

TSACHA PROPERTY

**SUMMARY REPORT
ON
TOMMY VEIN AND LARRY VEIN
DIAMOND DRILLING PROGRAM
NOVEMBER 2004 - FEBRUARY 2005**



**N.T.S.
093F005 and 093F006**

LATITUDE 53° 02' N, LONGITUDE 125° 02' W

**OMINECA MINING DIVISION,
CENTRAL BRITISH COLUMBIA**

Prepared for:

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GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
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SUMMARY

Diamond drilling was performed on the TSACHA and TASHA 2 mineral claims, part of the 3Ts project, in central British Columbia. The field work was carried out between November 16, 2004 and March 5, 2005 on behalf of Southern Rio Resources Ltd. of Vancouver, British Columbia.

The Tsacha property is located in central British Columbia, approximately 125 km southwest of the town of Vanderhoof. The property is comprised of 84 units in five mineral claims. These mineral claims under option by Southern Rio Resources Ltd. from TeckCominco Limited.

The 3Ts project area has been explored since 1994, when the discovery of gold-bearing quartz veins by the British Columbia Geological Survey was announced. Prospecting and geochemical sampling were followed by diamond drilling. A total of more than 16,000 metres of diamond drilling in 81 holes was completed on the Tsacha property. Most of this drilling tested the Tommy Vein, which contains an inferred resource of 470,000 tonnes at 7.40 g/t gold and 65.2 g/t silver, was calculated using a cut-off grade of 4 g/t gold by Wallis and Fier (2002).

Southern Rio optioned the Tsacha property from TeckCominco Limited in early 2002. Southern Rio carried out a seven-hole (951.6 m) program of diamond drilling during October 2002, and studied the structural setting, character and mineralogy of the mineralized veins.

The 3Ts project is located along the southern margin of the Nechako Uplift, a structurally raised block. This uplift provides a window through younger cover rocks to the underlying volcanic and sedimentary rocks of the Jurassic Hazelton and the Bowser Lake Groups. Cretaceous Capoose Batholith granitic rocks intrude these stratified rocks. Eocene volcanic rocks of the Ootsa Lake and Endako Groups locally overlie the older rocks. Younger basalt of the Chilcotin Group forms rare hill cappings within the Nechako Uplift.

The mineralized quartz-calcite veins within the property area strike north-northwesterly and have subvertical dips. These veins formed by open space filling along faults. Vein breccia fragments, crustiform banding and comb crystal structures indicate that the mineralized veins have an epithermal character and formed at a shallow depth.

A total of 3,129.54 metres in twelve holes was drilled at the Tsacha property between November 2004 and February 2005. The results of the recent diamond drilling program show that the mineralized Tommy Vein structure remains open at depth. The mineralized Larry Vein also extends below the crosscutting microdiorite sill.

The Tommy Vein structure should be further tested by diamond drilling, below the microdiorite sill and to the south of current drill holes. Drilling should begin with three holes each approximately 260 m in length as the first phase. Additional drill holes will be needed to test the vein structure to the south and down-dip of the phase one drill holes.

Diamond drilling should also be done to test the bedrock underlying the headwaters of Adrian Creek and the area along the northern side of Adrian Lake, in TASHA 2 mineral claim. One hole here should be inclined to the southeast from a point to the southwest of hole TS-05-109. This drilling would search for the bedrock source of mineralized vein

boulders discovered along Adrian Creek.

The cost of the recommended exploration is estimated to be \$ 274,000.00.

INTRODUCTION AND TERMS OF REFERENCE

This report describes diamond drilling performed on the TSACHA and TASHA 2 mineral claims in central British Columbia. This work was carried out on behalf of Southern Rio Resources Ltd. (Southern Rio) of Vancouver, British Columbia.

Mr. Lindsay Bottomer, President of Southern Rio, contracted the writer to supervise the diamond drilling. The writer personally supervised and performed geological core logging and sampling on the property between December 5, 2004 and March 5, 2005.

The writer has read National Instrument 43 – 101 and Form 43 – 101F1, and this report has been prepared in compliance with that instrument and form. The writer fulfils the requirements to be a "qualified person" for the purposes of NI 43 – 101.

DISCLAIMER

No legal searches of mineral tenure ownership were made during the preparation of this report. The information regarding the mineral claims presented in Table 1 was provided by Southern Rio.

PROPERTY DESCRIPTION AND LOCATION

The TSACHA and TASHA 2 mineral claims are located approximately 125 km southwest of the town of Vanderhoof in central British Columbia (Figure 1). The project area is centred at approximately 53° 02' N latitude and 125° 02' W longitude.

The Tsacha property is comprised of five contiguous grid-system mineral claims totalling 84 units. The mineral claims have not been legally surveyed. The property covers an area of approximately 2,100 hectares (Figure 2). The mineral claims comprising the property are listed in Table 1 below. The diamond drilling that is the subject of this technical report was performed within the TSACHA and the TASHA 2 mineral claims.

Table 1. Tsacha Property mineral claims

Claim Name	Tenure number	Units	Owner
TSACHA	323354	16	TeckCominco Ltd.
TASHA	325898	20	TeckCominco Ltd.
TASHA 1	326061	16	TeckCominco Ltd.
TASHA 2	326062	16	TeckCominco Ltd.
TASHA 3	342344	16	TeckCominco Ltd.

Southern Rio may earn a 100 % interest in the Tsacha property mineral claims by completing exploration expenditures of \$ 1,200,000 by April 30, 2005, and by issuing 400,000 shares to TeckCominco Limited.

ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Tsacha property is located in central British Columbia, approximately 125 km southwest of the town of Vanderhoof (Figure 1).

A network of logging roads provides access to the property. The Kenney Dam Road extends southwesterly from Vanderhoof for 25 km to the Kluskus Forest Service Road. The turnoff to the property, onto the Green 9000 Road, is southwest of the 161 km marker

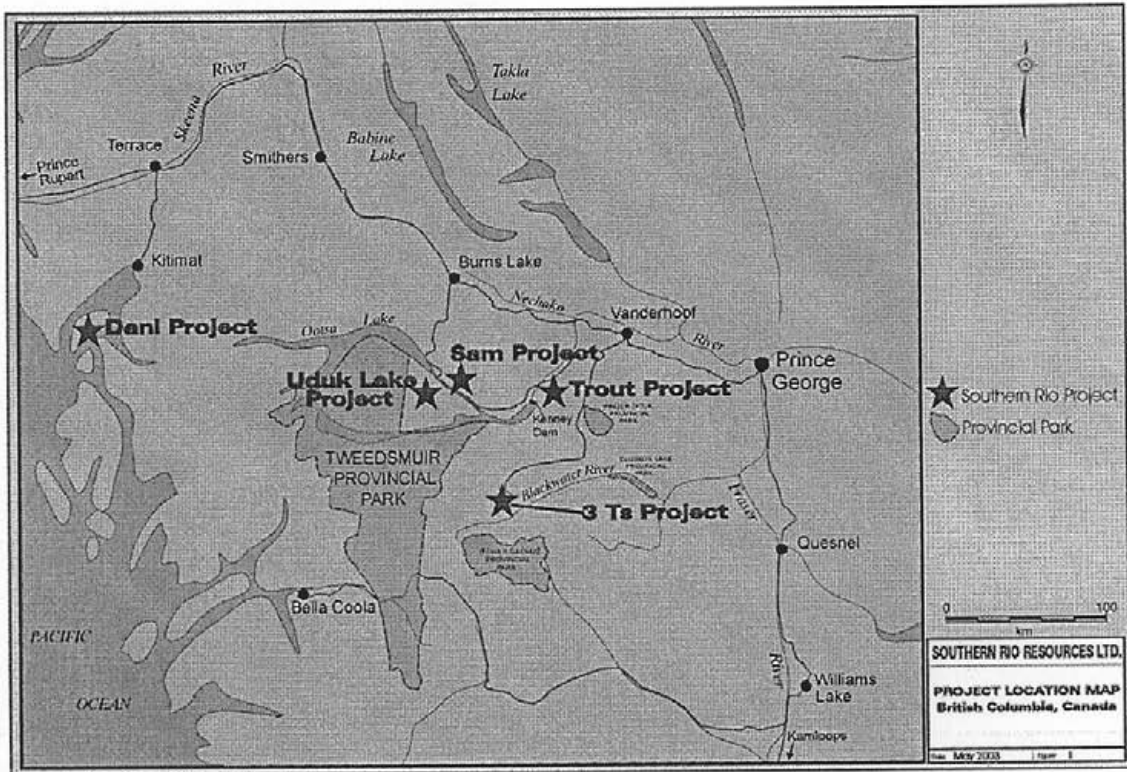


Figure 1. Location Map

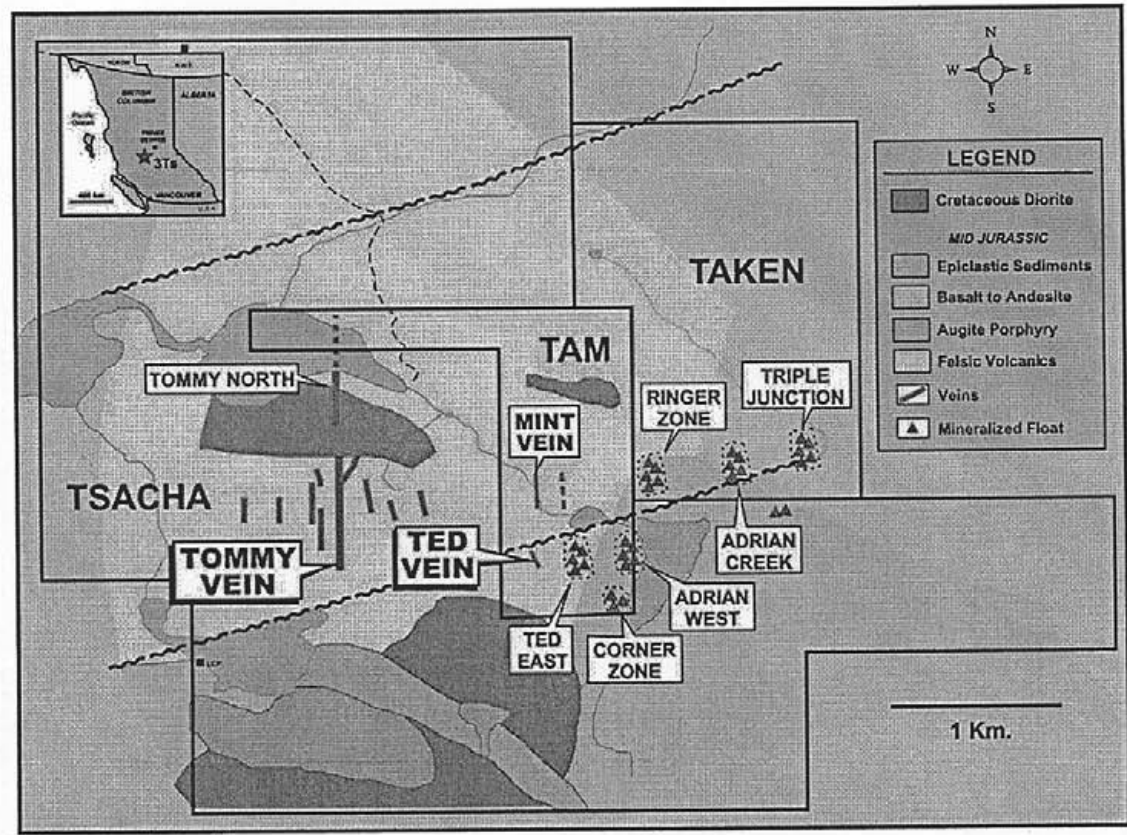
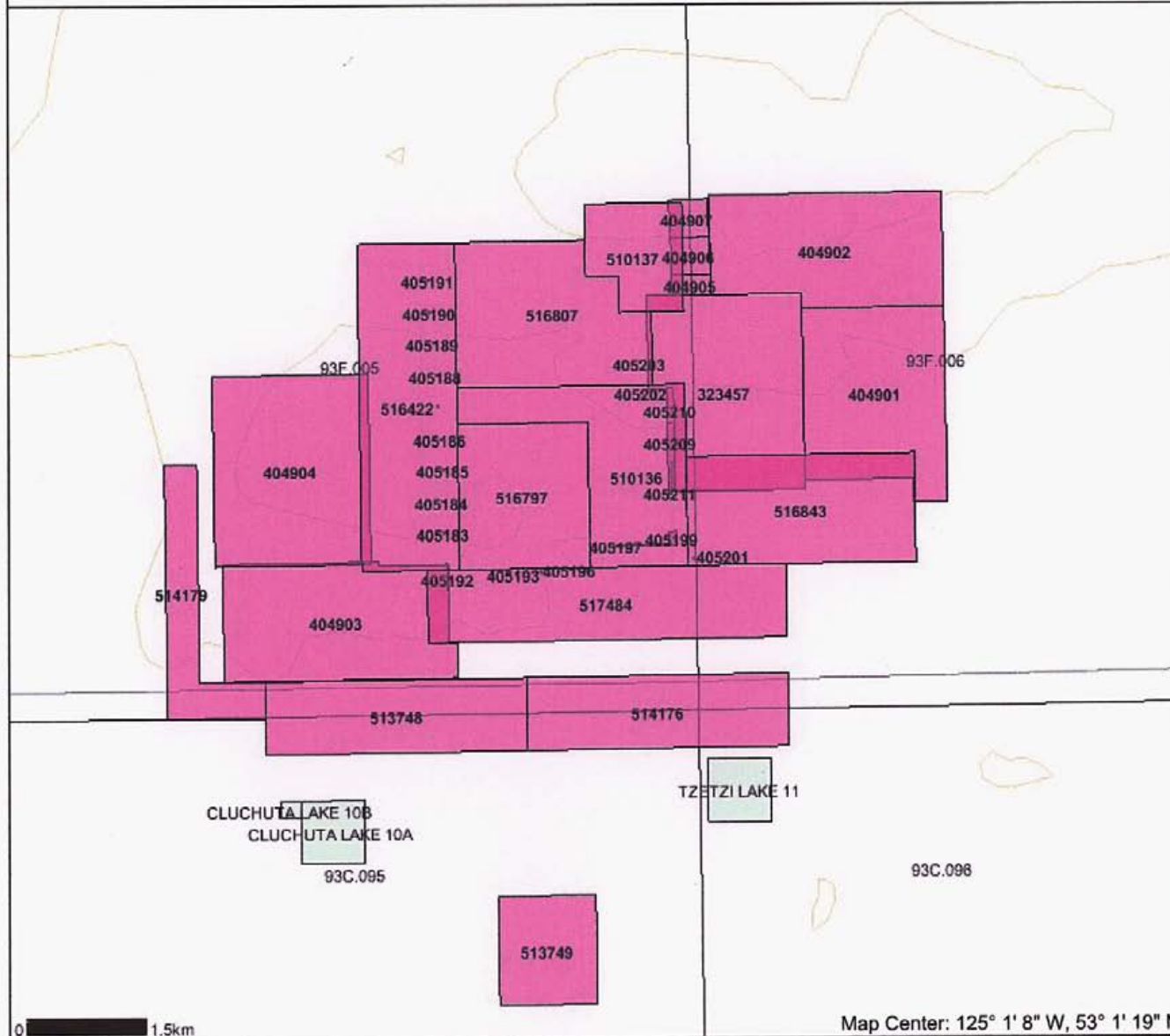


Figure 2. Claim Map

TSACHA PROPERTY: Converted Mineral Claims

Legend



- Indian Reserves
- National Parks
- Parks
- Mineral Tenures
- Reserves (Sites)
- Placer Claim Designation
- Placer Lease Designation
- No Staking Reserve
- Conditional Reserve
- Release Required Reserve
- Surface Restriction
- Recreation Area
- Others
- Mining Divisions
- BCGS Grid
- Contours (1:250K)
- Contour - Index
- Contour - Intermediate
- Area of Exclusion
- Area of Indefinite Contours
- Major Cities

Scale: 1:80,000

DO NOT USE FOR NAVIGATION

along the Kluskus Road. Green 9000 Road extends 13 km southeastwards from the Kluskus Road to a point one kilometre east of the eastern boundary of the TSACHA mineral claim (Figures 2 and 4).

At present (April 2005) access to the Tsacha property area is via an access road established by TeckCominco Limited during 1995; this road begins at about the 6.5 km point along the Green 9000 Road. Drill roads and bulldozer tracks lead from the end of this access road into the property area. Alternative road access to the property is from the end of the Green 9000 Road, but a temporary bridge located at the 8 km point along the Green 9000 Road was removed during March 2005 and has not yet been replaced.

Driving time from Vanderhoof to the property is 3.5 hours. Most of the trip is along the Kluskus Road, which is busy with heavy industrial traffic (logging trucks). Vehicles travelling the Kluskus Road should be radio-equipped, and should carry spare fuel.

The project area is within the Nechako Plateau of central British Columbia. Elevations in the property area range from about 1,050 metres to about 1,280 metres a.s.l. The terrain consists of rounded hills separated by swamps and small lakes. Pine, spruce, aspen and alder trees grow in the property area. Most of the pine trees are dead or dying because of the mountain pine beetle infestation. Thick glacial till covers the bedrock in most places, and outcrop exposure is sparse. Soils are poorly developed. Summer weather is cloudy with frequent showers, and winters are dry and cold.

HISTORY

Tipper (1963) geologically mapped the region at 1:253,440 scale for the Geological Survey of Canada. More recent, detailed mapping in the property area was carried out by Diakow, Webster, Levson and Giles (1994) of the British Columbia Geological Survey.

The property area has been explored since 1994, following the discovery of gold-bearing quartz veins by the British Columbia Geological Survey; these veins contained up to 3.7 g/t gold and up to 41.8 g/t silver (Diakow and Webster, 1994). Teck Corporation (now TeckCominco Limited) staked the occurrence during 1994 as the Tsacha property, which is the subject of this technical report. Cogema Limited (Cogema) and Phelps Dodge Corporation of Canada (Phelps Dodge) staked adjoining ground to the east. Southern Rio restaked the Cogema property in 2001 as the Tam property.

Pautler and Weicker (2002) described the history of the Tsacha mineral property, and the following is summarized from their report. Teck Corporation delineated four veins and a vein-stockwork zone by prospecting and trenching during 1994. Follow-up work included further trenching, geophysical and geochemical surveys, and completion of 16,073.2 metres of diamond drilling in 81 holes throughout the property area by 1999.

Southern Rio optioned the Tsacha property from TeckCominco Limited in early 2002.

Southern Rio drilled a total of 951.6 m in seven holes on the Tsacha property during 2002. Six of these holes were drilled on the Tommy Vein structure, and one hole was drilled on the Larry Vein (McIvor, 2002).

Rhys (2003) studied the structural setting and character of the mineralized veins within the Tsacha and Tam mineral claims, and Ross (2003) carried out petrographic studies of rock samples from the properties.

During September 2003 Southern Rio briefly prospected the area west of the Tommy Vein, where Rhys (2003) had identified an area of altered rock. The area north of Tommy Lake was also prospected, in an attempt to discover the presumed northern extension of the Tommy Vein structure (Pawliuk, 2003).

In addition, a small vein quartz boulder was discovered along the creek that flows eastwards from the eastern end of Tommy Lake during November, 2003. This boulder contains 70 parts per billion (ppb) gold and 9.6 parts per million (ppm) silver, and is plotted on figure 5. The bedrock source of this boulder is unknown, but may be the northern extension of the Tommy Vein.

A total of 2,449.2 metres in seven holes was drilled at the Tsacha property during February and March 2004. The results of this diamond drilling show that the mineralized Tommy Vein structure remains open at depth and to the south. The mineralized Lary Vein also extends below a crosscutting microdiorite sill (Pawliuk, 2004b).

GEOLOGICAL SETTING

Regional Geology

The Tsacha property is located within the southern Nechako Plateau. Igneous and sedimentary rocks of Jurassic to Tertiary age underlie the region. These rocks form part of the Stikine Terrane. The geology of the project region is shown on Figure 3.

The property is within the Fawnie Creek map-area. This area is located along the southern margin of the Nechako Uplift, which is a northeast-trending, structurally raised block. The structural uplift provides a window through younger cover rocks to the underlying, regionally extensive, volcanic and sedimentary rocks of the Lower to Middle Jurassic Hazelton Group, and to the Late Jurassic Bowser Lake Group. These stratified rocks are intruded by granodiorite to granite of the Late Cretaceous Capoose Batholith. Eocene volcanic rocks of the Ootsa Lake and Endako groups locally overlie the older rocks. Younger, Miocene olivine basalt of the Chilcotin Group forms rare cappings on hills within the Nechako Uplift.

Property Geology

Quartz- and feldspar-phyric rhyolite tuffs and flows (RQFP) of the Entiako Formation are locally the most abundant rock unit (Figure 4). The Entiako Formation is the lowermost rock unit within the Hazelton Group. Naglico Formation andesite flows locally conformably overlie the Entiako Formation rocks. Late Cretaceous microdiorite sills and dykes intrude the above rocks.

MINERALIZATION

Tommy Vein

The Tommy Vein is a north-northwesterly striking, subvertical quartz-calcite vein located within the central portion of the TSACHA mineral claim (Figure 4). The vein formed by

open space filling along a fault with small right-lateral displacement (Rhys, 2003). Local bends in the fault can create dilational jogs where the vein may widen to fill the resulting openings. Vein breccia fragments indicate that faulting occurred during vein formation. The vein breccia fragments, local crustiform banding and comb crystal structures indicate that the Tommy Vein has an epithermal character, and formed at a shallow depth.

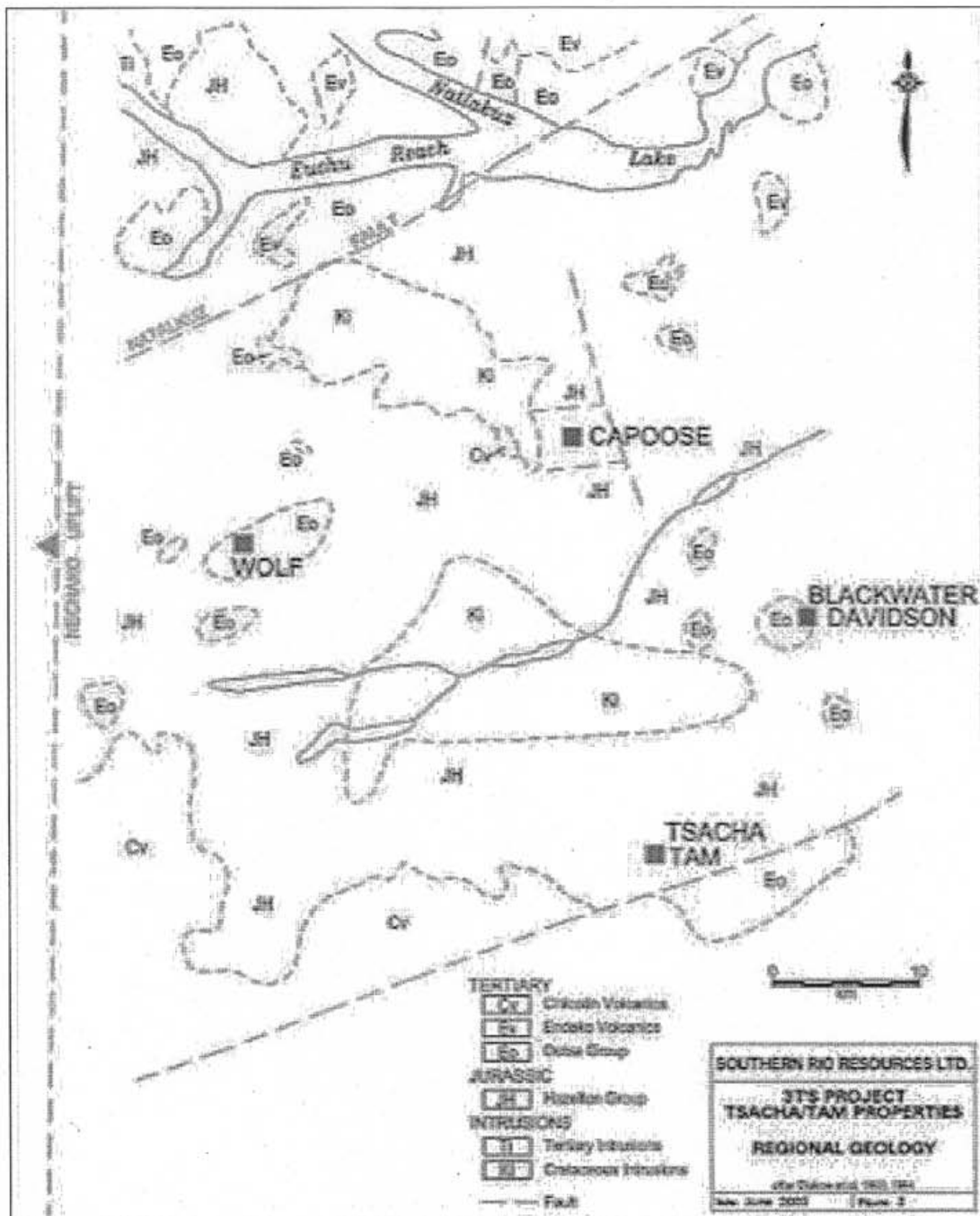


Figure 3. Regional Geology Map

The Tommy Vein is comprised of from 30 to 96 % quartz and from 4 to 70 % calcite. The vein is mottled; its colour varies from pale grey to creamy white to pale pink to pinkish red. Tan, light grey-brown and medium green coloured patches of vein material were seen in core from hole TS-05-108 (Appendix B). The Tommy Vein has been brecciated and rehealed; the vein material observed in drill cores appears to have undergone at least three or four such episodes of veining and brecciation. The early vein fragments within the brecciated intervals vary from light grey to off-white to pale reddish brown in colour, and are locally rimmed by pyrite grains up to 2 mm across. These pyrite grains themselves are often rimmed by dark sulphosalt(?) (Appendix B). Calcite within the Tommy Vein is generally granular but also occurs as late, crosscutting, white veinlets.

Tommy Vein quartz is generally medium to fine grained, granular and sugary with faint, centimetre scale, alternating bands of quartz and calcite. The vein is locally finely banded on a millimetre scale. The vein usually contains from 10 to 40 % variably silicified and assimilated rhyolite porphyry (RQFP) fragments. These RQFP fragments are often crosscut by light grey quartz veinlets; these veinlets are locally crosscut by (later) Tommy Vein material, as in drill hole TS-04-90 (Pawliuk, 2004b).

Open cavities up to 10 mm across are lined by pale grey, subhedral quartz or calcite crystals.

The wallrock rhyolite porphyry is generally pervasively silicified, bleached, brecciated and healed by quartz-calcite veins and veinlets across widths of up to about 10 metres along both the upper and lower contacts with the Tommy Vein. In addition, the wallrock porphyry contains up to 3 % pyrite as round blebs up to 3.5 mm across; these blebs sometimes contain radiating pyrite crystals.

The Tommy Vein contains traces to locally about 1 % combined pyrite and dark bluish sulphosalt(?). The sulphides occur as dusty disseminated masses or spots with faint margins, and as small grains. Pyrite is the most abundant sulphide. Dark grey, sooty sulphosalt(?) forms hairline, stylolitic veinlets in vein quartz in drill hole TS-04-97 (Pawliuk, 2004b).

About 3 % combined sulphosalt(?), brown sphalerite, galena and pyrite occur across 75 cm in RQFP wallrock in hole TS-04-97. The sphalerite here occurs as subhedral crystals up to 7 mm across with sulphosalt(?) and traces galena. rare traces of blonde sphalerite occur as very fine grained, disseminated blebs elsewhere within the Tommy Vein.

The Tommy Vein contains traces up to about 1 % bright red hematite as dusty disseminated masses, spots and veinlets with faint margins (Appendix B). Irregular, stylolitic veinlets of hematite +/- pyrite locally occur within the Tommy Vein. Local traces of chlorite coat fracture surfaces within the vein, as in hole TS-05-108 (Appendix B).

Irregular veinlets of bright orange-red rhodochrosite(?) locally occur within the Tommy Vein.

Late igneous dykes are often emplaced along the Tommy Vein structure; in some places these dykes have replaced the Tommy Vein (Figures 6 and 12; Appendix B).

Larry Vein

The Larry Vein is a north-northwesterly striking, subvertical quartz-calcite vein located

within the central portion of the TSACHA mineral claim (Figure 4). The vein formed by open space filling along a fault with small right-lateral displacement (Rhys, 2003). Local bends in the fault can create dilational jogs where the vein may widen to fill the resulting openings. Vein breccia fragments indicate that faulting occurred during vein formation. The vein breccia fragments, local crustiform banding and comb crystal structures indicate that the Larry Vein has an epithermal character, and formed at a shallow depth.

The Larry Vein intersected within drill hole TS-05-108 is described in the following section, under diamond drilling.

DRILLING

A total of 3,129.54 metres in twelve holes was drilled at the Tsacha property area between November 27 and February 24, 2005. The drilling was performed by Falcon Drilling Ltd. of Prince George, British Columbia, using a custom-built diamond drill rig. The drill cores are stored in labelled wooden boxes, stacked in a storage area on the property. The core boxes are covered with plywood sheeting, to protect them from rain and snow.

The diamond drilling was supervised by the writer, with assistance from Daniel Meldrum and Robert Weicker, P.Geo. Drill hole orientation, depth and locations are listed in the following table.

**Table 2: Summary of November 2004 - February 2005
Diamond Drill Holes, TSACHA property**

<u>Hole No.</u>	<u>Collar Location (local grid)</u> <u>Northing / Easting / elevation (m)</u>	<u>Azimuth/ Inclination</u>	<u>Depth (m)</u>
TS-04-98	45 + 50 N / 52 + 58 E / 1190	270 ⁰ / 61 ⁰	474.57
TS-04-99	45 + 00 N / 52 + 87 E / 1195	265 ⁰ / 57 ⁰	431.09
TS-05-100	45 + 06 N / 51 + 72 E / 1197	265 ⁰ / 55 ⁰	226.47
TS-05-101	45 + 50 N / 52 + 57 E / 1190	265 ⁰ / 45 ⁰	144.78
TS-05-102	45 + 07 N / 52 + 18 E / 1196	270 ⁰ / 50 ⁰	105.77
TS-05-103	48 + 65 N / 51 + 77 E / 1157	265 ⁰ / 53 ⁰	260.91
TS-05-104	48 + 65 N / 51 + 78 E / 1157	265 ⁰ / 58 ⁰	328.27
TS-05-105	50 + 22 N / 51 + 29 E / 1150	266 ⁰ / 61 ⁰	254.51
TS-05-106	48 + 75 N / 50 + 38 E / 1184	084 ⁰ / 65 ⁰	322.22
TS-05-107	49 + 50 N / 50 + 36 E / 1177	090 ⁰ / 66 ⁰	297.18
TS-05-108	49 + 09 N / 51 + 92 E / 1149	270 ⁰ / 53 ⁰	247.80
TS-05-109	5876864 N / 366080 E / 1073	135 ⁰ / 50 ⁰	<u>35.97</u>
			Total 3,129.54

Note: Collar locations surveyed by hipchain-and-compass from earlier drill holes, and by G.P.S. Collar coordinates for TS-05-109 are UTM coordinates.

Downhole surveys included acid dip tests of hole inclination at the bottom of the holes, and at intervals along deeper drill holes. No acid dip test was performed at the bottom of hole TS-05-109, which was abandoned in overburden before reaching bedrock.

Drill hole azimuth and inclination are determined by a Sperry-Sun test. Sperry-Sun tests were performed on all holes except for TS-05-109, which was abandoned in overburden

before reaching bedrock.

Table 3 below compares the inclination of the bottoms of drill holes as determined by both Sperry Sun testing and by acid testing.

Table 3. Comparison of drill hole inclination tests

Drill hole number	Depth (m)	Inclination by acid test	Depth (m)	Inclination by Sperry Sun test
TS-04-98	474.57	60 ^o	474.57	61 ^o
TS-04-99	404.47	52 ^o	431.90	52 ^o
TS-05-100	226.47	50 ^o	226.47	51 ^o
TS-05-101	117.70	40.5 ^o	144.78	40 ^o
TS-05-102	102.41	42.5 ^o	105.77	45 ^o
TS-05-103	260.91	35 ^o	260.91	41 ^o
TS-05-104	276.45	53 ^o	328.27	47.5 ^o
TS-05-105	249.02	51 ^o	254.51	55 ^o
TS-05-106	316.08	58 ^o	316.08	60 ^o
TS-05-107	231.04	55 ^o	279.18	58.5 ^o
TS-05-108	45.72	49.5 ^o	184.71	59 ^o

Acid test results were used to determine drill hole inclinations used for plotting of the drill holes on the cross sections accompanying this report.

Drill hole TS-04-98

This hole was drilled to test the Tommy Vein structure up-dip of earlier drill hole TS-04-97 (Figure 7). Drill hole TS-04-98 intersected rhyolite quartz feldspar porphyry (RQFP) from 0.0 m to 57.40 m depth. From 57.40 m to 87.85 m depth the hole cut an andesite dyke. From 87.85 to 110.54 m depth the hole intersected RQFP, with local bleached and brecciated sections.

Between 110.54 m and 113.07 m depth the core is 50 % RQFP and 50 % quartz-carbonate vein material. The vein quartz contains dusty disseminated red hematite, and is locally finely banded; the vein carbonate is somewhat wormy. Dark sulphosalt(?) forms faint veinlets 3 to 4 mm wide within the central part of the interval (Appendix B). Assay results show that this interval contains 0.98 g/t gold and 3.9 g/t silver across 2.4 m (Appendix A).

From 113.07 m to 119.75 m depth the hole intersected RQFP with 15 % quartz-carbonate vein material.

From 119.75 m to 124.65 m depth the hole intersected 75 % quartz-carbonate vein material and 25 % RQFP fragments (Appendix B). Assay results from this interval show that it contains up to 1.19 g/t gold and 10.7 g/t silver across 1.1 m (Appendix A).

From 124.65 m to 149.35 m depth the hole intersected green, chlorite-altered RQFP with 10 % quartz-carbonate vein material.

From 149.35 m to 154.17 m depth the hole intersected a quartz (75 %) – carbonate (25%) vein (Appendix B). The vein contains traces to 1 % hematite that forms rims along vein quartz fragments, and as dusty red blotches up to 10 mm across; the vein also contains from traces to 1 % sulphosalt veinlets 1 to 3 mm wide at 70 to 80 degrees to the core axis. The vein contains traces finely disseminated pyrite throughout (Appendix B). Assay results from 151.33 m to 154.17 m depth show that it contains 2.54 g/t gold and 43.9 g/t silver

across an approximate true width of 1.9 m (Appendix A; Figure 7).

The above mineralized quartz-carbonate vein intercepts in drill hole TS-04-98 do not extend either up or down to the adjacent drill holes on cross section 45+50 N (Figure 7).

From 154.17 m to 179.50 m depth the hole intersected RQFP with 20 % quartz-carbonate vein material above 159.50 m depth, and 5 to 10 % quartz-carbonate vein material below 159.50 m depth. Microdiorite sill is present from 179.50 m to 305.48 m depth; this rock unit is crosscut by a major fault zone from 261.31 m to 264.36 m depth. Alternating intervals of RQFP and late igneous dyke were cut from 305.48 m to 431.97 m depth.

From 431.97 m to 436.63 m depth the hole intersected 75 % quartz-carbonate vein material and 25 % variably silicified RQFP fragments (Appendix B). This interval is the Tommy Vein (Figure 7). The vein from 436.00 m to 436.63 m depth contains 2.57 g/t gold and 25.2 g/t silver across an approximate true width of 0.43 m (Appendix A).

From 436.63 m to 437.60 m depth the hole intersected intersected RQFP with 25 to 30 % quartz-carbonate vein material and 5 % hematite. A late igneous dyke was cut from 437.60 m to 439.59 m depth; RQFP is present from 439.59 m to the bottom of the hole at 474.57 m depth.

Drill hole TS-04-99

Hole TS-04-99 was drilled to test the Tommy Vein structure below the microdiorite sill and down-dip of an earlier drill intersection in drill hole 95-30, which assayed 4.87 g/t gold and 35.6 g/t silver across an estimated true width of 2.1 m (Figure 6).

Drill hole TS-04-99 intersected RQFP from 3.05 m to 183.19 m depth. Several faults crosscut the RQFP. The RQFP has locally been brecciated and healed by quartz-calcite veinlets. The RQFP is moderately to weakly bleached from 84.11 m to 89.50 m depth, from 95.77 m to 99.67 m depth, and from 174.85 m to 180.20 m depth; these bleached intervals are altered fault envelopes.

From 183.19 m to 183.75 m depth the hole intersected a quartz (65 %) – carbonate (35 %) vein with 0.5 % dusty disseminated hematite and rare specks of pyrite throughout (Appendix B). The vein material has been brecciated and rehealed, and contains 5 % RQFP fragments, some of which have been moderately silicified. Assay results from this interval show that it contains 0.07 g/t gold and 0.6 g/t silver across 0.55 m (Appendix A; Figure 6).

From 183.75 m to 187.50 m depth the hole intersected RQFP.

The hole intersected quartz (75 %) – carbonate (23 %) – chlorite (?) (2 %) vein from 187.5 to 188.55 m depth. The vein is mottled and crudely banded on a cm scale. The dark green, waxy chlorite(?) occurs across about 4 to 9 cm along both the upper and lower vein contacts. The vein contains rare traces of hematite; no sulphide minerals were seen (Appendix B). Assay results from this interval show that it contains 0.49 g/t gold and 3.9 g/t silver across 1.05 m (Appendix A; Figure 6).

From 188.55 m to 192.66 m depth the hole intersected RQFP. Microdiorite sill is present from 192.66 m to 329.20 m depth; this rock unit is crosscut by a major fault zone from

310.72 m to 311.38 m depth. RQFP was cut from 329.20 m to 380.95 m depth.

The hole intersected quartz (90 %) – carbonate (10 %) vein and vein quartz breccia from 380.95 m to 383.65 m depth. The vein contains local traces of sulphosalt(?) and hematite (Appendix B). Assay results from 382.45 m to 383.65 m depth show that the vein here contains 0.38 g/t gold and 0.4 g/t silver across an apparent width of 1.2 m. However, a duplicate sample of this same interval contains <0.03 g/t gold and <0.1 g/t silver (Appendix A).

Locally moderately brecciated RQFP was cut from 383.65 m to 401.05 m depth.

The hole intersected quartz (93 %) – carbonate (7 %) vein from 401.05 m to 402.67 m depth. The vein contains traces dark sulphosalt and 15 to 20 % variably silicified RQFP fragments (Appendix B). Assay results from this interval show that it contains <0.03 g/t gold and 0.1 g/t silver across 1.62 m (Appendix A).

Alternating intervals of RQFP and late igneous dyke were cut from 402.67 m to 417.66 m depth.

The hole intersected quartz (35 %) – carbonate (65 %) vein from 417.66 m to 418.17 m depth. The vein contains rare traces sulphosalt and pyrite (Appendix B). Assay results from this interval show that it contains 1.04 g/t gold and 3.4 g/t silver across 0.51 m (Appendix A; Figure 6).

Late igneous dyke was cut from 418.17 m to 419.42 m depth. The hole intersected quartz (35 %) – carbonate (65 %) vein from 419.42 m to 421.78 m depth. The vein contains rare traces sulphosalt and pyrite (Appendix B). Assay results from this interval show that it contains 0.16 g/t gold and 3.7 g/t silver across 2.36 m (Appendix A).

RQFP was cut from 421.78 m to 424.09 m depth. The hole intersected quartz (70 %) – carbonate (30 %) vein breccia from 424.09 m to 425.81 m depth. The vein contains rare traces sulphosalt and pyrite (Appendix B). Assay results from this interval show that it contains 0.04 g/t gold and 0.7 g/t silver across an apparent width of 1.72 m (Appendix A).

RQFP was cut from 425.81 m to 426.70 m depth. The hole intersected quartz (35 %) – carbonate (65 %) vein breccia from 426.70 m to 427.30 m depth. The vein contains rare traces sulphosalt and pyrite (Appendix B). Assay results from 426.70 m to 428.76 m depth show that the rock here contains 4.50 g/t gold and 34.5 g/t silver across an approximate true width of 1.3 m (Appendix A; Figure 6).

RQFP was cut from 427.30 m to the bottom of the hole at 431.90 m depth.

Drill hole TS-05-100

Hole TS-05-100 was drilled to test the Tommy Vein structure above the microdiorite sill and down-dip of an earlier drill intersection in drill hole 95-30, which assayed 4.87 g/t gold and 35.6 g/t silver across an estimated true width of 2.1 m (Figure 6).

Drill hole TS-05-100 intersected alternating intervals of RQFP and late igneous dyke from 3.05 m to 39.91 m depth. Locally brecciated RQFP was cut from 39.91 m to 164.04 m depth; this rock is crosscut by several faults, including one large fault from 104.00 m to

109.70 m depth. A sample of weakly brecciated and weakly silicified RQFP with 5 to 7 % light grey vein quartz from 57.05 m to 58.55 m depth contains 1.69 g/t gold and 2.2 g/t silver across an apparent width of 1.50 m (Appendix A; Figure 6).

From 164.04 m to 183.58 m depth the hole cut a late igneous dyke. From 183.58 m to 190.74 m depth the hole intersected RQFP. A late igneous dyke was cut from 190.74 m to the bottom of the hole at 226.47 m depth.

Drill hole TS-05-101

Hole TS-05-101 was drilled to test for the up-dip extension of an earlier drill intersection in drill hole TS-04-98, which assayed 2.54 g/t gold and 43.9 g/t silver across 1.9 m (Figure 7).

Drill hole TS-05-101 intersected locally brecciated RQFP from 3.05 m to 34.18 m depth.

A quartz breccia vein was cut from 34.18 m to 35.23 m depth; this rock contains 60 % silicified RQFP fragments within a matrix of vein quartz (35 %) and carbonate (5 %). Traces of disseminated pyrite rimmed by dark sulphosalt(?) were observed across a few cm within the central part of the breccia vein (Appendix B). This breccia vein and 0.53 m of the overlying brecciated RQFP contain 0.53 g/t gold and 10.3 g/t silver across 1.58 m (Appendix A; Figure 7).

From 35.23 m to 54.88 m depth the hole cut RQFP. From 54.88 m to 61.03 m depth the hole intersected a late igneous dyke. RQFP was cut from 61.03 m to 137.46 m depth. A late igneous dyke was cut from 137.46 m depth to the bottom of the hole at 144.78 m depth.

The mineralized quartz veins intersected above the microdiorite sill in hole TS-04-98 do not extend up-dip to hole TS-05-101, which is 35 to 50 metres above hole TS-04-98 (Figure 7).

Drill hole TS-05-102

Hole TS-05-102 was drilled to test the along strike and up-dip extension of an earlier drill intersection in drill hole TS-04-98, which assayed 2.54 g/t gold and 43.9 g/t silver across 1.9 m (Figures 6 and 7).

Drill hole TS-05-102 intersected RQFP from 3.05 m to 59.16 m depth; this rock is moderately bleached below 41.60 m depth.

From 59.16 m to 70.78 m depth the hole cut a late igneous dyke. RQFP was cut from 70.78 m to the bottom of the hole at 150.77 m depth. From 74.16 m to 74.58 m depth the RQFP is moderately brecciated and healed by calcite (60 %) – quartz (40 %) veinlets. The veinlet calcite contains 1 % pyrite and 2 % dark sulphosalts (?hematite).

No significant results were obtained from assays of core samples from hole TS-05-102 (Appendices A and B).

Drill hole TS-05-103

This hole was drilled to test the Tommy Vein structure below the microdiorite sill and down-dip from an earlier intersection in drill hole 95-14 (Figures 8 and 12).

Drill hole TS-05-103 intersected mainly RQFP from 3.05 m to 70.26 m depth; this rock is locally weakly brecciated. Microdiorite sill is present from 70.26 m to 253.04 m depth; this rock unit is crosscut by a major fault zone from 100.86 m to 106.02 m depth.

RQFP was cut from 106.02 m to the bottom of the hole at 260.91 m depth.

The Tommy Vein was not intersected in hole TS-05-103 because the hole deflected upwards an unusual amount during drilling of the hole (Appendix B, Figure 8).

No significant results were obtained from assays of core samples from hole TS-05-103 (Appendices A and B).

Drill hole TS-05-104

This hole was drilled to test the Tommy Vein structure below the microdiorite sill and down-dip from an earlier intersection in drill hole 95-14 (Figures 8 and 12). It tested the Tommy Vein structure below hole TS-05-103, which deflected upwards during drilling and thereby missed the vein structure below the sill.

Drill hole TS-05-104 intersected RQFP from 2.45 m to 64.34 m depth; this rock is crosscut by three narrow, late igneous dykes. Microdiorite sill is present from 64.34 m to 232.05 m depth. The sill is crosscut by a major fault zone from 116.16 m to 123.14 m depth.

RQFP was cut from 232.05 m to 314.35 m depth.

A quartz (94 %) – calcite (1 %) – RQFP fragments (5 %) vein was cut from 314.35 m to 314.68 m depth; this rock contains traces of disseminated pyrite and hematite, and local traces of dark, dusty disseminated sulphosalt(?) were observed within bands up to 8 mm wide (Appendix B). This vein contains 0.40 g/t gold and 4.9 g/t silver across 0.33 m (Appendix A; Figure 8).

RQFP was cut from 314.68 m to the bottom of the hole at 328.27 m depth.

Drill hole TS-05-105

This hole was drilled to test the northern Tommy Vein structure below the microdiorite sill and down-dip from surface Trench 8, where the vein contains 4.29 g/t gold and 25.9 g/t silver across 6.9 m (Figures 11 and 12).

Drill hole TS-05-105 intersected RQFP from 1.54 m to 23.91 m depth. Microdiorite sill is present from 23.91 m to 169.46 m depth; the sill is crosscut by a large fault at 68.49 m depth. RQFP was cut from 169.46 m to 206.63 m depth.

The quartz (95 %) – calcite (5 %) Tommy Vein was cut from 206.63 m to 209.00 m depth; the vein contains traces to 0.5 % dusty disseminated hematite and local traces of dark, bluish sulphosalt as spotty disseminations along arcuate fractures. Ovoid chalcopyrite masses up to 1.0 mm across were observed along a veinlet 1.5 mm wide at 207.93 m depth (Appendix B). One mineralized vein sample from 208.20 m to 209.00 m depth assays 2.98 g/t gold and 25.2 g/t silver across an apparent width of 0.80 m (approximate true width of 0.54 m) (Appendix A; Figure 11).

RQFP was cut from 209.00 m to the bottom of the hole at 254.51 m depth.

Drill hole TS-05-106

This hole was drilled to test the Larry Vein structure below the microdiorite sill, down-dip and along strike from an earlier intersection in drill holes 95-22 and 95-23 (Figures 5, 8 and 9).

Drill hole TS-05-106 intersected RQFP from 6.10 m to 87.19 m depth; this rock is crosscut by several faults. Microdiorite sill is present from 87.19 m to 217.10 m depth; the sill is crosscut by a major fault zone from 135.12 m to 138.53 m depth.

RQFP was cut from 217.10 m to 233.48 m depth. Alternating, narrow intervals of late igneous dyke and RQFP were cored from 233.48 m to 294.98 m depth.

RQFP was cut from 294.98 m to the bottom of the hole at 322.22 m depth.

The RQFP is brecciated and healed by 25 % vein material from 303.89 m to 309.20 m depth; this vein material is 75 % quartz, 20 % carbonate, 3 % hematite and 2 % chlorite. A vein 8 cm wide occurs at 305.75 m depth, and another vein 15 cm wide occurs at 306.15 m depth. Traces of sulphosalt occur at quartz vein boundaries within the interval. Hematite occurs as dusty disseminations, and as veinlets up to 3 mm wide (Appendix B).

The RQFP is brecciated and healed by 20 % vein material from 312.68 m to 314.68 m depth; this vein material is 73 % quartz, 25 % carbonate and 2 to 3 % hematite. A vein 5 cm wide occurs from 313.68 to 313.83 m depth; this vein contains traces of sulphosalt and hematite (Appendix B).

No significant results were obtained from assays of core samples from hole TS-05-106 (Appendices A and B). The Larry Vein structure in hole TS-05-106 is probably occupied or replaced by a late igneous dyke (Figure 8).

Drill hole TS-05-107

This hole was drilled to test the central portion of the Larry Vein structure below the microdiorite sill and down-dip from earlier drill hole 98-75, which probably missed the main Larry Vein structure (Figures 5 and 10).

Drill hole TS-05-107 intersected RQFP from 4.27 m to 85.57 m depth; this RQFP is crosscut by late igneous dykes from 44.55 m to 52.67 m depth, and from 63.62 m to 69.17 m depth. RQFP from 75.29 to 75.79 m depth is brecciated and healed by 40 % carbonate – quartz vein material that contains a clot of magnetite 1 cm wide; this interval contains <0.03 g/t gold and 0.5 ppm silver (Appendices A and B).

Microdiorite sill is present from 85.57 m to 214.19 m depth; the sill is crosscut by a large fault from 207.42 m to 213.36 m depth.

RQFP was cut from 214.19 m to 297.18 m depth. Rare quartz-carbonate veins from 1 to 4 cm wide crosscut this RQFP, and one quartz-carbonate breccia vein 17 cm wide (Appendix B).

Drill hole TS-05-108

This hole was drilled to test the northern Tommy Vein structure below the microdiorite sill, and also below earlier drill holes 95-21 and 95-23 (Figures 5, 9 and 12). Hole TS-05-108 also tested the Larry Vein structure above the microdiorite sill (Figure 9).

Drill hole TS-05-108 intersected RQFP from 3.05 m to 40.27 m depth.

The quartz(80 %)-carbonate(10 %)-magnetite(5 %)-hematite(5 %) Larry Vein was intersected from 40.27 m to 42.60 m depth. The magnetite occurs mainly within the central portion of the vein interval, as irregular masses up to 1 cm across. Hematite occurs mostly as a selvage 2 to 4 mm wide along the margins of the magnetite masses. Traces of disseminated pyrite and sphalerite occur throughout the Larry Vein. Assay results from this interval show that the Larry Vein contains 6.36 g/t gold and 48.5 g/t silver across 3.4 m (approximate true width 2.2 m) (Appendix A; Figure 9).

The drill hole intersected RQFP from 42.60 m to 53.44 m depth. Microdiorite sill is present from 53.44 m to 215.96 m depth. RQFP was cut from 215.96 m to 220.56 m depth.

The quartz(96 %)-carbonate(4 %)-hematite(0.5 %) Tommy Vein was intersected from 220.56 m to 234.93 m depth. There are variably pale tan, medium green and cream coloured patches of vein material above 224.25 m depth. Hematite occurs mainly as dusty disseminated specks within or along late quartz and calcite veinlets, but also as faint masses within the main body of vein quartz (Appendix B). Rare traces of very finely disseminated pyrite are present, as are traces of chlorite. The vein quartz is locally finely banded on a mm scale. Assay results from the upper part of this interval show that the Tommy Vein contains 10.89 g/t gold and 60.2 g/t silver from 220.56 m to 229.42 m depth, across an estimated true width of 6.0 m (Appendix A; Figure 9).

The drill hole intersected RQFP from 234.93 m to the bottom of the hole at 247.80 m depth.

Drill hole TS-05-109

This hole was drilled to test the bedrock underlying the headwaters of Adrian Creek, west of numerous mineralized vein quartz-carbonate float boulders discovered on the eastern side of the Tsacha property, within TASHA 2 mineral claim (Pawliuk, 2003; Figure 13).

No bedrock was cored in drill hole TS-05-109 because of difficult drilling conditions. The hole was stopped in overburden at a depth of 35.97 m (Figure 14).

SAMPLING METHOD AND APPROACH

The sampling method and approach consisted of logging the core, during which intervals for sampling and assaying would be marked out on the core in the core boxes. The selected intervals generally included all intervals containing significant (> 5%) quartz and/or carbonate veining, visible sulphides, and altered wallrocks for several metres on either side of the main vein intervals. Vein material was generally sampled in one metre intervals, with variations to allow for included barren dyke intervals, and the occurrence of major structures or lithologic contacts. Wallrock samples outside of the vein zones were sometimes sampled over lengths of up to two metres.

SAMPLE PREPARATION, ANALYSES AND SECURITY

The drill core samples were geologically logged by the writer or by Daniel Meldrum, M.Sc. Selected intervals of core were then split lengthwise using a Longyear wheel-type core splitter. The core samples were bagged, and then shipped via bus from Vanderhoof to Eco Tech Laboratory Ltd. in Kamloops, British Columbia.

The samples were assayed for gold and silver by geochemical fire assay. Subsamples of 30 gm were analyzed.

Assay certificates form Appendix A. Geological logs of the diamond drill cores are presented in Appendix B.

DATA VERIFICATION

Routine duplicate and blank samples were inserted into the sample stream every 20 samples. The assays for these duplicates and blanks are reported with the regular assays in Appendices A and B. In addition, selected pulps were submitted to Acme Analytical Laboratories Ltd. for check assaying. Results for the duplicate pulp assays were unavailable at time of writing.

The microdiorite sill rock unit was used for the blank samples in the sampling program. This rock was collected from diamond drill holes that intersected the sill during the current drilling program. Laboratory results show that the 12 blank samples contain no gold, and from zero to 0.2 g/t silver (Appendices A, B), therefore no contamination within the laboratory is indicated by the blank sample results.

Duplicate samples were obtained by quartering the drill core sample from the selected interval (splitting one half of the core into two quarters). The two quarter-core samples were then submitted to the assay laboratory as a duplicate pair. Nine duplicate pairs were assayed. Duplicate sample results are listed with the other results in appendices A and B, and shown in Table 4 below. The variation between the duplicate sample results is not significant.

Table 4. Duplicate sample results

Sample	Au (g/t)	Ag (g/t)
11825	0.42	4.6
11826 (<i>duplicate of 11825</i>)	0.26	2.9
11852	<0.03	0.4
11853 (<i>duplicate of 11852</i>)	<0.03	0.4
11879	<0.03	<0.1
11880 (<i>duplicate of 11879</i>)	<0.03	0.3
11898	0.07	0.3
11899 (<i>duplicate of 11898</i>)	0.08	0.2
11959	<0.03	<0.1
11960 (<i>duplicate of 11959</i>)	<0.03	<0.1

11979	<0.03	0.2
11980 (duplicate of 11979)	<0.03	0.3
11999	0.03	0.6
12000 (duplicate of 11999)	<0.03	0.4
12016	<0.03	0.3
12019 (duplicate of 12016)	<0.03	0.2
12039	3.34	12.0
12040 (duplicate of 12039)	3.16	14.4

MINERAL RESERVE AND MINERAL RESOURCE ESTIMATES

Wallis and Fier (2002) estimated an inferred mineral resource of 470,000 tonnes grading 7.40 g/t gold and 65.2 g/t silver for the Tommy Vein; this resource was calculated using a cut-off grade of 4 g/t gold. No revisions have been made to their resource estimate.

INTERPRETATION AND CONCLUSIONS

The results of the diamond drilling program show that the mineralized Tommy Vein structure is open at depth, below the crosscutting microdiorite sill. The width and grade of the Tommy Vein appear to be more variable below the sill than above it (Figure 12).

The results of the diamond drilling program show that the mineralized Larry Vein structure is not everywhere open at depth, below the crosscutting microdiorite sill. In drill hole TS-05-108 the vein structure appears to be occupied by a late igneous dyke, and the vein structure does not appear to be present below the sill in hole TS-05-107.

RECOMMENDATIONS

The Tommy Vein structure should be tested by further diamond drilling below the microdiorite sill. Drilling should begin north of hole TS-05-108 and down-dip of earlier drill hole 95-26, with three holes each approximately 260 m in length in the first phase. Additional drill holes will be needed to test the vein structure down-dip of the phase one drill holes.

Diamond drilling should also be done to test the bedrock underlying the headwaters of Adrian Creek and along the northern side of Adrian Lake, in TASHA 2 mineral claim. This drilling would test for the bedrock source of mineralized vein quartz boulders discovered along the creek (Pawliuk, 2003). One hole should be inclined to the southeast from a point to the west of earlier drill hole TS-05-109; this hole should be drilled to a depth of 250 m. The drilling of hole TS-05-109 was stymied by thick overburden. Bedrock is exposed along the northeastern shore of Adrian Lake, to the southwest of the collar of hole TS-05-109 (Figures 4 and 13), so overburden thickness should not be a problem in the area to the west.

The cost of the recommended exploration is \$ 274,000.00. A cost estimate for the recommended program is outlined below.

Cost Estimate

Diamond drilling: 1,700 m @ \$ 125.00/m	\$ 212,500.00
Assays	\$ 5,000.00
Excavator: drill pads, road building	\$ 2,000.00
Geological engineering, supervision, reporting	\$ 22,000.00
Camp costs, supplies	\$ <u>7,500.00</u>
Subtotal	\$ 249,000.00
Contingency (10 %)	\$ <u>25,000.00</u>
Total	\$ 274,000.00

Respectfully submitted,



David J. Pawliuk, P. Geo.

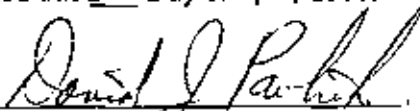


CERTIFICATE of AUTHOR

I, David J. Pawliuk, P.Geo. do hereby certify that:

1. I am currently employed as a consulting geologist by:
Nanoose Geoservices
2960 Anchor Way
Nanoose Bay, British Columbia, Canada
V9P 9G2
2. I graduated with a degree of Bachelor of Science with Specialization in Geology from the University of Alberta in 1975.
3. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia, and of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
4. I have worked as a geologist for more than 20 years since my graduation from university.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of this Technical Report. I was on-site at the Tsacha property from December 5 to 17, 2004, and from January 11 to February 12, and from February 22 to March 5, 2005. I performed and supervised the geological core logging and sampling.
7. I have had prior involvement with the property that is the subject of the Technical Report. I performed and supervised prospecting, geological mapping and geochemical rock sampling on the Tsacha property during September, 2003. I performed and supervised geological core logging and sampling during February, 2004.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am not independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101. I expect to receive options in the securities of Southern Rio Resources Ltd.
10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
11. I consent to the filing of the technical report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the company public files on their websites accessible by the public, of the Technical Report.

Dated this 30 Day of April, 2005.


Signature of Qualified Person

DAVID PAWLIUK
Print name of Qualified Person



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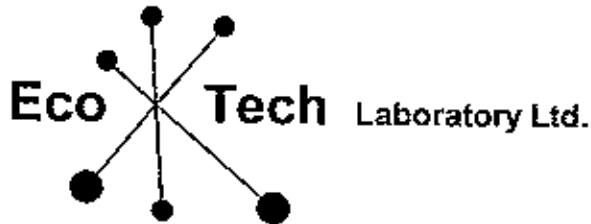
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STATEMENT OF EXPENDITURES

TSACHA PROPERTY November 2004 – February 2005

CORE DRILLING	Contract Charges:	\$387,278.62
ANALYTICAL		\$ 5,110.42
FIELD EXPENSES/SUPPLIES		\$ 10,049.13
CAMP (Food, cook, fuel, rent)		\$ 35,420.52
PROFESSIONAL FEES		\$ 61,404.63
TRAVEL		\$ 16,500.99
GOVERNMENT FEES (Land Title)		\$ 310.00
MANAGEMENT FEES/GST.....		<u>\$ 36,125.20</u>
	Total:	<u>\$552,199.51</u>



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Suite 1410, 650 W Georgia
Box 11584
Vancouver, BC, V6B 4N8

20-Dec-04

ATTENTION: LINDSAY BOTTOMER

RECEIVED
DEC 29 2004

No. of samples received: 48
Sample Type: Rock
Project #: 3-T's
Shipment #: 04-01
Samples submitted by: Dan Meldrum

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)	Pb (%)
1	11801	0.15	0.004			
2	11802	0.06	0.002			
3	11803	0.04	0.001			
4	11806	0.07	0.002			
5	11807	0.03	0.001			
6	11808	0.61	0.018	170	4.96	2.27
7	11809	0.10	0.003			
8	11810	1.13	0.033			
9	11811	0.61	0.018			
10	11812	0.75	0.022			
11	11813	1.54	0.045			
12	11814	0.14	0.004			
13	11815	0.06	0.002			
14	11816	0.08	0.002			
15	11817	0.29	0.008			
16	11818	0.71	0.021			
17	11819	0.33	0.010			
18	11820	1.12	0.033			
19	11821	1.27	0.037			
20	11822	0.17	0.005			
21	11823	0.43	0.013			
22	11824	0.10	0.003			
23	11825	0.42	0.012			
24	11826	0.26	0.008			

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Jutta Jealouse
B.C. Certified Assayer

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)	Pb (%)
25	11827 <i>Blank</i>	<0.03	<0.001			
26	11828	<0.03	<0.001			
27	11829	<0.03	<0.001			
28	11830	<0.03	<0.001			
29	11831	0.12	0.003			
30	11832	0.03	0.001			
31	11833	1.15	0.034			
32	11834	0.14	0.004			
33	11835	0.18	0.005			
34	11836	0.19	0.006			
35	11837	0.29	0.008			
36	11838 } <i>dup</i>	0.30	0.009			
37	11839 <i>Blank</i>	<0.03	<0.001			
38	11840	0.15	0.004			
39	11841	2.04	0.059	70.0	2.04	
40	11842	3.10	0.090			
41	11843	2.48	0.072	38.0	1.11	
42	11844	0.45	0.013			
43	11845	0.20	0.006			
44	11846	0.06	0.002			
45	11847	0.18	0.005			
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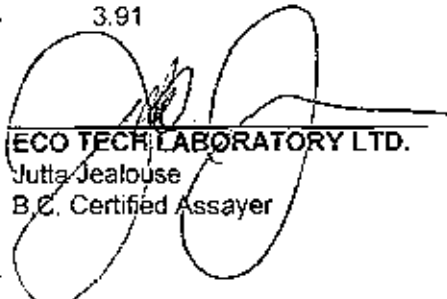
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8	11810	1.21	0.035			
10	11812	0.74	0.022			
11	11813	1.51	0.044			
19	11821	1.35	0.039			
31	11833	1.25	0.036			
36	11838	0.30	0.009			
39	11841	2.10	0.061			
41	11843	2.47	0.072			
42	11844	0.46	0.013			

Resplit:

1	11801	0.14	0.004			
36	11838	0.30	0.009			

Standard:

		1.86	0.054			
OX123		1.87	0.055			
Pb106				134	3.91	



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SOUTHERN RIO RESOURCES
Suite 1410, 650 W Georgia
Box 11584
Vancouver, BC, V6E 4N8

Phone: 250-573-5700
Fax : 250-573-4557

ATTENTION: LINDSAY BOTTOMER

No. of samples received: 48
Sample Type: Rock
Project #: 3-7's
Shipment #: 04-01
Samples submitted by: Dan Meldrum

Values in ppm unless otherwise reported

Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Ti %	U	V	W	Y	Zn
1	11801	10.8	0.10	30	65	<5	1.80	5	4	93	112	1.28	<10	0.16	1175	2	<0.01	2	170	364	<5	<20	28	<0.01	<10	5	<10	8	729
2	11802	1.0	0.10	10	45	<5	1.28	<1	3	88	18	1.11	<10	0.13	728	2	<0.01	1	160	30	<5	<20	22	<0.01	<10	5	<10	7	63
3	11803	1.6	0.10	15	50	<5	1.88	<1	3	90	17	1.03	<10	0.21	1016	<1	<0.01	2	160	16	<5	<20	28	<0.01	<10	4	<10	12	40
4	11806	2.2	0.06	50	30	<5	1.12	3	2	116	157	0.75	<10	0.15	525	17	<0.01	2	60	178	<5	<20	17	<0.01	<10	2	<10	1	436
5	11807	0.7	0.10	15	35	<5	1.42	<1	4	81	13	1.42	<10	0.39	840	2	<0.01	3	150	8	<5	<20	36	<0.01	<10	4	<10	6	64
6	11808	>30	0.08	475	25	<5	0.54	43	6	82	3502	1.87	<10	0.15	552	659	<0.01	<1	<10	>10000	35	<20	17	<0.01	<10	3	<10	<1	8785
7	11809	1.1	0.26	5	30	<5	3.25	<1	3	47	10	0.96	<10	0.19	496	3	0.01	1	160	32	<5	<20	20	<0.01	<10	12	<10	9	32
8	11810	5.5	0.15	<5	5	<5	4.70	<1	1	78	7	0.57	<10	0.11	555	1	0.01	2	80	2	<5	<20	28	<0.01	<10	5	<10	7	13
9	11811	2.2	0.19	<5	15	<5	7.07	<1	2	89	7	0.68	<10	0.15	768	2	0.01	2	120	4	<5	<20	58	<0.01	<10	8	<10	9	18
10	11812	2.5	0.18	<5	1190	<5	7.45	<1	<1	50	44	0.82	<10	0.40	650	<1	<0.01	5	200	8	<5	<20	151	<0.01	<10	26	<10	15	24
11	11813	5.6	0.11	<5	220	<5	6.18	<1	2	74	11	0.57	<10	0.27	408	1	<0.01	3	100	6	<5	<20	82	<0.01	<10	11	<10	8	13
12	11814	0.4	0.17	<5	290	<5	2.78	<1	<1	43	3	0.39	<10	0.17	290	<1	<0.01	1	210	6	<5	<20	83	<0.01	<10	9	<10	12	11
13	11815	0.6	0.17	<5	555	<5	3.07	<1	<1	33	3	0.46	<10	0.23	297	<1	<0.01	2	210	10	<5	<20	130	<0.01	<10	16	<10	12	11
14	11816	0.4	0.15	<5	320	<5	2.92	<1	<1	43	2	0.33	<10	0.08	219	<1	<0.01	<1	210	8	<5	<20	95	<0.01	<10	4	<10	10	4
15	11817	1.5	0.09	25	140	<5	3.72	<1	1	42	6	0.50	<10	0.14	288	<1	<0.01	<1	150	4	<5	<20	49	<0.01	<10	5	<10	6	8
16	11818	2.3	0.08	5	110	<5	4.49	<1	<1	63	2	0.54	<10	0.19	402	<1	<0.01	2	90	4	<5	<20	58	<0.01	<10	5	<10	6	11
17	11819	1.1	0.14	<5	120	<5	4.56	<1	1	64	2	0.63	<10	0.24	449	<1	<0.01	1	140	4	<5	<20	41	<0.01	<10	7	<10	7	16
18	11820	7.8	0.05	15	20	<5	>10	1	2	66	27	1.01	<10	0.43	1152	<1	<0.01	2	30	10	<5	<20	155	<0.01	<10	19	<10	8	23
19	11821	13.5	0.02	<5	70	<5	2.54	<1	<1	111	8	0.32	<10	0.06	317	2	<0.01	2	<10	2	<5	<20	42	<0.01	<10	4	<10	<1	5
20	11822	3.7	0.17	<5	<5	<5	1.93	<1	5	114	145	1.02	<10	0.50	485	1	<0.01	4	240	4	5	<20	37	<0.01	<10	43	<10	5	32
21	11823	6.4	0.07	<5	60	<5	9.63	<1	2	70	25	0.83	<10	0.33	740	<1	<0.01	2	50	8	<5	<20	132	<0.01	<10	29	<10	4	20
22	11824	2.8	0.21	30	25	<5	4.37	<1	3	32	47	0.98	<10	0.20	398	2	<0.01	<1	190	8	<5	<20	50	<0.01	<10	9	<10	9	18
23	11825	4.6	0.05	<5	100	<5	>10	1	2	75	17	0.86	<10	0.30	1190	<1	<0.01	1	40	6	<5	<20	157	<0.01	<10	14	<10	8	16
24	11826	2.9	0.13	5	<5	<5	1.83	<1	5	112	108	0.94	<10	0.44	436	2	<0.01	3	200	4	<5	<20	36	<0.01	<10	41	<10	4	28
25	11827	<0.2	0.93	<5	685	<5	2.97	<1	9	31	26	2.96	10	1.16	645	1	0.04	7	1650	8	<5	<20	277	0.01	<10	78	<10	11	65

Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Ti %	U	V	W	Y	Zn
26	11828	0.7	0.17	10	15	<5	2.51	<1	2	23	13	0.66	<10	0.20	294	<1	<0.01	2	220	6	<5	<20	47	<0.01	<10	9	<10	11	14
27	11829	0.4	0.13	15	30	<5	1.83	<1	4	60	7	1.39	<10	0.44	430	3	<0.01	1	210	8	<5	<20	34	<0.01	<10	4	<10	9	37
28	11830	0.2	0.12	10	95	<5	1.59	<1	3	73	4	1.29	<10	0.30	363	2	0.01	3	180	4	<5	<20	30	<0.01	<10	4	<10	7	26
29	11831	0.8	0.11	45	40	<5	0.84	<1	3	84	8	1.30	<10	0.21	278	13	<0.01	2	160	12	<5	<20	18	<0.01	<10	3	<10	6	27
30	11832	1.2	0.12	20	95	<5	2.41	25	2	65	40	0.96	<10	0.28	995	2	<0.01	<1	140	1616	5	<20	30	<0.01	<10	4	<10	7	1631
31	11833	3.6	0.09	10	80	<5	1.53	3	2	88	10	0.69	<10	0.22	477	4	<0.01	2	80	128	<5	<20	25	<0.01	<10	3	<10	4	201
32	11834	1.3	0.11	25	85	<5	2.43	1	3	69	16	1.02	<10	0.27	506	2	<0.01	2	140	46	<5	<20	33	<0.01	<10	4	<10	5	62
33	11835	1.0	0.12	10	200	<5	2.73	<1	1	85	13	0.93	<10	0.35	509	2	<0.01	1	140	10	<5	<20	42	<0.01	<10	5	<10	6	31
34	11836	2.8	0.08	10	15	<5	3.56	<1	2	71	14	0.72	<10	0.26	465	1	<0.01	2	90	10	<5	<20	40	<0.01	<10	5	<10	5	23
35	11837	4.1	0.05	<5	<5	<5	2.40	<1	<1	119	4	0.40	<10	0.11	252	2	<0.01	2	30	8	<5	<20	26	<0.01	<10	3	<10	2	11
36	11838	3.8	0.06	<5	5	<5	2.76	<1	1	123	4	0.43	<10	0.12	291	1	<0.01	3	30	8	<5	<20	31	<0.01	<10	3	<10	2	12
37	11839	<0.2	0.71	<5	280	<5	3.09	<1	11	22	26	2.67	10	1.17	677	1	0.04	4	1780	10	<5	<20	190	0.04	<10	53	<10	13	64
38	11840	2.5	0.05	<5	<5	<5	1.16	<1	1	73	4	0.44	<10	0.16	253	2	<0.01	2	40	6	<5	<20	16	<0.01	<10	4	<10	1	16
39	11841	>30	0.03	<5	<5	<5	6.58	<1	1	99	11	0.52	<10	0.15	718	<1	<0.01	3	10	6	<5	<20	84	<0.01	<10	5	<10	6	14
40	11842	22.8	0.03	<5	15	<5	3.56	<1	1	88	6	0.51	<10	0.16	442	2	<0.01	2	10	6	<5	<20	45	<0.01	<10	7	<10	2	16
41	11843	>30	0.02	<5	<5	<5	9.25	<1	1	78	8	0.65	<10	0.24	924	<1	<0.01	1	10	6	<5	<20	108	<0.01	<10	9	<10	4	22
42	11844	12.6	0.11	10	20	<5	1.87	<1	3	59	12	1.08	<10	0.24	446	2	<0.01	2	180	6	<5	<20	25	<0.01	<10	6	<10	7	31
43	11845	1.7	0.14	<5	155	<5	0.76	<1	2	73	5	1.00	<10	0.19	334	1	<0.01	3	190	6	<5	<20	18	<0.01	<10	5	<10	8	29
44	11846	1.0	0.17	<5	80	<5	0.85	<1	2	92	9	1.06	<10	0.23	331	2	<0.01	2	190	2	<5	<20	18	<0.01	<10	6	<10	8	29
45	11847	1.8	0.11	<5	100	<5	1.42	<1	2	86	5	0.86	<10	0.22	327	1	<0.01	3	130	4	<5	<20	25	<0.01	<10	9	<10	6	23
46	11848	<0.2	0.24	<5	45	<5	1.04	<1	2	86	9	1.01	<10	0.11	305	3	0.02	2	180	10	<5	<20	50	<0.01	<10	5	<10	9	20
47	11849	0.3	0.39	10	45	<5	1.71	<1	4	81	14	1.12	<10	0.21	283	3	0.02	3	190	14	<5	<20	40	<0.01	<10	11	<10	11	44
48	11850	0.2	0.42	15	45	<5	4.29	<1	4	63	11	1.05	<10	0.45	617	3	0.02	2	180	12	<5	<20	84	<0.01	<10	7	<10	13	32

QC DATA:

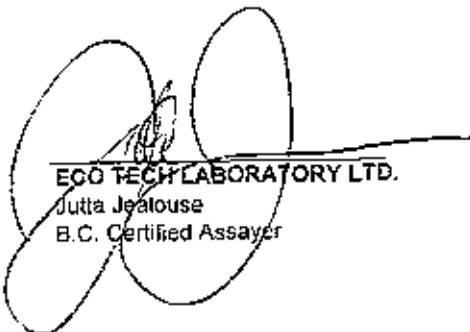
Resplit:		Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Ti %	U	V	W	Y	Zn
1	11801	10.6	0.09	30	55	<5	1.78	4	4	83	111	1.24	<10	0.16	1160	1	<0.01	2	160	374	<5	<20	25	<0.01	<10	4	<10	7	745
36	11838	3.8	0.04	<5	<5	<5	2.80	<1	<1	118	4	0.38	<10	0.12	296	1	<0.01	4	30	6	<5	<20	30	<0.01	<10	3	<10	3	12

Repeat:

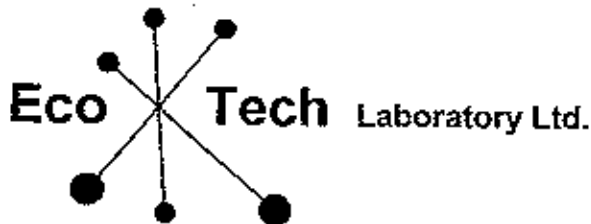
1	11801	11.3	0.09	30	60	<5	1.79	4	4	92	109	1.27	<10	0.16	1180	2	<0.01	3	170	362	<5	<20	27	<0.01	<10	4	<10	8	725
10	11812	2.5	0.15	<5	175	<5	7.01	<1	<1	46	42	0.78	<10	0.38	615	<1	<0.01	5	180	8	<5	<20	141	<0.01	<10	24	<10	13	23
19	11821	13.9	0.02	<5	65	<5	2.61	<1	<1	111	8	0.31	<10	0.06	302	2	<0.01	1	<10	<2	<5	<20	42	<0.01	<10	5	<10	<1	5
36	11838	3.8	0.06	<5	5	<5	2.77	<1	1	125	4	0.43	<10	0.12	294	1	<0.01	4	30	6	<5	<20	30	<0.01	<10	3	<10	2	12

Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Ti %	U	V	W	Y	Zn
<i>Standard:</i>																													
GEO '04		1.4	1.34	55	135	<5	1.30	<1	15	52	83	3.51	<10	0.73	559	1	0.02	23	620	24	<5	<20	55	0.10	<10	60	<10	9	74
GEO '04		1.5	1.44	50	135	<5	1.35	<1	16	55	85	3.72	<10	0.77	576	<1	0.03	25	620	20	<5	<20	59	0.10	<10	61	<10	10	74

JJjm
df/1955
XLS/04



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ASSAYING
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CERTIFICATE OF ASSAY AK 2004-2005

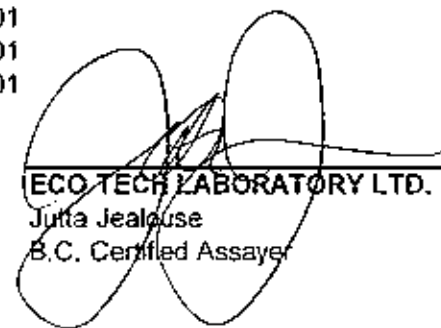
SOUTHERN RIO RESOURCES
Suite 1410, 650 W Georgia
Box 11584
Vancouver, BC, V6B 4N8

10-Jan-05

ATTENTION: LINDSAY BOTTOMER

No. of samples received: 62
Sample type: Core
Project #: 3T's (Tsacha)
Shipment #: Not Indicated
Samples Submitted by: David Pawliuk

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
1	11851	0.03	0.001	0.3	0.01
2	11852	<0.03	<0.001	0.4	0.01
3	11853	<0.03	<0.001	0.4	0.01
4	11854	<0.03	<0.001	<0.1	<0.01
5	11855	0.08	0.002	0.5	0.02
6	11856	0.08	0.002	1.9	0.06
7	11857	0.04	0.001	0.2	0.01
8	11858	0.06	0.002	0.2	0.01
9	11859	2.57	0.075	25.2	0.74
10	11860	0.15	0.004	0.6	0.02
11	11861	<0.03	<0.001	0.2	0.01
12	11862	<0.03	<0.001	0.3	0.01
13	11863	<0.03	<0.001	0.4	0.01
14	11864	<0.03	<0.001	0.2	0.01
15	11865	0.09	0.003	0.7	0.02
16	11866	<0.03	<0.001	0.4	0.01
17	11867	<0.03	<0.001	0.3	0.01
18	11868	0.07	0.002	0.6	0.02
19	11869	0.09	0.003	<0.1	<0.01
20	11870	0.49	0.014	3.9	0.11
21	11871	<0.03	<0.001	0.5	0.02
22	11872	0.09	0.003	<0.1	<0.01
23	11873	<0.03	<0.001	0.4	0.01
24	11874	<0.03	<0.001	<0.1	<0.01



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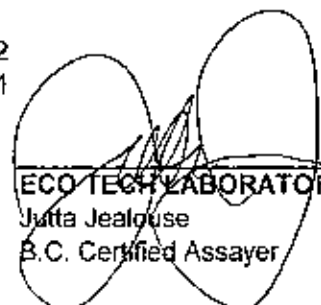
ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
25	11875	<0.03	<0.001	0.3	0.01
26	11876	<0.03	<0.001	0.3	0.01
27	11877	<0.03	<0.001	<0.1	<0.01
28	11878	<0.03	<0.001	<0.1	<0.01
29	11879	<0.03	<0.001	<0.1	<0.01
30	11880	0.38	0.011	0.4	0.01
31	11881	<0.03	<0.001	<0.1	<0.01
32	11882	<0.03	<0.001	0.2	0.01
33	11883	<0.03	<0.001	<0.1	<0.01
34	11884	<0.03	<0.001	0.4	0.01
35	11885	0.03	0.001	0.2	0.01
36	11886	0.03	0.001	0.2	0.01
37	11887	0.06	0.002	0.4	0.01
38	11888	<0.03	<0.001	0.2	0.01
39	11889	<0.03	<0.001	<0.1	<0.01
40	11890	<0.03	<0.001	0.2	0.01
41	11891	<0.03	<0.001	0.2	0.01
42	11892	<0.03	<0.001	0.8	0.02
43	11893	<0.03	<0.001	0.5	0.02
44	11894	<0.03	<0.001	1.3	0.04
45	11895	<0.03	<0.001	0.2	0.01
46	11896	<0.03	<0.001	<0.1	<0.01
47	11897	0.05	0.001	0.4	0.01
48	11898	0.07	0.002	0.3	0.01
49	11899	0.08	0.002	0.2	0.01
50	11900	<0.03	<0.001	<0.1	<0.01
51	11901	0.07	0.002	1.0	0.03
52	11902	0.04	0.001	0.3	0.01
53	11903	1.04	0.030	3.4	0.10
54	11904	0.23	0.007	3.2	0.09
55	11905	0.10	0.003	4.0	0.12
56	11906	0.04	0.001	0.8	0.02
57	11907	0.04	0.001	0.6	0.02
58	11908	0.03	0.001	0.5	0.02
59	11909	0.06	0.002	1.0	0.03
60	11910	0.06	0.002	1.4	0.04
61	11911	9.20	0.268	59.0	1.72
62	11912	2.57	0.075	24.5	0.71

} duplicate pair

vein

1 m
1.36**QC DATA:**Repeat:

1	11851	<0.03	<0.001	0.4	0.01
9	11859	2.66	0.077		
10	11860	0.11	0.003	0.6	0.02
19	11869	0.09	0.003	<0.1	<0.01



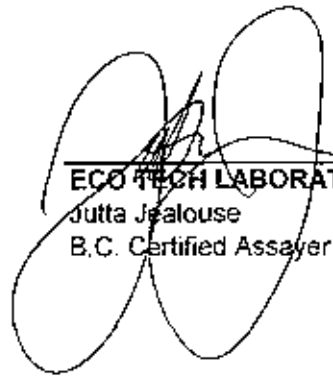
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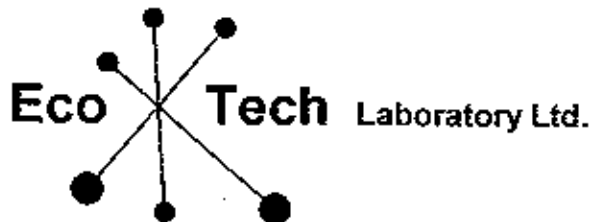
SOUTHERN RIO RESOURCES AK4-2005

10-Jan-05

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
20	11870	0.47	0.014		
30	11880	0.43	0.013		
36	11886	0.04	0.001	0.2	0.01
45	11895	<0.03	<0.001	0.2	0.01
53	11903	1.01	0.029		
61	11911	8.98	0.262		
62	11912	2.49	0.073		
<i>Resplit:</i>					
1	11851	<0.03	<0.001	0.2	0.01
36	11886	0.07	0.002	0.3	0.01
<i>Standard:</i>					
GEO 04				1.4	0.04
GEO 04				1.5	0.04
OX123		1.78	0.052		
OX123		1.84	0.054		

JJ/jrn
XLS/04


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CERTIFICATE OF ASSAY AK 2005-0022

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Suite 1410, 650 W Georgia
Box 11584
Vancouver, BC, V6B 4N8

28-Jan-05

ATTENTION: LINDSAY BOTTOMER

No. of samples received: 19
Sample type: Core
Project #: 3T's
Shipment #: 2005-001
Samples Submitted by: D. Pawliuk

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
1	11913	<0.03	<0.001	0.9	0.03
2	11914	0.09	0.003	0.9	0.03
3	11915	0.03	0.001	0.6	0.02
4	11916	<0.03	<0.001	0.7	0.02
5	11917	0.03	0.001	0.7	0.02
6	11918	<0.03	<0.001	0.9	0.03
7	11919	<0.03	<0.001	0.6	0.02
8	11920	<0.03	<0.001	0.5	0.02
9	11921	0.03	0.001	0.8	0.02
10	11922	1.69	0.049	2.2	0.06
11	11923	<0.03	<0.001	0.8	0.02
12	11924	<0.03	<0.001	0.9	0.03
13	11925	<0.03	<0.001	<0.2	<0.01
14	11926	0.05	0.001	1.2	0.04
15	11927	0.05	0.001	1.3	0.04
16	11928	0.03	0.001	0.9	0.03
17	11929	<0.03	<0.001	0.5	0.02
18	11930	0.05	0.001	1.1	0.03
19	11931	0.18	0.005	2.1	0.06

QC DATA:

Repeat:

1	11913	<0.03	<0.001	0.8	0.02
10	11922	1.65	0.048	2.0	0.06

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ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
<i>Resplit:</i>					
1	11913	0.03	0.001	0.9	0.03
<i>Standard:</i>					
Pb106				58.5	1.71
SH13		1.34	0.039		

JJ/jm
XLS/05

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CERTIFICATE OF ASSAY AK 2005-0025

SOUTHERN RIO RESOURCES

Suite 1410, 650 W Georgia
Box 11584
Vancouver, BC, V6B 4N8

28-Jan-05

ATTENTION: LINDSAY BOTTOMER

No. of samples received: 17

Sample type: Core

Project #: 3T's

Shipment #: 2005-002

Samples Submitted by: David Pawliuk

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
1	11932	<0.03	<0.001	1.4	0.04
2	11933	<0.03	<0.001	<0.2	<0.01
3	11934	0.08	0.002	0.4	0.01
4	11935	<0.03	<0.001	<0.2	<0.01
5	11936	<0.03	<0.001	<0.2	<0.01
6	11937	<0.03	<0.001	<0.2	<0.01
7	11938	<0.03	<0.001	<0.2	<0.01
8	11939	<0.03	<0.001	<0.2	<0.01
9	11940	0.11	0.003	1.9	0.06
10	11941	0.07	0.002	1.7	0.05
11	11942	<0.03	<0.001	<0.2	<0.01
12	11943	0.06	0.002	0.7	0.02
13	11944	0.84	0.024	16.7	0.49
14	11945	0.38	0.011	7.0	0.20
15	11946	0.15	0.004	3.9	0.11
16	11947	0.10	0.003	1.8	0.05
17	11948	0.22	0.006	3.4	0.10

QC DATA:

Repeat:

1	11932	<0.03	<0.001	1.4	0.04
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Resplit:

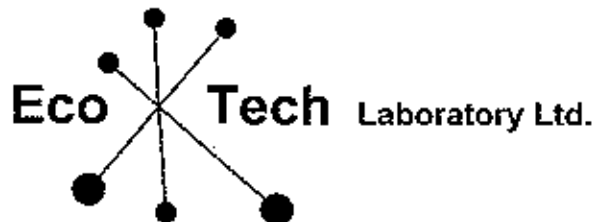
1	11932	<0.03	<0.001	1.4	0.04
---	-------	-------	--------	-----	------

Standard:

Pb106				58.4	1.70
SH13		1.32	0.038		

JJ/jm
XLS/05

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CERTIFICATE OF ASSAY AK 2005-034

SOUTHERN RIO RESOURCES

Suite 1410, 650 W Georgia
Box 11584
Vancouver, BC, V6B 4N8

7-Feb-05

ATTENTION: LINDSAY BOTTOMER

No. of samples received: 13

Sample type: Core

Project #: 3T's

Shipment #: 2005-003

Samples Submitted by: David Pawliuk

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
1	11949	<0.03	<0.001	0.2	0.01
2	11950	<0.03	<0.001	<0.1	<0.01
3	11951	0.25	0.007	0.7	0.02
4	11952	<0.03	<0.001	0.2	0.01
5	11953	<0.03	<0.001	<0.1	<0.01
6	11954	<0.03	<0.001	<0.1	<0.01
7	11955	0.03	0.001	<0.1	<0.01
8	11956	<0.03	<0.001	<0.1	<0.01
9	11957	0.04	0.001	0.3	0.01
10	11958	0.06	0.002	0.4	0.01
11	11959	<0.03	<0.001	<0.1	<0.01
12	11960	<0.03	<0.001	<0.1	<0.01
13	11961	<0.03	<0.001	<0.1	<0.01

QC DATA:

Repeat:

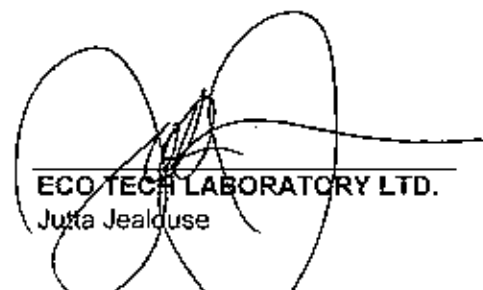
1	11949	<0.03	<0.001	<0.1	<0.01
3	11951	0.28	0.008		

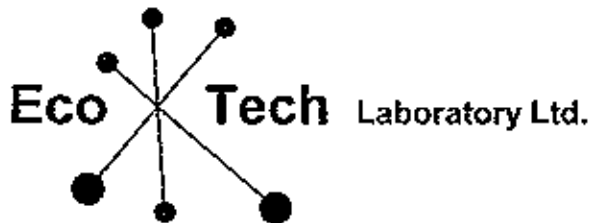
Resplit:

1	11949	<0.03	<0.001	<0.1	<0.01
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Standard:

SH13	1.31	0.038			
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CERTIFICATE OF ASSAY AK 2005-047

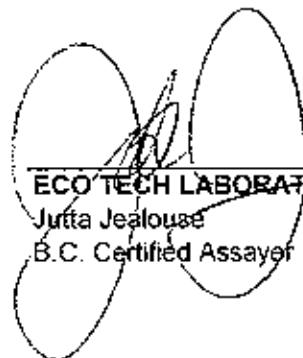
SOUTHERN RIO RESOURCES
Suite 1410, 650 W Georgia
Box 11584
Vancouver, BC, V6B 4N8

15-Feb-05

ATTENTION: LINDSAY BOTTOMER

No. of samples received: 26
Sample type: Core
Project #: 3T's
Shipment #: 2005-004
Samples Submitted by: David Pawliuk

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
1	11962	<0.03	<0.001	0.3	0.01
2	11963	<0.03	<0.001	0.2	0.01
3	11964	<0.03	<0.001	<0.1	<0.01
4	11965	<0.03	<0.001	0.3	0.01
5	11966	<0.03	<0.001	0.7	0.02
6	11967	<0.03	<0.001	0.5	0.02
7	11968	<0.03	<0.001	0.8	0.02
8	11969	<0.03	<0.001	<0.1	<0.01
9	11970	<0.03	<0.001	<0.1	<0.01
10	11971	0.03	0.001	0.2	0.01
11	11972	<0.03	<0.001	<0.1	<0.01
12	11973	0.03	0.001	0.6	0.02
13	11974	<0.03	<0.001	0.3	0.01
14	11975	0.40	0.012	4.9	0.14
15	11976	<0.03	<0.001	0.3	0.01
16	11977	0.03	0.001	0.2	0.01
17	11978	<0.03	<0.001	0.5	0.02
18	11979	<0.03	<0.001	0.2	0.01
19	11980	<0.03	<0.001	0.3	0.01
20	11981	<0.03	<0.001	<0.1	<0.01



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ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
21	11982	<0.03	<0.001	0.2	0.01
22	11983	<0.03	<0.001	<0.1	<0.01
23	11984	<0.03	<0.001	<0.1	<0.01
24	11985	<0.03	<0.001	<0.1	<0.01
25	11986	<0.03	<0.001	<0.1	<0.01
26	11987	0.04	0.001	0.2	0.01

QC DATA:*Repeat:*

1	11962	<0.03	<0.001	0.2	0.01
10	11971	<0.03	<0.001	<0.1	<0.01
14	11975	0.36	0.010		

Resplit:

1	11962	<0.03	<0.001	0.3	0.01
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Standard:

SH13		1.33	0.039		
Pb106				58.5	1.71

JJ/jm
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CERTIFICATE OF ASSAY AK 2005-49

SOUTHERN RIO RESOURCES

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Box 11584
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15-Feb-05

ATTENTION: LINDSAY BOTTOMER

No. of samples received: 18
Sample type: Core
Project #: 3T's
Shipment #: 2005-005
Samples Submitted by: D. Pawliuk

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
1	11988	<0.03	<0.001	0.7	0.02
2	11989	0.04	0.001	0.3	0.01
3	11990	0.08	0.002	0.8	0.02
4	11991	0.06	0.002	0.8	0.02
5	11992	0.05	0.001	0.7	0.02
6	11993	0.05	0.001	1.0	0.03
7	11994	0.06	0.002	1.6	0.05
8	11995	0.06	0.002	1.0	0.03
9	11996	0.10	0.003	0.6	0.02
10	11997	0.27	0.008	10.0	0.29
11	11998	2.98	0.087	25.2	0.74
12	11999	0.03	0.001	0.6	0.02
13	12000	<0.03	<0.001	0.4	0.01
14	12001	<0.03	<0.001	0.2	0.01
15	12002	0.03	0.001	0.7	0.02
16	12003	0.06	0.002	0.5	0.02
17	12004	0.03	0.001	0.5	0.02
18	12005	<0.03	<0.001	<0.1	<0.01

QC DATA:

Repeat:

1	11988	0.03	0.001	0.7	0.02
10	11997	0.28	0.008		
11	11998	3.17	0.092		

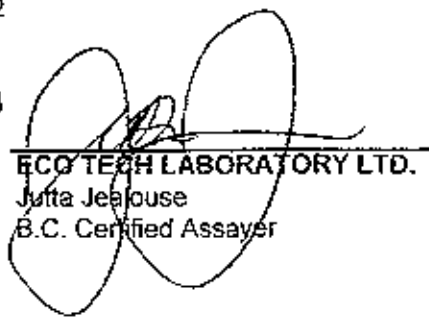
Resplit:

1	11988	0.05	0.001	0.7	0.02
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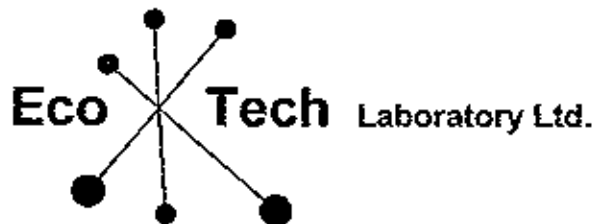
Standard:

Pb106				58.6	1.71
SH13		1.33	0.039		

JJ/jm
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CERTIFICATE OF ASSAY AK 2005-088

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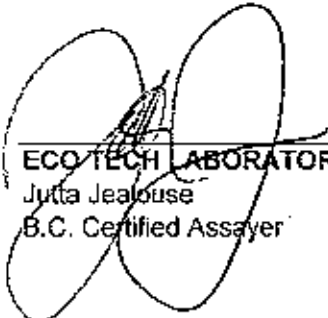
11-Mar-05

TSACHA # 108

ATTENTION: LINDSAY BOTTOMER

No. of samples received: 32
Sample type: Core
Project #: 3T's
Shipment #: 2005-007
Samples Submitted by: D. Pawliuk

ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
1	12023	0.04	0.001	1.3	0.04
2	12024 37.87-38.95m	1.11	0.032	6.4	0.19
3	12025 38.95-40.27m	0.57	0.017	6.0	0.18
4	12026 40.27-41.27m	19.7	0.575	150	4.37
5	12027 41.27-42.27m	0.17	0.005	4.0	0.12
6	12028 42.27-43.27m	0.57	0.017	2.7	0.08
7	12029 43.27-44.27m	0.10	0.003	1.5	0.04
8	12030	<0.03	<0.001	0.5	0.02
9	12031	<0.03	<0.001	0.9	0.03
10	12032	0.32	0.009	0.4	0.01
11	12033	2.12	0.062	2.9	0.09
12	12034	0.39	0.011	1.1	0.03
13	12035	18.4	0.537	52.0	1.52
14	12036	1.76	0.051	4.0	0.12
15	12037	9.15	0.267	34.0	0.99
16	12038	3.35	0.098	10.8	0.32
17	12039	3.34	0.097	12.0	0.35
18	12040	3.16	0.092	14.4	0.42
19	12041	<0.03	<0.001	0.2	0.01
20	12042	18.1	0.528	76.1	2.22
21	12043	18.7	0.545	120	3.50


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ET #.	Tag #	Au (g/t)	Au (oz/t)	Ag (g/t)	Ag (oz/t)
22	12044	39.9	1.164	350	10.21
23	12045	1.13	0.033	20.2	0.59
24	12046	0.27	0.008	5.1	0.15
25	12047	1.11	0.032	5.4	0.16
26	12048	0.57	0.017	2.7	0.08
27	12049	1.09	0.032	2.3	0.07
28	12050	1.82	0.053	2.2	0.06
29	12051	0.21	0.006	1.4	0.04
30	12052	0.04	0.001	0.9	0.03
31	12053	<0.03	<0.001	0.8	0.02
32	12054	0.06	0.002	0.8	0.02

QC DATA:**Repeat:**

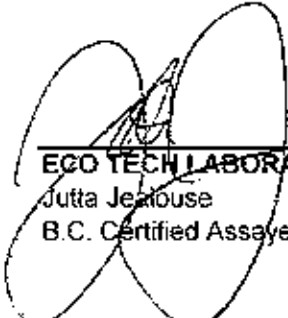
1	12023	0.06	0.002	1.3	0.04
4	12026 40.27-41.27m	20.1	0.586		
4	12026 40.27-41.27m	19.8	0.577		
10	12032	0.31	0.009	0.6	0.02
11	12033	2.60	0.076		
13	12035	18.6	0.542		
15	12037	11.3	0.330		
17	12039	3.69	0.108		
19	12041	<0.03	<0.001	0.3	0.01
20	12042	20.1	0.586		
21	12043	21.9	0.639		
22	12044	40.4	1.178		
23	12045	1.28	0.037		

Resplit:

1	12023	0.04	0.001	1.5	0.04
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Standard:

OX123	1.74	0.051		
Cu106			136	3.97
Pb106			60.0	1.75
SH13	1.32	0.038		
SP17	18.2	0.531		

JJ/jm
XLS/05


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TS04-98

Started: Nov 27, 2004

Completed: Dec 6, 2004

Location: 45+39N; 52+54E (same as TS04-97)

Az: 270° ; Inclination: -61°

Purpose: To test Tommy Vein below Sill (above TS04-97; below TS04-90)

TS04-98	From (m)	To (m)	Description
Major	0.00	57.40	RQFP; Maroon-Brown to locally brick red laminated lapilli tuff; 5-10% lenticular to locally fiamé like lapilli size clasts in medium to fine grained ash tuff matrix; banded ~65-75° to core axis. Numerous veins of calcite (white) and/or quartz (smoky gray) ranging from hairline to multiple cms across; make up 1% of rock volume; feldspar grains make up 15-25% rock volume, often weakly altered; 1-2% quartz grains mostly 2-4 mms across; rare very fine grain pyrite; limonite stains fracture surface in uppermost 40.0 m of core.
Minor	38.71	44.10	RQFP bleached to a pale green-gray color.
Point	43.80		quartz vein 2 cm wide. 10° to core axis with abundant bright red hematite (20% vein).
Minor	44.10	46.30	very broken core; locally core is ground to coarse sand sized particles.
Minor	46.30	57.40	brecciated core healed by 90-95% quartz, 5-10% calcite vein material comprising 40-80% rock volume (60-20% RQFP). Veins cut core at many angles and locally obliterate core; lower contact ~planar 20° to core axis; RQFP looks like a maroon ash tuff at this point but a metre up hole the rock still has typical RQFP texture but here is brecciated and healed by quartz.
Major	57.40	87.85	DYKE: dark-medium green fine grain andesite dyke; quite soft, locally calcareous. A few 10-20 cm sections of RQFP in the upper 5 m of this unit suggest that dyke contact is either ~parallel to hole or is undulatory or is split into multiple small dykes at this point; significant (10-15%) calcite vein material in upper 5 m. A few pink calcite veins from 72.5-75.0 m, ~1 cm wide; lower contact is gradational over 30 cm with xenoliths of RQFP within dyke material.
Minor	58.60	62.10	broken core; <1-8 cm chunks 35% calcite vein.
Minor	70.58	72.34	RQFP; 20° to core axis upper contact with dyke 0.5 cm chill margin on dyke; lower contact in broken core likely at 20-30° to core axis.
Major	87.85	110.54	RQFP; brick red to dark brownish red locally bleached to pale pink; overall ~5% quartz carbonate vein material. two zones of significant auto brecciation; several quartz carbonate veins across 10 cm to be discussed in point section; lower contact is gradational (somewhat arbitrary) set at a point where core is >50% vein material; very altered.
Minor	89.73	89.96	fine grain pinkish color rock ~same hardness as RQFP; upper and lower contact sharp and irregular/undulatory; slightly calcareous, somewhat banded and quartz eyes 1-2 mms are visible (perhaps this is a very altered RQFP?)
Point	91.23		quartz-carbonate (50-50%) vein 5 - 6 cm wide at 25° to core axis; trace sulfosalt; faint traces of green translucent mineral appears to be mixed in with quartz-carbonate - possibly fluorite? chlorite?
Minor	92.65	92.89	breccia zone; RQFP auto brecciated and healed by quartz 35%+carbonate 60%+ fluorite? 5% vein material; trace pyrite and sulfosalt as <<1 mm specs; cuts core axis @ ~45° and pink carbonate vein 45° to core axis (~perpendicular to breccia zone)

TS04-98	From (m)	To (m)	Description
Point	94.13		4 cm+ quartz-carbonate vein 50% quartz; 50% carbonate; 1-2% fluorite? (green); 1-2% hematite dusty red as a few 1-3 mm blebs of dark red material; 20° to core axis; white to pale yellow carbonate at wall rock boundary locally has "wormy" look about it; pale smoky gray quartz is in center of vein.
Survey	100.00		-58° acid.
Minor	100.50	101.60	broken core, locally sand sized particles; can break some core with hands; 1-2% carbonate 1-2 cm quartz vein @ 20° to core axis
Minor	102.32	102.72	RQFP; auto brecciated and filled/healed by calcite; calcite looks slightly red from incorporated RQFP material (dust sized).
Point	106.91		quartz (85%) white-smoky gray; carbonate (15%) pale pink (in middle of vein) trace-1% hematite as 1 mm concentrations at vein boundaries; 1-2% fluorite? (green); trace sulfosalt as <1 mm specs; 6 cm wide and 40° to core axis.
Minor	107.95	108.61	small zones (a few cms across) of brecciation healed by calcite; calcite pale reddish-brown due to RQFP rock flour.
Point	108.81		thin-film <<1 mm of medium-bright green; no fizz with HCl; possibly fluorite? looked like film of malachite at first glance.
Sample	109.49	110.54	11,809
Sample	110.54	111.52	11,810
Major	110.54	113.07	VEIN, 50% RQFP/50% vein (60% quartz/40% carbonate) locally vein material has dusty red hematite; locally quartz is nicely banded and calcite has a wormy look about it; near the middle of the interval (111.40-111.50) sulfosalt can be observed as thin 3-4mm diffuse veins along main vein boundaries and cutting across/through main vein. The lowermost 45 cm is broken core <1-8cms chunks of epidote green clayey fault gouge; soft to touch; along with carbonate vein material.
Sample	111.52	112.60	11,811
Sample	112.60	113.30	11,812
Major	113.07	119.75	altered RQFP; 15% quartz carbonate vein material/85% altered RQFP; feldspars altered-medium to dark green in matrix of pale green to pale pink rock; veins cut core at many angles; locally hematite occurs as 5 mm blotches of dark dusty red material or as thin <1 mm selvages on veins.
Sample	113.30	114.03	11,813
Sample	114.03	115.16	11,814
Sample	115.16	115.96	11,815
Sample	115.96	116.96	11,816
Sample	116.96	117.96	11,817
Sample	117.96	118.75	11,818
Sample	118.75	119.75	11,819
Sample	119.75	120.56	11,820
Major	119.75	124.65	VEIN + intensely chlorite altered, sheared RQFP

TS04-98	From (m)	To (m)	Description
Minor	119.75	121.40	25% altered wall rock; 60% quartz (smoky gray); 15% calcite (white creamy locally orange to rusty looking); 1-2% sulfosalt; 1% open vugs. Most of carbonate is at top of interval. There is a large smattering of sulfosalt at ~120 m depth where for 5-10 cms 5% rock is sulfosalt as slivers (1 mm X 1 cm) and clouds of dark material (0.5 X 2.0 cm) occurs within calcite, quartz is smoky with fine dust sized particles of sulfosalt? scattered throughout (trace-1%). A few spots have trace hematite as dusty patches, or locally red clasts a few mms across can be observed. numerous open spaces up to 2-5 mm in size occur throughout this interval, especially within vein quartz.
Sample	120.56	121.40	11,821
Sample	121.40	122.80	11,822
Sample	121.40	122.80	11826, dupe of 11822
Minor	121.40	122.80	very brecciated very chloritized ~fault gouge; can break core with hands; 20-30% vein material; 50-60% milky green chlorite; 10-15% RQFP. 5% open spaces; all of the rock in this interval is broken or milled.
Sample	122.80	123.40	11,823
Minor	122.80	123.40	VEIN; 65% calcite (white locally wormy); 25% quartz (smoky gray); 5% open spaces; rock has a pale red aspect most likely partly due to ghost of a red RQFP and/or hematite as fine dust; some ghosts of RQFP texture can be observed (more likely color from RQFP).
Sample	123.40	124.10	11,824
Minor	123.40	124.10	chlorite rich altered rock (less vein material than 121.40-122.80 above).
Sample	124.10	124.10	11,825
Minor	124.10	124.65	vein material 60% calcite, 40% quartz, 1% hematite, trace sulfosalt, 1% open spaces, pale smoky gray quartz with 1-2% dusty red hematite unlikely to be RQFP; brecciated and healed by white (locally orange) calcite. calcite/quartz fragments discernible ranging from 1 mm to several cms in size; one large vug located within calcite; sulfosalt occurs as dust sized specs throughout core.
Sample	124.65	125.65	11,828
Major	124.65	149.32	RQFP mostly green much is quite altered (chloritized); 10% interval is vein material. Locally tens of cms are rich in sulfosalt and hematite (up to 5% in 10 cm section), overall trace-1% sulfosalt and hematite; large sections of this interval are broken. Possible fault zone.
Minor	124.65	129.10	very chloritized RQFP banding ~90° to core axis; many clasts are bright green in the lower 1/2 of interval; upper 1/2 is almost all chlorite green.
Minor	129.10	131.30	less altered RQFP: reddish in color; feldspars chloritized but rock looks relatively fresh; very little vein material (2-3%).
Minor	131.30	133.20	broken core, top of interval marked by fault gouge (sand sized ground core) rest of interval soft, green (very chloritized) RQFP. often difficult to see RQFP ghost texture through chloritization.
Minor	133.20	135.25	green broken core ~134.06-135.20m 2-3% sulfosalt as 1-2 mm wide veinlets, locally clusters 3-4 mm wide, 1 cm long plus 1-2% hematite as dusty red diffuse veinlets. Abundant chlorite (at least 3-5%); at least 3-5% rock is quartz vein; 1-2% calcite.
Sample	133.75	135.25	11,829
Sample	135.25	136.25	11,830

TS04-98	From (m)	To (m)	Description
Minor	135.25	137.92	green altered RQFP; heavily chlorite altered but also heavily silicified (i.e. difficult to scratch with nail) core is very fractured/healed by quartz; numerous 1-5mm quartz veins (10+%) cut core at all angles; hematite (1-2%) occurs at vein boundaries and disseminated dust throughout; trace-1% sulfosalt occurs at other vein boundaries (i.e. rarely seen with hematite).
Sample	136.25	137.92	11,831
Minor	137.92	144.25	greenish altered RQFP; rock is less altered than 135.25-137.92 m; 10% quartz/carbonate vein; rock is cut by numerous quartz veins some with halos of hematite or sulfosalt; these veins are white to smoky gray and are cut by creamy white carbonate veins which locally appear to fill tension gashes (two small terminating veins perpendicular to each other) quartz veins tend to be mostly 0.5 mm wide but range up to 5 cm; calcite veins are mostly 0.5 cm wide; if samples above or below this contain gold or silver, consider sampling this interval.
Sample	144.25	145.35	11,832
Minor	144.25	149.35	RQFP with ~30-35% vein material; pale green RQFP difficult to determine proportions of quartz-carbonate; possibly 50-50 split; ~1% hematite as thin <1 mm rims of quartz carbonate veins, locally as diffuse stock work of hairline fractures (i.e. @146.85 m) trace-1% sulfosalt occurs as irregular hairline fractures <1mm wide and as blebs 3-4 mm across and as dust sized grains throughout vein material; <1% of core is green translucent mineral found within quartz veins (fluorite? chlorite?).
Sample	145.35	146.35	11,833
Sample	146.35	147.35	11,834
Sample	147.35	148.35	11,835
Sample	148.35	149.35	11,836
Sample	149.35	150.35	11,837
Sample	149.35	150.35	11,838, dupe of 11,837
Minor	149.35	154.17	VEIN; 75% quartz 25% calcite; quartz is smoky gray to locally pale orange; calcite is creamy white and cross cuts quartz vein; trace-1% hematite as rims around quartz vein and as dusty red blotches up to 1 cm across; trace-1% sulfosalt as thin 1-3mm veins cutting core axis ~70-80° and as dust sized particles disseminated throughout and as dark dusty rims around some brecciated quartz fragments. Trace pyrite as <1 mm specs disseminated throughout.
Sample	150.35	151.33	11,840
Sample	151.33	152.33	11,841
Sample	152.33	153.33	11,842
Sample	153.33	154.17	11,843
Sample	154.17	155.12	11,844
Major	154.17	179.50	RQFP; slightly reddish-pink near the top of interval (with most feldspar altered dark green) with significant (20%) vein material to 159.50 m. Below 159.50 m veins make up 5-10% of core; locally RQFP becomes dark green (nearly black) i.e. @ 173-174 m. Veins throughout entire interval (154.17-179.50 m) carry trace-1% hematite and trace sulfosalt but veins not abundant or wide enough to warrant sampling. upper contact with vein is irregular.
Sample	155.12	156.17	11,845

TS04-98	From (m)	To (m)	Description
Sample	156.17	157.12	11.846
Sample	157.12	158.46	11.847
Minor	157.28	158.46	quartz carbonate vein with abundant sulfosalt over 10 cm 3-4% as thin 1-3mm veins; trace hematite overall trace-1% sulfosalt and hematite. Hematite often occurs at vein boundaries both within wall rock and vein.
Point	158.85		thin (1-2mms) wide veins of dark-black material with very little to no quartz carbonate associated.
Minor	159.40	159.50	quartz-carbonate+ ? vein; 10cm wide vein heals brecciated RQFP. 60-70° to core axis; 20% of vein is peach color does not react to HCl; 1% of vein is hematite as dark red blotches mostly near edges but also occurs within the vein; trace sulfosalt as 1 mm specs.
Minor	161.00	161.50	2-3cm quartz vein with well-developed banding and trace amounts of hematite mostly @ wall rock contact; vein is undulatory but cuts core at a low angle (0-20° to core axis).
Minor	164.10	164.84	broken core; 10%-15% quartz carbonate vein material some with hematite and or sulfosalt; sulfosalt and hematite also occur as veinlets. hematite (2-3%) veinlets are 1-5mm wide and seem to be crosscut by quartz carbonate veins; sulfosalt (trace-1%) veins are <1-1mm wide and cross cut quartz carbonate veins. Sulfide volume drops off quickly either side of this interval.
Minor	164.84	170.38	RQFP; in this interval looks quite fresh with pale yellow feldspars; color ranges from reddish to pinkish to greenish; numerous small <1-1cm veins cut core at many angles; makes up ~5% of interval; hematite occurs mostly as <1-1mm films at wall rock contact (trace amount) trace amount of sulfosalt occurs as tiny dots <1mm in and around veins.
Minor	170.38	179.50	green RQFP locally very dark green; green to dark green matrix with mostly green colored lithic tuff fragments; feldspars creamy off-white to greenish; 2 large (6+cm) quartz-carbonate veins at top of interval and several barren looking carbonate only veins in the lower 1/2 of interval
Point	170.50		10-12cm wide quartz-carbonate vein cuts core @ 20° to core axis; trace amounts of sulfosalt and hematite
Minor	171.10	171.85	quartz carbonate vein running parallel to core axis (maybe same vein as 170.50 m) trace-1% hematite as 1 mm rind at wall rock boundary but also as fine dusty pink-red areas mostly within quartz (i.e. not within carbonate); trace-1% translucent green mineral (fluorite?) seems to occur within carbonate; only a few specs of sulfosalt observed.
Major	179.50	305.48	SILL; upper contact ~70° to core axis; chill margin at upper contact marked by slightly darker color and finer grain size at contact there are also 5-10% white minerals 1-2mm in size in the first 30 cm (possibly plagioclase? - No reaction with HCl) does this represent partially digested RQFP? The sill is a monotonous green gray fine grained, salt and pepper textured locally calcareous rock unit; thin 1-5mm white carbonate veins cut core at many angles.
Survey	240.79		-58.5° acid.
Minor	261.31	264.36	fault zone very broken core fault gouge milled core; core easily broken with bare hands.

TS04-98	From (m)	To (m)	Description
Major	305.48	310.04	RQFP; upper contact broken core; greenish brown-khaki colored core; feldspars dark green (altered) at contacts for several meters with sill/dyke but white in middle of interval from 307.50-309.10; 3-5 quartz carbonate veins (which cut core @ many angles). Bright red hematite occurs as abundant blebs (mostly 2-3 mm but up to 2-3 mm x several cm) that seem to be spatially associated with pale yellow carbonate; dusty sulfosalt seems to be spatially associated with smoky gray quartz; locally veins of dark colored material (likely sulfosalt) forms thin veins (1-2mm across) locally these veins look much like chlorite (especially when seen near chlorite-altered feldspars). Lower dyke contact planar and sharp ~40° to core axis; there is a coincident calcite-hematite vein at this location; sulfosalt and hematite make up 1-2% of the interval from 307.50-309.10 but comprise tr.-1% of the entire interval.
Survey	306.93		Sperry Sun 279° -62°
Sample	307.55	309.05	11848, abundant hematite + sulfosalt.
Major	310.04	329.44	DYKE; fine grain medium-dark green; salt and pepper texture (diorite?) Subtle banding (slightly darker-lighter color i.e. finer/coarser grain rock) occurs from 326 m to the bottom of interval.
Sample	329.44	330.61	11,849
Sample	330.61	331.82	11,850
Major	331.82	336.38	DYKE; very dark green to black, fine grained; quite calcareous (fizz vigorously with HCl even where no veins occur) <1% of core are small 1-2mm veinlets of calcite; lower contact is sharp and undulatory over 1 cm but seems relatively planar on the scale of the core ~30° to core axis, there is a subtle chill margin over 1 cm were the color of rock is darker.
Major	336.38	340.50	RQFP; maroon to muddy brownish red in color; feldspars look quite fresh, flame-like structures appear to be 80-90° to core axis; virtually no sulfides or veins present; 1-10cm segment 340.00-340.10 m of dyke? material; lower contact of main interval is ~parallel to core axis relatively digestive looking with cm plus size clasts of RQFP in dyke material; white carbonate is abundant @ the contact
Major	340.50	342.90	DYKE; dark green-black; 20 cm of broken core at lower contact; throughout much of this interval ghosts of plagioclase crystals can be observed making this look much like a very altered RQFP; plagioclase crystals ~ same proportion as RQFP but a little smaller.
Major	342.90	348.66	RQFP: (much like 336.38-340.50) here hematite is found in relatively high concentration in bands (perhaps primary depositional) as well as peripheral to some calcite blebs/knots.
Minor	342.90	343.10	quartz-carbonate vein; quartz portions have 5-10% sulfosalt; the quartz portions seem to have crosscut the white carbonate vein which heals brecciated RQFP; little hematite concentration has occurred in this small interval; the lower contact (348.66 m) with dyke is sharp but irregular.
Major	348.66	351.13	DYKE; very much like 340.50-342.90; lower contact is sharp. 45-50° to core axis.
Minor	348.86	349.06	small segment of RQFP with blebs of dyke material within it
Major	351.13	378.06	RQFP; reddish to khaki to grayish; mostly very little vein material <1%; mainly 1-3mm white calcite veins cutting core @ many angles; rare 3-4mm smoky gray quartz vein; feldspar is mostly white to pale green rarely reddish from hematite alteration. Lower contact 60° to core axis marked by a thin (1 cm) chlorite rich mm scale banded layer
Minor	359.97	360.15	calcite vein ~30° to core axis; clasts of RQFP within vein; a few slightly reddish areas in vein suggests trace hematite. no sulfides observed; ~8 cm true width.

TS04-98	From (m)	To (m)	Description
Point	361.30		quartz carbonate vein; quartz is white to smoky gray. calcite is creamy white; locally pinkish (trace hematite); 3 cm true width; cuts core @ 30° to core axis; trace-1% hematite as dusty areas within calcite and as 1 mm bright red veinlets; trace sulfosalt as 1 mm specs; rare trace pyrite as <<1 mm specs.
Point	363.60		quartz vein; ~1 cm wide; 15-20° to core axis; 15% pyrite cubes up to 1-2mms within vein; a few 1 mm veinlets of sulfosalt (~1%); hematite reddens rock ~5 cm either side of vein
Point	369.55		pink carbonate vein 1cm wide heals brecciated RQFP; possibly some sulfosalt difficult to discern breccia fragments down to dust size particles ~sulfosalt.
Minor	370.06	370.90	very fine grained, green, very few veins.
Minor	370.90	371.85	coarser grained (relic plagioclase crystals?) as 340.50-342.90m 1 vein every ~10 cm.
Minor	371.85	377.00	as for 370.90-371.85 m except very few veins, bottom half of interval has 2-3% spots of white calcite 1-5 mm across.
Minor	377.00	378.26	pale green; matrix is very soft, chlorite altered; lowermost 15 cm grades from pale green into nearly brick red color.
Major	378.06	386.46	DYKE; several phases of dyke material; several different colors/textures within this relatively short interval; overall green-dark green; fine - med grain; <1-1% calcite vein 2-3 mm across; calcite rarely slightly pink
Minor	378.26	379.60	contact with the unit above is a very quick (2-3 cm) irregular change in color from brick red to medium green. interval alternates medium to dark green several times; at bottom of interval unit has a coarse felty texture with jagged dark green blotches (< 1-4mms in size) within the medium green fine grained matrix. Lower contact is sharp and planar ~70° to core axis.
Minor	379.60	386.46	interval starts as thinly banded (cm scale) parallel to contact becomes massive medium green with hints of red hematite to 383.0; from 383.0-385.68, dark green rock (much like 340.50-342.90). From 385.68 to bottom of interval rock retains texture but becomes grayish-green with fine hematite dusting
Survey	380.09		-60°acid.
Sample	386.46	387.55	11,851
Major	386.46	414.93	RQFP; brownish to brownish red to bright brick red; locally intensely brecciated overall say 5% vein material; lower contact irregular ~40° to core axis. details to be discussed in minor intervals.
Minor	386.46	387.80	intensely brecciated RQFP (50%) healed by mostly quartz (45%) perhaps five% calcite 1% chlorite vein @ 20° to core axis (387.35 m); trace-1% sulfosalt; trace-1% hematite.
Minor	387.80	391.70	brick red RQFP; 1-2% vein material: feldspars hematite altered to bright red.
Minor	391.70	392.28	brecciated RQFP (70%) healed by 30% quartz; quartz is cloudy with RQFP dust; mostly RQFP fragments range from dust to ~1 cm across
Minor	392.28	403.50	brick red RQFP; 5-10% quartz carbonate vein material; with carbonate > quartz (70.30%); 15-20% of interval is moderately brecciated and healed by quartz carbonate; locally this material is pinkish in color (dusty hematite) other places it is off-white-pale creamy yellow; the quartz tends to be smoky gray; feldspars are reddish (hematite altered) trace amounts of sulfosalt occur as dusty gray areas of calcite that heals breccia; in the lower half of interval are numerous large (2-3 cm) primary lithic tuff fragments. lower contact is defined by a 13 cm wide (true width) mostly carbonate vein that cuts core @ 30-40° to core axis

TS04-98	From (m)	To (m)	Description
Minor	403.50	414.93	interval starts with quartz (5%) carbonate (90%) vein from 403.6--406.1 autobrecciated grayish red RQFP heated by quartz carbonate vein (with trace amounts of hematite/sulfosalt). Most fragments 1-4 cm in size; below 406.10 core has a dull gray brown color in part due to pervasive silicification that has trace-1% sulfosalt; small 1-5 mm veins are often rimmed by very thin <1 mm rinds of sulfosalt; lower in the interval sulfosalt may comprise 1-2% of core as 1-3 mm wide veinlets and rare blebs; veins cut core @ many angles; in the upper 5 m trace amounts of hematite can be observed as pink colored breccia healing carbonate.
Point	406.10		2-3cms of clay fault gouge appears to cut core @ 80+° to core axis
Sample	411.45	412.45	11852, 2% hematite + 2-3% mostly calcite vein
Sample	411.45	412.45	11853, duplicate of 11,852
Point	413.25		chlorite vein 3 cm wide ; 40° to core axis.
Point	414.14		chlorite vein irregular up to 3 cm wide ~50-90° to core axis.
Major	414.93	416.44	DYKE; very dark green to nearly black fine grained dyke; irregular upper contact; slightly calcareous with small (1-2mms) specs of pale gray calcite say 15% of core; one large xenolith of RQFP @ 415.65 m (17 cm total length) there is a subtle chill margin ~4 cm wide around this xenolith; lower dyke contact is somewhat irregular but about ~45°. rock is quite soft easily scratched by nail
Major	416.44	424.46	RQFP; upper half of interval is reddish to reddish brown, lower half is dull gray brown very little red color; dividing two colors is a zone of broken core (420.05-420.77m) most fragments are a few cms in size, fresh broken surfaces are coated with dark green chlorite. Of special note are a pale green soft chlorite vein from 418.10-418.30 vein is very irregular in shape; quartz veins @ 418.69 m (<1 cm, 50° to core axis); 418.83 m (3 cm wide, irregular shape); 417.66 m (3 cm wide, 15° to core axis). Each quartz vein has hematite immediately beside it or within the quartz. There is trace-1% sulfosalt in upper 1/2 as <1 mm veinlets often occurring in clusters and as thin rinds next to quartz veins. In the lower 1/2 of interval very little (tr -1%) hematite occurs as dust within calcite veins; sulfosalt mainly occurs as thin (1mm) veinlets that locally look like they heal brecciated RQFP (1% sulfosalt); yellowish calcite occurs @ 423.34m proximal to a sulfosalt vein; quartz carbonate vein @ 424.26m is right next to a pinkish calcite vein; a quartz vein occurs @ 424.37 m at 40° to core axis ~2 cm wide and an irregular calcite vein 3 cm wide
major	424.46	426.63	DYKE; dark green to black much as described 414.93-416.44m but here from 424.46-425.23 m core is heavily chlorite altered and very soft-pale green with slightly darker "phenocrysts" 1-2mms in size that look much like the white spots from 424.46-425.23; the upper contact is sharp and relatively planar ~45° to core axis; lower contact is slightly irregular at 35° to core axis.
Major	426.63	430.92	RQFP; gray brown in color; feldspars are off-white to pale yellow; 15% vein material; of the vein material 75% white to pinkish calcite 25% pale smoky gray quartz; overall trace-1% sulfosalt mostly as thin 1 mm veinlets or as rinds (1 mm) around quartz fragments or proximal to lower contact with dyke as 1-3mm selvage. Hematite tr-1% occurs mainly as dusty disseminations within calcite; a few clasts of brecciated RQFP are also discolored red by hematite. most of this interval is brecciated and healed by calcite; lower contact is very irregular; very few veins are planar, but rather heal breccia and so have very irregular boundaries.

TS04-98	From (m)	To (m)	Description
Major	430.92	431.97	DYKE; medium green; quite soft (easily scratched with nail) locally quite calcareous; upper contact with RQFP exhibits mm scale banding ~parallel to wall rock (chill margin). RQFP/DYKE contact at shallow angle to core axis.
Major	431.97	436.62	VEIN. defined as rock with greater than 50% vein material; in this interval 75% vein material 25% RQFP (variably silicified) mostly pale brown to pale gray. Lower contact is gradational into core with less vein material; it appears as though RQFP was brecciated and healed by smoky gray quartz vein; the quartz/RQFP was later brecciated and healed by calcite; sulfosalt seems to be spatially associated with quartz material whereas hematite occurs mainly as dusty disseminations within carbonate material. 25% RQFP; 50% quartz; 20% calcite; 1-2% hematite; tr.-1% sulfosalt mostly as small (1mm) specs more often along fractures or along edges of quartz veins or as veinlets <1mm wide cutting core at all angles; trace pyrite as <1-1mm subhedral cubes; trace sphalerite sometimes rimmed by fine pyrite.
Minor	431.97	433.90	50% vein (calcite: quartz 50:50); 50% rhyolite quartz feldspar porphyry; sulfides as noted in major interval above; one speck chalcopyrite seen.
Sample	432.00	433.00	11,855
Sample	433.00	434.00	11,856
Minor	433.90	435.00	50% vein material; 50% RQFP; locally the calcite is quite dark red suggesting a high hematite content lower 1/2 of this interval is mostly pale green gray RQFP with pale yellow feldspars. peripheral to RQFP fragments are blotches a few mms wide of green chlorite.
Sample	434.00	435.00	11,857
Sample	435.00	436.00	11,858
Minor	435.00	436.40	vein material (85-90%); top half of interval is 80% quartz with 15% RQFP very silicified locally completely obliterated by quartz vein; ghost of feldspar crystals can be seen in vein material; this part has a gray green cast partly from the gray of the smoky quartz partly from the digested RQFP. A few specs of bright red hematite (3-4mm across) suggests tr. <1% hematite; sulfosalt can be seen as 1-2mm specs (tr. to <1%). Lower half of this interval is almost entirely quartz/carbonate (50:50) vein material, the carbonate is pinkish (with rare blebs of bright red hematite ~1%) the quartz looks quite barren with only rare tiny specs (<<1 mm) of sulfosalt; lower contact with less vein-rich material is perpendicular to core axis.
Minor	435	435.32	green-olive sandy material; the core above and below this material fits together also there is extra material with respect to the meterage; this suggest that this material represents material that has caved into the hole. This extraneous material has been removed to reduce the likelihood of contaminating samples.
Sample	436.00	436.63	11 859
Minor	436.40	436.63	50% vein (50:50 quartz:carbonate), 50% RQFP, trace-1% hematite as dusty dissemination dusty dissemination is within calcite and rare bright red blotches 3-4 mm across; trace pyrite; trace sphalerite as 1 mm specs.
Sample	436.63	437.63	11,860
Major	436.63	437.60	RQFP; very altered by quartz plus hematite; quartz vein material 25-30% rock volume; 10% rock equals chlorite vein (very soft pale green); 5% hematite that strongly colors upper half of interval as pervasive alteration and is found in blotches peripheral to quartz veins; sulfosalt is difficult to estimate - possibly 1% is present over interval as dusty dissemination is especially near quartz veins.

TS04-98	From (m)	To (m)	Description
Major	437.60	439.59	DYKE; black, fine grained: upper contact ~45° to core axis; but is quite irregular there is a thin 1 cm plus layer of soft green chlorite altered material (altered Dyke?) at the contact; very much like the chlorite vein described in 436.63-437.60 m interval; the Dyke is quite hard and slightly calcareous; within the Dyke is a 25 cm (total length) from 438.00-438.25 m xenolith of quartz vein plus RQFP material; Lower contact is irregular but ~25° to core axis again with pale green soft chlorite material at the contact.
Major	439.59	474.57	RQFP; colors range from nearly brick red (top of interval) to slightly reddish-brown to pale yellowish brown (451-453m) back to brownish to nearly grayish brown. The top half of interval (439.59-456.29) is relatively unbrecciated relative to lower 1/2 which is quite extensively brecciated yet has relatively little vein material healing the breccia (at most 15%). The entire interval is quite hard (silicified) the lower one half locally has perhaps 2% sulfosalt as dusty black disseminated grains that discolor patches several cm to tens of cm across.
Minor	450.40	453.33	bleached RQFP; rock is light tan to pale yellow; a quartz/carbonate vein runs down the middle of the core through the lower half of this interval; the rock either side of this 5-10 mm vein is bleached pale yellow and locally beyond the pale yellow is a rim 5 mm wide of hematite as a cloudy red halo to the yellow bleached rock; trace-1% sulfosalt also is associated with this vein as a thin <1mm selvage.
Sample	452.33	453.33	11861
Minor	453.33	454.50	RQFP; significant 1-2% hematite as dusty red blotches occurs in this interval along with trace-1% sulfosalt as <1mm rims to the 2-3mm quartz veins that cut core at all angles.
Minor	456.25	456.48	medium green chlorite rich vein (altered Dyke?) Subtle chill margins (1cm) next to wall rock; both upper and lower contact 10-20° to core axis.
Minor	456.48	474.57	brecciated RQFP; rock is brownish to locally grayish brown to gray; much of core is broken and healed by quartz carbonate veins; from 456.48-462.00 m rock is 80% silicified altered RQFP, 10-15% quartz-carbonate veins; 1-2% sulfosalt as dark gray disseminated dust often proximal to vein material (50-50 quartz-carbonate); trace pyrite as <1 mm cubes; very little to no hematite observed; below 462 m there are only a few 10 cm intervals with any significant amount of vein or sulfide.
Sample	457.00	458.00	11862, if these run perhaps sample either side
Minor	458.50	459.00	pale green chlorite rich vein (altered Dyke?) < 1-3 cm wide parallel to core axis. Very soft; trace calcite in vein "chill margin" parallel to wall rock contact
Sample	459.00	460.00	11863, if these run perhaps sample either side
Point	468.97		pink carbonate veins; 40° to core axis 3 cm wide 15% quartz.
Point	470.45		pink carbonate veins; 40° to core axis 3-4cms wide 15% quartz.
Survey	474.57		-61° acid.
Survey	474.57		279°. -60 Sperry Sun
Sample	0.00	0.00	11827, blank
Sample	0.00	0.00	11839, blank
Sample	0.00	0.00	11854, blank

TS04-99

Started: Dec. 6, 2004

Completed: Dec. 17, 2004

Location: 52+84 E; 45+00 N

Orientation: azimuth 265; collar inclination -57

Purpose: To test Tommy Vein below Sill

Logged by: D. Meldrum (0-135.43 m) D. Pawliuk (135.43 m - EOH)

TS04-99	From (m)	To (m)	Description
Major	0.00	3.05	CASING
Major	3.05	192.66	Rhyolite quartz feldspar porphyry; Rhyolite lapilli tuff maroon to medium gray green to pale gray to Rusty; hard rock (not easily scratched by nail); good to excellent core recovery, nonmagnetic; 3-5% pale gray quartz eyes ~3-5mm across; 5-7% pale yellow to pinkish to rusty feldspar grains 3-4 mm across; 5-10% lapilli tuff sized lithic tuff fragments often flattened (parallel to original surface?). Some are fiamé like most are 1-2 mm wide and 2-3 cm across; fine ash makes up matrix ~80% trace- \ll 1 mm specs of pyrite disseminated throughout; flame shaped clasts ~70-80° to core axis. A few quartz veins cut core at several angles to core axis and make up 1% of rock volume. Each is a few mm wide, some are slightly pinkish most are creamy white; a few clots of quartz are rimmed by green vitreous mineral (hard=4) (chlorite?) that makes up \ll 1% of interval; limonite stain on fracture surfaces down to 32 m depth.
Minor	8.18	10.81	DYKE; pale slightly pinkish green (at top) to medium to dark green (near bottom) fine grain diorite dyke. Blotches of pinkish carbonate up to 10mm across make up 1-2% core; rock has a salt and pepper texture and locally crystals 1mm in size can be observed; mafic mineral may be chloritized; rock is moderately hard but locally can be scratched with nail. Upper contact is sharp and planar at 30° to core axis; lower contact is irregular with dyke invading Rhyolite quartz feldspar porphyry i.e. Rhyolite quartz feldspar porphyry xenoliths within dyke.
Minor	31.30	32.60	trace-1% sulfosalt plus trace-1% hematite; several quartz veins in this interval a few millimeters wide have halos of dusty gray material and dusty red material (sulfosalt and hematite) overall quartz veins form 2-3% of rock volume in this interval.
Minor	40.50	41.00	quartz carbonate vein parallel to core axis carries 3-5% sulfosalt within it; overall vein makes up 5-10% of this interval; trace hematite, pyrite also observed proximal to vein.
Minor	41.76	58.20	interval has 3-5% carbonate vein; several are 3-4 cm across; locally carbonate heals brecciated Rhyolite quartz feldspar porphyry; and in places smoky gray quartz fragments can be observed within pinkish vein calcite; these calcite veins cut core at all angles. Also within this interval are trace-1% specs of honey yellow sphalerite(?) \ll 1mm disseminated throughout core.
Minor	58.20	60.05	interval is extensively brecciated and healed by mostly calcite 10-15%; rock is 85% Rhyolite quartz feldspar porphyry.
Point	60.58		3 cm wide quartz/calcite vein cuts core @ 20-25° to core axis; calcite pale creamy yellow; quartz smoky gray (50:50) trace-1% hematite and trace \ll 1mm specs of pyrite.
Minor	63.09	63.29	interval of brecciation; healed by quartz plus calcite (each ~10%); 3-5% hematite as dark red cloudy masses.

TS04-99	From (m)	To (m)	Description
Minor	65.25	65.65	interval of brecciation; silica heals breccia; 40% bright white and smoky gray quartz; five% hematite; 55% Rhyolite quartz feldspar porphyry; 2% chlorite.
Point	69.48		4 cm very soft greenish clot of rock; lithic tuff fragment of chloritized dyke material?
Minor	73.56	73.90	Rhyolite quartz feldspar porphyry with relatively little ash (35%?); 35% dark lithic tuff grains 1-2 mm; 35% feldspar grains 2-3 mm.
Minor	73.90	74.30	50% interval is quartz/calcite vein material (50:50) calcite is pinkish due to dusty hematite (1-2%?); 1% sulfosalt along contact of quartz vein and dispersed in a small stockwork in the middle of this interval.
Minor	74.30	75.75	nearly black Rhyolite quartz feldspar porphyry.
Minor	75.19	75.39	odd looking rock unit; unsure if this represents a small dyke that has digested Rhyolite quartz feldspar porphyry or not; slightly greener than Rhyolite quartz feldspar porphyry, has a spotty texture; is quite fine grained and lacks feldspar phenocrysts; upper and lower contact are diffuse but appear to be -perpendicular to core axis.
Minor	75.75	78.90	bleached interval of Rhyolite quartz feldspar porphyry; pale green gray color; bottom 20cm are brecciated and healed by pink calcite (15-20% vein material) overall the entire interval only 1-2% vein material; 2-5 millimeter quartz/carbonate vein is cutting core @ many angles.
Minor	78.90	84.11	interval of very dark nearly black Rhyolite quartz feldspar porphyry; from 80.20-81.61m 3-5% of rock is dusty red hematite mostly as clouds 1 cm or so radiating out from thin 1-2 mm quartz veins; from 82.75-84.11 m dusty green gray with a small (1%) amount of red hematite clouds core; this gives the core a milky green gray washed out aspect to it; in some intervals almost all grains are replaced by green gray alteration.
Minor	84.11	89.50	bleached green gray Rhyolite quartz feldspar porphyry as for 82.75-84.11 (described above).
Minor	86.60	86.80	brecciated interval healed by calcite (70%) green gray Rhyolite quartz feldspar porphyry (30%); calcite pale green gray color.
Minor	89.50	92.00	dark red to nearly black locally somewhat greenish gray Rhyolite quartz feldspar porphyry; 1-2% hematite, trace sulfosalt as thin 1mm rinds on either side of quartz/carbonate vein parallel to core axis.
Minor	92.00	93.98	green gray Rhyolite quartz feldspar porphyry; wisps of hematite rich material cut core -70° to core axis; several wispy quartz/calcite veins cut core.
Minor	93.98	95.77	reddish to nearly black Rhyolite quartz feldspar porphyry; perhaps 3-5% hematite as dusty red clouds usually proximal to 3-5 mm wide carbonate veins.
Minor	95.77	99.67	interval is mostly bleached pale pink rock; very hard (silicified); numerous mostly carbonate (90%/quartz 10%) veins 1-4 cm across cut core mostly 20-40° to core axis; these veins have little to no visible sulfide with only a rare speck of pyrite and sulfosalt; some of these veins are slightly pinkish (dusty hematite) and some have hematite as thin <1mm selvages; 1 vein at 97.00 m has -5% green vitreous soft mineral (chlorite?) as up to 1 cm wide sliver or selvage between main carbonate vein and wall rock; from 97.36-97.80 m rock has a very dark matrix with 30-40% lithic tuff fragments (some several cm across).
Survey	96.62		-56°
Sample	98.96	99.96	11864, if this runs it may be worth white to sample from 96.62-90 8.96 m.

TS04-99	From (m)	To (m)	Description
Minor	99.67	105.94	mostly nearly black Rhyolite quartz feldspar porphyry; two carbonate veins in the uppermost meter @ 20° to core axis; 1-1.5cm wide each with a thin millimeter selvage of hematite; very little vein material elsewhere in this interval.
Minor	105.94	107.03	pale green gray Rhyolite quartz feldspar porphyry; matrix is a washed out gray green color; many of the feldspars are medium green (chlorite altered). Flame like structures cut core ~80-90° to core axis; many of these are hematitic red; rock is somewhat softer than nail but is difficult to scratch.
Minor	107.03	112.32	very rubbly core; most chunks a few centimeters in size; most pieces are pale green gray as for 105.94-107.03 m however there is one that is very dark ~black right next to pale gray fragments (possible mixup with core?) This interval most likely represents a large fault; a few fragments are made up of 50% calcite healing brecciated Rhyolite quartz feldspar porphyry.
Minor	112.32	121.40	Rhyolite quartz feldspar porphyry; dull gray slightly greenish moderately broken core; very few pieces >10cm; vein material ~1-2% mostly carbonate; trace-1% hematite as dusty red area surrounding veins or fractures within rock; a few short 10-15cm intervals of dark red Rhyolite quartz feldspar porphyry; 1 large (4cm+) lithic clast observed at 119 m.
Minor	121.40	123.75	very rubbly core as for 107.03-112.32 m above.
Minor	123.75	127.42	dark red to nearly black Rhyolite quartz feldspar porphyry; quite broken; few pieces >10cm; little to no vein material.
Minor	127.42	147.22	relatively competent core; mostly pale green-gray very altered-muddy looking core; <1-1% vein material mostly thin 1-2 millimeter wide quartz/carbonate veins. From 131.00-132.20m there are numerous small gashes and blebs of chlorite like material (vitreous/soft green) this interval also has 2-3% hematite in thin irregular, hairline to 3mm veinlets healing breccia; veinlets mainly @ 45-55° to core axis. Traces green-black chlorite coating fracture surfaces.
Point	144.30		fault; 1.5mm dark green-black chlorite gouge along slip @ 10° to core axis.
Minor	145.60	146.00	moderately brecciated; 1-2% dark green-black chlorite coating irregular fracture surfaces throughout.
Point	146.60		fault; 2mm sandy gouge on irregular, chlorite-coated fracture @ 20° to core axis.
Point	146.77		banded calcite (85%)-pale gray quartz (15%) vein 3cm wide @ 55°; undulating pyrite mass 10mm long by up to 3mm wide along vein margin.
Minor	147.22	147.32	FAULT; 10cm clayey, pale greenish gray gouge between slips @ 47°. Moderately brecciated healed with 10% calcite vein material across 33cm below fault.
Minor	147.32	158.20	as for 127.42 -147.22 above. Moderately broken core to 155.65 m depth.
Point	152.20		FAULT; smear sandy gouge on irregular, chlorite coated fracture @ 39°.
Point	153.77		FAULT; smear sandy gouge on smooth chloritic slip @ 25°.
Point	155.09		FAULT; smear sandy gouge on smooth chloritic fracture @ 27°.
Point	157.66		FAULT; 3mm sandy and silty gouge on slip @ 33°.
Minor	158.20	174.85	medium brown-maroon Rhyolite quartz feldspar porphyry with average about 1% finely disseminated hematite within matrix. Less clay altered and more competent than overlying interval. Fewer faults; much better core recovery. Traces disseminated pyrite as subhedral grains up to 0.75mm across.

TS04-99	From (m)	To (m)	Description
Minor	164.85	165.78	weakly brecciated; healed by 1% calcite veinlets with hematite selvages.
Point	166.22		banded calcite (65%) hematite (5%) quartz (5%) wall rock (25%) vein 8cm wide @ 36°.
Survey	169.70		-55° AZ 276° (Sperry)
Minor	170.73	171.63	somewhat broken core.
Point	171.53		chlorite-coated fault slip @ 33°
Sample	171.80	172.80	11865
Point	171.99		mottled pale creamy gray quartz vein 10 cm wide @ 28°. Wall rock, Rhyolite quartz feldspar porphyry bleached pink across 15 mm; brick red hematite 2 mm along vein selvages; dark bluish sulfosalt filling fractures up to ~10mm long within bleached wall rock; sulphosalt forms 0.5% rock volume across 5 cm along lower vein contact. Traces dusty disseminated pink hematite and rare sulfosalt within vein. Vein brecciated, healed.
Point	172.49		quartz (90%) calcite (10%) vein 5 cm wide @ 40°, contains traces hematite and sulfosalt. Vein brecciated and healed.
Minor	174.85	180.20	bleached light greenish brown Rhyolite quartz feldspar porphyry. 2% pale gray quartz-calcite veins, veinlets up to 4 cm wide @ 25° to 35° to core axis. Traces dusty hematite; local fine millimeter scale chalcidonic banding within veins.
Point	179.35		FAULT; 2mm sandy and clayey gouge on fracture @ 42°.
Point	179.55		FAULT; 2mm clayey gouge on fracture @ 10°.
Minor	180.20	192.66	Medium brownish maroon Rhyolite quartz feldspar porphyry; 15% overall mottled light gray to cream-colored quartz (75%) calcite (25%) vein material within interval. Veins up to 80 cm wide, and mostly about 30° to core axis.
Minor	180.26	180.70	FAULT (?); somewhat broken core; smear of gouge along chlorite coated fracture @ 10°.
Sample	181.10	181.60	11866 0.5 m.
Point	181.30		mottled quartz calcite vein 7cm wide @ 25° contains traces dark sulfosalt (?) and red hematite.
Sample	181.60	183.20	11867; 1.6 m
Minor	183.19	183.75	quartz (65%) calcite (35%) vein; brecciated and rehealed; 0.5% dusty disseminated brick red hematite throughout. 5% Rhyolite quartz feldspar porphyry wall rock fragments-these fragments locally moderately silicified. Upper vein contact @ 25°, lower contact irregular, rare speck of pyrite. Traces-0.5% bright green chlorite (?) as irregular faint masses to 8mm across; photos taken.
Sample	183.20	183.75	11868; 0.55 m
Survey	185.01		-53°
Minor	186.20	187.50	weakly brecciated; healed by banded quartz-hematite-calcite veinlets to 15mm wide generally at shallow angles to core axis.
Sample	186.20	187.50	11869; 1.3 m.
Minor	187.50	188.55	quartz (75%) calcite (23%) chlorite (?)(2%); Vein is mottled and crudely banded on cm scale. Upper contact @ 40°; lower contact @ -30°. Abundant dark green waxy chlorite across about 4-9cm along both upper and lower vein contacts. Rare trace hematite; no sulfides seen.
Sample	187.50	188.55	11870; 1.05 m.

TS04-99	From (m)	To (m)	Description
Major	192.66	329.20	MICRODIORITE SILL; Light gray-green fine grained soft rock with 0.5% grayish white calcite filling amygdules to 8mm across and as veinlets mainly 45-50° to core axis; nonmagnetic. Discrete upper contact @ 62° with dark chilled margin 2cm wide.
Point	203.51		FAULT; 8mm very finely broken core and clayey gouge on slip @ 26°.
Point	218.51		FAULT; 2 smooth slips coated with waxy chlorite 23mm apart, both @ 30°.
Point	221.39		FAULT; 3mm soft finely crushed chlorite gouge on fracture @ 50°.
Point	222.23		fault; 1mm dark green chlorite rich gouge on smooth slip @ 42°.
Point	224.73		creamy white mottled calcite vein 23mm wide @ 45° to core axis. Contains 10% wall rock xenoliths. No sulfides seen.
Point	226.46		breccia vein; 20mm wide @ 60° with subangular wall rock fragments cemented within jasperoid matrix; no sulfides seen.
Point	240.94		FAULT; 1mm chloritic gouge along fracture @ 27°. Carbonate veinlets offset at least 7cm by this fault.
Point	243.89		FAULT; 1mm sandy gouge on fracture @ 48°.
Point	251.17		FAULT; smear chloritic gouge on fracture @ 48°.
Minor	258.80	271.05	weakly magnetic interval within Microdiorite sill; dark grayish green, NOT a Dyke within sill; gradational "contacts" at both upper and lower boundaries of magnetic interval.
Survey	270.36		-55°.
Point	273.31		FAULT; 1mm silty gouge on smooth fracture @ 44°.
Minor	287.80	288.62	FAULT; somewhat broken core between smooth fractures coated by 1mm sandy gouge @ 36° to core axis.
Minor	292.90	293.83	FAULT; somewhat broken core; smooth chlorite coated slips @ 41°.
Point	298.53		FAULT; 4mm light gray silty gouge on smooth slip @ 26°.
Minor	299.09	299.35	fault; weakly brecciated; healed by 80% grayish white vein quartz and 20% calcite.
Point	299.35		Smooth slip @ 33°.
Point	299.95		FAULT; 1mm light gray silty gouge on smooth slip @ 30°.
Point	302.60		FAULT; smear light gray silty gouge on slip @ ~53°.
Minor	303.85	304.12	FAULT; moderately broken core between slips @ 55°.
Minor	304.65	305.55	FAULT; crushed, moderately brecciated core; with light gray silty gouge along irregular fracture surfaces.
Minor	308.50	309.92	FAULT; crushed weakly brecciated core with gray silty gouge along slips mostly @ 23°.
Minor	310.72	311.38	FAULT; crushed broken core and gouge between fractures at ~30°. No Rhyolite quartz feldspar porphyry fragments, only Microdiorite sill and quartz-calcite vein material incorporated within fault.
Minor	312.35	312.51	FAULT; moderately brecciated partly healed by quartz calcite veins. Cannot determine orientation.
Point	313.24		FAULT; smear pale gray gouge on smooth slip @ 27°.
Major	329.20	380.95	Rhyolite quartz feldspar porphyry. Medium reddish brown; generally weakly brecciated heated by 1% pale gray calcite (90%) quartz (8%) hematite (2%) dark green chlorite (trace) veinlets throughout uppermost in 5.70 m of rock unit. Calcite quartz veinlets almost completely absent below 334.90 m depth. Veins mostly at 35-50° to core axis.

TS04-99	From (m)	To (m)	Description
Point	329.20		discrete intrusive contact @ 60° with underlying Rhyolite quartz feldspar porphyry. Dark maroon glassy chilled margin 20mm wide.
Point	340.06		FAULT; Smear sandy gouge on fracture @ 41°.
Minor	343.33	343.62	FAULT; Moderately broken core; 2mm silty gouge on smooth fracture @ 30°.
Minor	346.79	348.19	light brown moderately bleached Rhyolite quartz feldspar porphyry matrix; lapilli relatively unaltered, distinct. Primary laminae @ 55-60°.
Point	347.36		pink-gray to cream color quartz (98%)-calcite (2%) and hematite (trace) vein 3cm wide @ 42°.
Sample	348.90	350.20	11871; 1.3 m
Minor	348.98	351.32	6% calcite (85%)-quartz (15%) veins up to 6cm wide mainly at 55° to core axis. Traces dusty disseminated pink hematite. Local traces dark sulfosalt as wispy discontinuous hairline veinlets. Traces chalcopyrite as blebs up to 1.5mm across along the vein margin @ 350.25 m.
Sample	350.20	351.40	11872; 1.2 m.
Minor	354.00	357.87	weakly bleached; alteration envelope along fault at 356.04 m depth marked by 3mm soft, sand sized gouge along irregular fracture @ ~20° to core axis.
Minor	360.15	363.15	dark brick red interval with abundant dusty disseminated hematite throughout matrix. Feldspar is moderately altered to soft, waxy green chlorite (?).
Sample	363.50	364.50	11873; 1.0 m.
Point	364.06		pale brown-gray quartz (65%)-calcite (35%) vein 12cm wide @ 37° contains 10% Rhyolite quartz feldspar porphyry fragments. Traces sulfosalt as faint, elongate masses along short fractures.
Point	365.43		FAULT; thin smear gouge on fracture @ 28°.
Minor	366.20	367.03	bleached, light brown tuff matrix.
Minor	374.00	376.72	3% pale cream-gray calcite (50%)-quartz (50%) veins up to 15mm wide @ 34° with traces sulfosalt and rare pyrite along margins. Veins occasionally brecciated, rehealed.
Sample	374.00	375.50	11874
Sample	375.50	377.00	11875
Minor	379.50	380.10	moderately bleached, clay-altered.
Point	380.04		FAULT; 3cm clayey gouge and soft, sand sized rock fragments along fracture @ 40°.
Sample	380.10	380.95	11876
Major	380.95	382.44	QUARTZ (90%)-CALCITE (10%) VEIN; mottled pink grayish brown; generally massive appearance, say 2% variably bleached Rhyolite quartz feldspar porphyry xenoliths up to 8cm across within vein material. Local traces dark sulfosalt often as discontinuous, faint masses along hairline fractures/veinlets at 32° to core axis. Local traces pink hematite increasing in abundance in lower one half of interval; upper vein contact discrete @ 63°. Lower contact brecciated, healed at ~50°.
Sample	380.95	381.95	11877
Sample	381.95	382.45	11878

TS04-99	From (m)	To (m)	Description
Major	382.44	383.65	VEIN QUARTZ BRECCIA; angular fragments intensely silicified Rhyolite quartz feldspar porphyry fragments and vein quartz within sandy, silica indurated matrix. Traces dusty pink hematite throughout. Say 65% Rhyolite quartz feldspar porphyry fragments; remainder vein quartz.
Sample	382.45	383.65	11880, duplicate of 11879
Sample	382.45	383.65	11879; 1.2 m
Point	383.22		subhedral pyrite grains up to 1.5mm across; traces sulfosalt along irregular fractures.
Minor	383.65	384.48	moderately brecciated; healed by say 7% pale grayish pink calcite (90%)-quartz (10%) vein material. Lower contact of interval discrete @ 37°. Calcite veinlets usually rimmed by watery gray quartz vein material along contact with RQFP wall rock. Locally specs of pyrite.
Point	383.65		lower contact @ ~54°.
Sample	383.65	384.50	11882
Minor	386.72	387.05	probable fault; moderately broken core; cannot determine orientation.
Point	387.45		FAULT; thin smear sandy gouge on fracture @ 27°. Weakly bleached envelope 15cm wide.
Point	387.72		FAULT; 1mm sandy gouge on fracture @ 44°.
Minor	388.57	397.24	2-3% quartz (60%)-calcite (40%)-hematite (traces) veinlets, veins up to 3cm wide at between 23° and 65° to core axis. Weakly bleached below 394.20 m depth.
Sample	388.75	389.75	11883
Point	389.00		traces dark sulfasalt, both within vein quartz and along margins of late cross cutting calcite veinlet. Rare speck pyrite within vein quartz.
Sample	396.10	397.10	11884
Point	396.16		off white quartz (95%)-calcite (5%) vein 6cm wide @ ~34° to core axis contains 20% variably silicified RQFP fragments (xenoliths); traces dark sulfosalt and pyrite as faint masses up to 2.5mm across along vein margins.
Sample	397.10	390.10	118 85
Minor	397.24	401.05	weakly to moderately brecciated RQFP healed by 25% quartz (85%)-calcite (15%) vein material. Vein widths difficult to determine but up to at least 9cm wide; irregular vein at top of interval may be ~30cm wide. Vein contact at top of interval at 43°, otherwise irregular veins oriented at or about 20° to core axis. Calcite vein material pale pink, colored by traces of dusty disseminated hematite; locally rare traces dark sulfosalt, pyrite and hematite disseminated throughout interval. These are breccia veins that contain angular pale gray vein quartz fragments within calcite matrix. Pink carbonate more abundant in lower half of interval.
Point	397.54		cavity ~30mm across lined by euhedral watery gray quartz crystals to 3mm across with dark rims. Cavity filled with later milky white vein quartz.
Sample	398.10	399.10	11886
Sample	399.10	400.10	11887
Sample	400.10	401.05	11888

TS04-99	From (m)	To (m)	Description
Minor	401.05	402.67	QUARTZ CALCITE VEIN (TOMMY VEIN?). Pale gray quartz (93%) -pink calcite (7%) vein, brecciated and re-heated with 15-20% variably silicified RQFP xenoliths. Traces dark sulfosalt along faint discontinuous hairline veinlets at ~50° to core axis below 401.80 m depth. Spec pyrite @ 401.80 m depth. Upper vein contact irregular @ -20°; Lower contact at 50°. Some RQFP's xenoliths weakly bleached as well as silicified.
Sample	401.05	401.85	11889
Sample	401.85	402.67	11890
Minor	402.67	402.98	RQFP; weakly bleached; moderately brecciated and healed by 30% pale gray vein quartz and off white calcite across lowermost 10cm.
Sample	402.67	402.98	11891
Minor	402.98	404.77	LATE IGNEOUS DYKE; upper contact @ 65°, lower @ 38°. Medium maroon-gray very fine grained, nonmagnetic with 0.5% calcite filling amygdules.
Survey	404.47		-52°
Major	404.77	408.26	RQFP; bleached light brown with say 20% medium brown (unbleached) bands and patches very weakly brecciated. Healed by 3% pale gray-brown quartz veinlets/veins upto 13cm wide, mostly at about 25° to core axis. Average 0.5-1% dark sulfosalt as irregular veinlets and masses with faint margins. Numerous healed fault slips throughout at ~75° to core axis marked by offsets of quartz veinlets.
Sample	404.77	405.77	11892
Sample	405.77	406.77	11893
Sample	406.77	408.26	11894
Point	408.10		irregular sulphosalt (60%)-calcite (39%) pyrite (1%) veins upto 12mm wide by 70mm long.
Major	408.26	411.25	LATE IGNEOUS DYKE as for 402.98-404.77 above. Upper contact @ 48°; Lower contact at 17°.
Major	411.25	417.66	RQFP; mottled light brick red; weakly brecciated heated by 3% pale brownish gray, banded quartz (50%) -calcite (50%) veinlets and veins mostly at ~30° to core axis; moderately brecciated, healed by silica across lowermost 30cm. Somewhat gradational contact with underlying quartz vein breccia.
Sample	411.25	412.25	11895
Sample	412.25	413.25	11896
Sample	413.25	414.25	11897
Sample	414.25	415.75	11898
Sample	414.25	415.75	11899, duplicate
Sample	415.75	416.75	11901
Sample	416.75	417.66	11902
Major	417.66	418.17	QUARTZ VEIN BRECCIA; TOMMY VEIN (?); as 419.42-421.78 m below gradational upper contact @ ~25° to core axis.
Sample	417.66	418.17	11903
Major	418.17	419.42	LATE IGNEOUS DYKE; faults marked by finely to moderately broken core at both upper and lower contacts; upper and lower contact @ ~ 68°.
Point	418.58		FAULT; 13cm gray clayey gouge between slips @ 50°.

TS04-99	From (m)	To (m)	Description
Major	419.42	421.78	QUARTZ VEIN BRECCIA (TOMMY VEIN); mottled pale pink to pale gray to off white quartz (35%) - calcite (65%) vein. Appears to have been brecciated and rehealed at least three or four times. Angular-subangular vein quartz fragments to 6-8cm across throughout; also variably silicified RQFP fragments. Rare spec pyrite grains up to 2mm across. Rare dark sulphosalt as faint spots up to 3-4mm across; ~1% late, off white calcite veinlets up to 8mm wide, irregular and randomly oriented.
Sample	419.42	420.42	11904
Sample	420.42	421.78	11905
Major	421.78	424.09	RQFP, light brown moderately silicified; weakly brecciated; healed by 25% cream-colored calcite. Traces dark sulphosalt along margins of calcite veins. Gradational contact across 8cm with underlying rock unit.
Sample	421.78	422.78	11906
Point	422.63		pale gray quartz (65%) - calcite (35%) vein 12mm wide @ 21° banded on millimeter scale. Traces disseminated pyrite along vein margins.
Sample	422.78	424.09	11907
Major	424.09	425.81	QUARTZ VEIN BRECCIA; as for 419.42-421.78 m above. Gradational upper contact @ -43°. Lower contact @ 40°. Overall 70% quartz 30% calcite.
Sample	424.09	425.09	11908
Sample	425.09	425.81	11909
Major	425.81	426.70	RQFP; medium brown weakly brecciated; healed by two% creamy white calcite-quartz veinlets.
Sample	425.81	426.70	11910
Major	426.70	427.30	QUARTZ VEIN BRECCIA; as 419.42-421.78m above. Crudely banded on centimeter scale parallel vein margins. Upper contact @ - 50°; Lower contact -30°.
Sample	426.70	427.30	11911
Point	427.26		brick red hematite band 5mm wide at -25° to core axis.
Major	427.30	431.90	RQFP; medium brown-gray moderately brecciated; healed by 8% watery grey quartz (85%)-calcite (15%) of vein material to 428.76 m depth; below 428.76 m are 1-2% quartz-calcite veinlets mainly @ ~40°; also below 428.76m RQFP only locally weakly brecciated.
Sample	427.30	428.76	11912
Point	431.90		EOH
Survey	431.90		inclination -52° (Sperry)
Sample	0.00	0.00	11881; Blank
Sample	0.00	0.00	11900, blank

TS05-100

Started January 14, 2005 Completed January 19, 2005
 Location: 51+88 E; 45+12 N Az 265° inclination -55° at collar
 Purpose: test Tommy Vein above sill
 Logged by: Dave Pawliuk

TS05-100	From	To	Description
Major	0.00	3.05	CASING
Major	3.05	5.15	RQFP, light gray-brown moderately brecciated; healed by pale gray quartz and off-white calcite veinlets. Rock spotted by 2-3% off-white subrounded feldspar phenocrysts average 3mm across. Hard. Dusty disseminated hematite within matrix. Overall say 5% pale gray quartz veinlets, veins, 1% off-white later calcite veinlets. Light yellow brown limonite along weathered fracture surfaces throughout. 0.5% pyrite very finely disseminated with elongate masses along margins of watery gray quartz veinlets. Also rare specs pyrite as subhedral grains up to 0.75mm. Discrete intrusive contact with underlying dyke @ 12°.
Sample	3.05	4.00	11913
Sample	4.00	4.80	11914
Sample	4.60	5.65	11915
Major	5.15	10.72	LATE IGNEOUS DYKE. Dark greenish brown to light greenish brown, pale green chilled margin about 20cm wide along upper contact. Dyke here crosscut by green calcite veinlets. Abundant carbonate throughout dyke; everywhere reacts with HCl. 1-2% pyrite and traces of sulfosalts? within uppermost 60cm of unit. Weakly magnetic throughout.
Minor	8.98	9.58	RQFP xenolith?. Discrete upper contact @ 32° lower contact @ 15°. RQFP medium grayish Brown moderately brecciated. Healed by 5-10% watery gray irregular vein quartz. Traces of pyrite.
Major	10.72	12.53	RQFP. Medium brown to grayish brown, weakly brecciated, moderately fractured 0.1-0.5% finely disseminated pyrite throughout. Traces dark bluish black sulfosalt (?). Broken core at upper contact. Cannot determine orientation. Lower contact discrete @ 10°. <0.5% irregular pale gray quartz veinlets up to about 6mm wide. Local bleached pale brownish orange patches up to 8cm across.
Sample	10.72	12.53	11916
Major	12.53	24.32	LATE IGNEOUS DYKE. Fine grained dark greenish brown, weakly magnetic. Abundant pervasive carbonate throughout rock unit in addition to calcite filled amygdules. As for 5.15 -10.72 m above.
Minor	20.08	24.32	lower portion of dyke interval, light grayish orange-Brown in color. Only 0.5% calcite veinlets. no pervasive carbonate as in upper, darker colored portion of dyke. Gradational contact between upper and lower portions of dyke. Moderately broken core across 15cm at lower contact. cannot determine orientation.
Major	24.32	164.04	RQFP, light grayish brown, medium grained. spotted by creamy white feldspar phenocrysts average 3mm across and subhedral watery gray quartz eyes average 5mm across. Trace very fine disseminated pyrite throughout. Generally competent rock unit. Say 3% lapilli to 6mm across. Local faint banding @ 60° to core axis. Overall about 0.5% late grayish white, irregular calcite veinlets. Monotonous.
Minor	28.78	28.98	Light brown fine grained late igneous dyke. Moderately broken core, cannot determine orientation.
Minor	30.64	31.24	weakly brecciated; weakly silicified; 1% disseminated pyrite. Traces sulphosalt rimming pyrite grains.
Point	32.45		moderately silicified across 12cm; 2-3% disseminated pyrite, traces of sulphosalt within envelope along small fault slip @ 25° with smear of gouge

TS05-100	From	To	Description
Minor	39.63	39.91	LATE IGNEOUS DYKE; pale creamy brown; upper contact @ ~20° ; lower contact @ 40°.
Sample	42.00	43.00	11917
Point	42.24		light gray-brown calcite vein 3cm wide, @ 20° to core axis. Has dark gray-Brown margins ~6mm wide.
Point	42.56		mottled pale gray to cream-colored calcite vein 4cm wide @ 20° to core axis. Traces very fine disseminated pyrite and sulfosalt within RQFP fragments within the vein.
Point	49.96		FAULT; thin smear sandy gouge on smooth fracture @ 18°.
Sample	51.75	52.75	11918
Minor	51.78	55.56	moderately brecciated light green brown RQFP; healed breccia RQFP here weakly altered to greenish clay minerals. Generally soft easily scratched except for watery gray vein quartz forming breccia matrix. 0.5% disseminated pyrite, traces dark sulfosalt within breccia matrix.
Point	51.98		irregular patch grayish white vein calcite about 4cm across within breccia matrix.
Sample	52.75	53.75	11919
Sample	53.75	55.55	11920
Point	54.01		FAULT; 3mm silty light gray gouge on fracture @ 27°.
Sample	55.55	57.05	11921
Minor	55.56	60.00	weakly brecciated, weakly silicified with say 5-7% light gray vein quartz as irregular patches and veinlets, 0.5% disseminated pyrite, traces of dark sulfosalt, local traces bright brick red hematite mostly within wispy veinlets along irregular randomly oriented, hairline fractures.
Sample	57.05	58.55	11922
Point	57.64		FAULT; 3mm finely broken core and clayey gouge on fracture @ 33° to core axis.
Sample	58.55	60.05	11923
Sample	58.55	60.05	11924, duplicate
Minor	58.80	59.20	2% pyrite disseminated clots up to 10mm across rimmed by brick red hematite as faint halos up to 5mm wide.
Minor	62.75	65.08	moderately brecciated; healed by 3% light gray vein quartz and 2% cream-colored carbonate; carbonate later than (i.e. crosscuts) vein quartz. 1% open cavities within the vein carbonate up to 15mm across. Traces finely disseminated pyrite, faint hematite and dark sulfosalt?; sulfosalts? mainly along margins of vein quartz masses.
Sample	62.75	64.00	11926
Sample	64.00	65.25	11927
Point	65.08		cream-colored carbonate (90%)-quartz (10%) vein 17mm wide @ 18°. quartz crystals lining vein margins; this vein quartz contains pyrite and sulfosalts and is often rimmed by bright green chlorite? band 1-2mm wide with faint margins.
Minor	67.50	68.00	probable fault; somewhat broken core.
Sample	69.00	69.40	11928
Point	69.17		pale gray quartz (85%) RQFP fragments (13%) off white calcite (2%) vein 9cm wide @ 40° to core axis contains 1% dusty brick red hematite disseminated throughout. No sulfides seen.
Minor	71.92	74.37	moderately brecciated; healed by 15% pale gray quartz; 3% brick red hematite and local traces cream colored vein calcite. Local traces pyrite and dark sulfosalt, most commonly along margins of quartz veins. Veins mainly @ ~15-20° to core axis.

TS05-100	From	To	Description
Sample	72.00	73.50	11929
Sample	73.50	75.00	11930
Minor	76.00	76.85	moderately brecciated; healed; moderately to intensely silicified by watery gray vein quartz; say 25-30% vein quartz over interval. 4% brick red hematite, traces very fine disseminated pyrite.
Sample	76.00	77.00	11931
Point	79.54		quartz veinlet 6mm wide @ 23° contains pyrite masses to 1.5mm across; and hematite spots with faint margins.
Survey	81.38		Acid test -45.5
Point	83.91		quartz vein 4cm wide @ 35° contains say 5% brick red hematite especially along margins.
Minor	84.43	85.23	weakly brecciated, very weakly silicified; 1% pyrite as sub-round blebs to 2mm and very finely disseminated.
Minor	86.95	87.30	moderately brecciated; healed by quartz (99%) and carbonate (1%). No sulfides seen within vein matrix material.
Minor	92.80	93.80	calcite (50%)-quartz (40%)-pyrite (2%)-hematite (trace) veinlet, 5mm wide sub-parallel to core axis.
Sample	92.80	93.80	11932
Point	95.89		watery gray quartz vein 3cm wide @ 40° contains 50% RQFP fragments.
Minor	99.42	99.77	bleached pale brown bands to 6cm wide @ ~45° to core axis as alteration envelopes along brecciated, healed irregular quartz-hematite veinlets.
Point	102.00		pale cream - brown bleached band 7cm wide @ 40° ;? possibly healed fault slip?.
Minor	102.94	108.00	moderately to intensely brecciated; RQFP fragments within rock flour matrix. Soft, easily scratched; not silicified.
Minor	104.00	109.70	FAULT; moderately broken and ground core; 2cm pale gray sandy gouge @ 104.02 m. Cannot determine orientation. 1cm light gray sandy gouge on fracture @ 15° to core axis at 105.62 m depth.
Point	109.70		finely broken core across 5cm; cannot determine fault orientation.
Point	112.20		FAULT; 5cm finely broken core; bleached pale cream color across ~1cm along margins; cannot determine orientation.
Minor	114.85	116.75	FAULT; moderately to finely broken core, cannot determine orientation.
Minor	117.50	117.96	bleached pale brown bands up to 8mm wide @ 60°-80°.
Point	117.80		Laminae @ 62° to core axis.
Minor	118.60	119.15	FAULT; finely to moderately broken core; cannot determine orientation.
Point	121.90		FAULT; 3mm sandy gouge on fracture @ 40°.
Minor	122.66	130.00	moderately broken to somewhat broken core; pieces average 2-5cm across. Probable fault/breccia zone.
Point	122.66		FAULT; 2cm finely broken, sandy core; cannot determine orientation.
Minor	130.00	131.37	FAULT; soft, finely crushed core and sticky, silty gouge between slips @ 21° to core axis.
Minor	131.37	132.10	moderately brecciated; healed by 4% pale orange vein calcite.
Minor	132.10	132.33	pale grayish green late igneous dyke @ 32°; Dyke soft, sheared; locally moderately clay altered. Likely implaced along fault structure.
Point	141.07		FAULT; 1mm sandy and silty gouge along fracture @ 11°.
Survey	142.34		Sperrysun -54°; 282°?
Point	145.20		FAULT; 2mm sandy gouge on irregular fracture at ~24°.

TS05-100	From	To	Description
Minor	154.60	158.10	brick red hematite pervasive hematite stain.
Minor	161.00	163.93	locally weakly brecciated and bleached pale cream brown; healed by 1% irregular, dark gray calcite (67%)-quartz (30%) pyrite (1%) sulfosalt (2%) veinlets.
Sample	161.00	162.50	11933
Point	161.75		FAULT?; 3cm finely broken core; cannot determine orientation.
Sample	162.50	164.00	11934
Point	162.58		mineralized veinlets ~5mm wide @ 20° with bleached envelopes.
Point	163.88		irregular quartz-calcite-sulfosalt-chlorite-hematite veinlets.
Major	164.08	183.58	LATE IGNEOUS DYKE; upper contact @ ~50°, somewhat irregular. Medium brownish gray, fine grained, weakly magnetic; off white subhedral feldspar phenocrysts average 1.5mm across. Say 0.5% grayish white calcite veinlets up to 4mm wide mostly @ about 40-60° to core axis. Lower contact @ 23°, discrete.
Sample	183.50	25.00	11935
Major	183.58	190.74	RQFP; somewhat bleached light grayish brown to locally medium reddish-brown, generally weakly brecciated, with brecciation increasing with depth. Overall 1% creamy white calcite and light gray quartz veinlets. Intensity of bleaching also increases with depth across interval. Traces disseminated pyrite throughout. Local traces dark sulfosalt? within quartz-calcite veinlets in lower half of interval. Lower contact @ ~35°; discrete and irregular intrusive contact.
Sample	185.00	186.50	11936
Sample	186.50	188.00	11937
Sample	188.00	189.50	11938
Point	188.60		FAULT; smear clayey gouge on slip @ 28°.
Point	188.88		FAULT; 2mm sandy and silty gouge along fracture @ 50°.
Sample	189.50	190.75	11939
Major	190.74	226.47	LATE IGNEOUS DYKE; as for 164-183.58 above. Pervasive carbonate traces through rock unit also carbonate filling amygdules and all veinlets stretch the filling amygdules and as veinlets up to 3mm wide, say 1% carbonate overall. Soft generally easily scratched with scribe. Weakly magnetic throughout, probably enough to affect Sperrysun test results. Interstitial carbonate ~absent below about 208 m depth.
Point	226.47		EOH
Survey	226.47		acid test -50
Survey	226.47		Sperrysun -51°; 272°
Sample	0.00	0.00	11925, blank

TS05-101

Logged by: Dave Pawliuk

started January 19, 2005 completed Jan 22nd 2005

Location: 52+48 E 45+36 N az 265°, inclination -45°

Purpose: Test above intercept in TS04-98; above sill.

TS05-101	From	To	Description
Major	0.00	3.05	CASING
Major	3.05	34.18	RQFP; brick red to 19.50m depth; below 19.50m depth rock light reddish gray to 36.3m and brick red again below 36.30m depth. Rock medium grained spotted by 2-4% blocky off white feldspar phenocrysts average 3mm; 2% watery gray subhedral quartz eyes average 4mm across; say 2% very finely disseminated hematite within matrix of brick red RQFP intervals. 1% irregular, often lenticular, off white to pale gray quartz (80%) -calcite (20%) veinlets and breccia veins up to 4.5cm wide (average ~3mm wide) and mostly @ ~30-50° to core axis. Traces-0.5% finely disseminated pyrite throughout. Orange-brown limonite coats fracture surfaces down to 32m depth. Rock unit say 3-5% lenticular to subround lapilli average 6-8mm across. Generally competent rock, good core recovery.
Point	8.24		cream-colored calcite (60%)-watery gray quartz (40%) vein, 6cm wide @ ~70° to core axis; calcite cements brecciated vein quartz.
Point	8.58		FAULT; 7mm very finely broken, soft crushed core and clayey gouge along fracture @ 30°.
Minor	9.15	9.70	weakly brecciated; healed by medium gray to grayish white vein calcite as irregular veinlets.
Point	13.89		FAULT; 5mm sandy gouge on fracture @ 30°.
Point	16.92		faint laminae @ 50°.
Point	19.42	19.89	FAULT; somewhat broken core. 3mm soft, sandy gouge along fracture @ 15° @ 19.7m depth.
Point	23.28		FAULT; 3mm sandy, limonitic gouge on fracture @ 37° to core axis.
Minor	24.80	29.32	weakly to locally moderately brecciated. 2-3% watery gray quartz veinlets often containing traces pyrite and bright red hematite.
sample	24.80	26.20	11940
sample	24.80	26.20	11941, dupe
Point	26.15		pale gray quartz vein 6cm wide @ 33°, brecciated and rehealed by silica. Traces pyrite and bright red hematite.
Sample	27.70	29.30	11943
Minor	27.74	27.98	moderately brecciated; weakly to moderately silicified; breccia band @ ~25° to core axis, contains 1% pyrite
Point	29.26		light gray quartz vein 5.5cm wide @ 30°; vein quartz brecciated and rehealed by later silica.
Minor	30.56	31.09	FAULT?; moderately to finely broken core; cannot determine orientation.
Minor	33.65	34.18	moderately to weakly brecciated; healed by pervasive silica flooding.
Sample	33.65	34.18	11944
Major	34.18	35.23	QUARTZ BRECCIA VEIN; say 60% wall rock RQFP fragments generally rounded, up to 12cm across within matrix of light gray vein quartz (35%) and creamy white calcite (5%). Upper and lower contacts @ ~40°. RQFP breccia fragments weakly to intensely silicified. Traces pyrite disseminated speckles within central few cm of breccia vein; these rimmed by very dark sulfosalt (?). Generally dry looking vein material. Photo taken.

TS05-101	From	To	Description
Sample	34.18	35.23	11945
Major	35.23	54.88	RQFP; medium brick red to grayish brick red, medium grained, spotted lapilli tuff. Weakly brecciated; healed by 4% pale gray to pale creamy brown calcite (90%)-quartz (10%) veins and veinlets generally at ~40° to core axis. These veinlets often have early margins of watery gray vein quartz with later infilling of vein calcite. Dry looking rock with only local, rare trace disseminated pyrite within vein material. Below 43.70m core becomes somewhat broken with average peice ~6cm length; Blocky drilling.
Minor	35.23	36.00	bleached light reddish gray RQFP.
Sample	35.23	36.03	11946
Major	54.88	61.03	LATE IGNEOUS DYKE; dark steel gray very fine grained weakly magnetic rock with say 1% carbonate pervasive throughout rock unit and also as irregular Orange-white calcite veinlets to 12mm wide. Broken core at upper contact-cannot determine orientation. Lower contact discrete @ 15°.
Minor	60.00	60.63	medium grayish brown dyke/partially assimilated RQFP xenolith.
Major	61.03	85.38	RQFP. Brick red; 1% quartz-calcite veinlets, traces disseminated pyrite.
Minor	61.63	62.15	Late igneous dyke. Dark gray, very weakly magnetic, say 2% pervasive and vein calcite. Dyke brecciated and healed along both upper and lower contacts, upper contact @ 25°, lower contact irregular @ approximately 55°. Dyke contains ~4% RQFP xenoliths.
Sample	64.50	65.50	11947
Minor	64.70	65.32	moderately brecciated interval healed by 35% light gray, mottled vein quartz and 0.5% late hairline off-white irregular calcite veinlets. Interval 65% RQFP fragments; most of the these are unaltered, sub-angular. Say 1/4 to 1/3 of RQFP fragments weakly to moderately silicified. Traces disseminated pyrite within lowermost 18cm of interval.
Sample	66.80	67.90	11948
Point	66.92		medium gray to creamy white banded quartz (80%)-calcite (20%) vein 5cm wide @ 40°. Contains rare traces chalcopyrite as faint disseminated masses to 1.5mm across with lesser amounts of dark sulfosalt (?).
Minor	67.32	67.90	moderately brecciated; 80% subangular to angular brick red RQFP fragments; 15% light gray mottled vein quartz and 5% brownish white, late, vein calcite. Breccia healed by vein quartz and calcite. Crude banding @ ~35° to core axis within breccia band. Traces disseminated hematite and rare pyrite disseminated within vein quartz.
Minor	67.90	69.43	weakly brecciated; healed by 2% calcite vein material.
Minor	69.43	73.90	dark brick red RQFP; 0.5% irregular calcite veinlets.
Minor	80.93	85.38	bleached pale grayish brown, sericite and clay altered envelope along faults
Point	83.66		FAULT; 7cm brownish white clayey gouge and sand size material; cannot be certain of orientation but possibly ~75° to core axis
Point	84.50		FAULT; 12cm finely to moderately broken core; cannot determine orientation.
Point	84.90		FAULT; 8mm sticky clayey gouge on slip @ 43°.
Major	85.38	86.15	LATE IGNEOUS DYKE; aphanitic brick red, soft, nonmagnetic dyke bleached pale brown across 4cm along fault contact with overlying RQFP. Lower Dyke contact intrusive @ ~30°.
Point	85.38		FAULT; 3mm brownish cream-colored, clayey gouge on smooth slip @ 45°.

TS05-101	From	To	Description
Major	86.15	134.56	RQFP dark brick red to maroon with 0.5% off-white calcite veinlets up to 6mm wide mostly @ ~40° to core axis. RQFP spotted, medium grained; local moderately well-developed banding @ 57°.
Minor	87.12	88.63	bleached pale brown with reddish streaks (disseminated hematite) parallel banding within RQFP. Soft sericite and locally carbonate altered RQFP within bleached interval, which is alteration envelope along faults.
Point	87.94		FAULT: 1mm sandy gouge on fracture @ 50°.
Point	88.46		FAULT: 2mm silty and sandy gouge on smooth fracture @ 40°.
Minor	88.53	89.68	somewhat broken core; possibly fault @ 89.10m where 2mm sand sized gouge (?) material along irregular fracture subparallel to core axis.
Minor	91.18	91.35	weakly brecciated; healed by 5% pinkish white calcite veinlets mostly @ ~50°. Pervasive weak hematite alteration across interval.
Point	95.76		FAULT(?): 2mm sandy gouge on fracture @ 37°.
Point	102.41		partially healed fault slip; smear silty gouge along margin of sheared quartz calcite vein 13mm wide @ 42°.
Minor	102.45	105.36	bleached pale greenish brown, soft sericite (?) - altered interval.
Point	103.32		finely banded medium gray quartz vein 13mm wide @ 50° contains say 3% dark dusty disseminated sulfide (pyrite?).
Minor	106.90	109.50	weakly bleached, light brown RQFP.
Point	107.30		FAULT: 18cm moderately broken core; fracture at top of interval @ 17° to core axis.
Minor	114.24	114.78	weakly bleached light reddish-brown RQFP.
Point	114.71		pale gray to brown (very fine disseminated hematite) quartz vein 13mm wide @ 52° with pervasively silicified and hematite altered envelope 3-5cm wide along both upper and lower vein contacts. Traces disseminated pyrite and hematite in clots up to 3mm across along vein margins.
Point	116.06		FAULT: 5mm light gray silty gouge on fracture at ~52°. Fault within weakly bleached light brown alteration envelope 40cm wide.
Survey	117.70		acid test; -40.5°.
Point	121.05		cream - white calcite vein 47mm wide @ 50°. Rare specs pyrite along vein margins.
Minor	122.20	123.05	bleached pale orange alteration envelopes up to 4cm wide along both upper and lower margins of about 11 pale gray calcite veinlets and veins up to 25mm wide; these veins at ~33° to core axis.
Point	123.00		FAULT: 1mm pale gray clayey gouge on smooth slip @ 33° along lower margin of brecciated and healed calcite vein.
Sample	127.00	128.00	11949
Point	127.46		mottled pale orange to grayish white calcite (95%) quartz (5%) vein 23mm wide @ 8° to core axis. Local traces disseminated pyrite along margins.
Sample	132.50	133.50	11950
Minor	132.55	133.52	moderately brecciated medium brownish green RQFP. Soft, weakly chlorite altered, cemented by 5% grayish white vein calcite.
Minor	133.78	134.15	LATE IGNEOUS DYKE: dark chocolate brown, aphanitic; somewhat irregular intrusive contact @ ~30°.
Minor	134.15	134.56	medium green, weakly chlorite (?) altered RQFP; soft.
Major	134.56	135.56	LATE IGNEOUS DYKE; chocolate brown, aphanitic, soft somewhat broken core. Upper contact fault marked by 2mm sand and silty gouge on fracture @ 28°. <0.5% calcite veinlets; non-magnetic.

TS05-101	From	To	Description
Point	135.10		FAULT: 13cm finely broken core and silty gouge between fracture @ ~50° to core axis
Major	135.56	137.46	RQFP? Nothing noted in log.
Major	137.46	144.78	LATE IGNEOUS DYKE: very fine grained dark green-grey; 0.5% late calcite veinlets; soft, weakly magnetic.
Point	144.78		END OF HOLE
Survey	144.78		Sperrysun: -40°inclination, 269°az.
Sample	0.00	0.00	11942. blank

TS05-102

Purpose: Test New Vein intercept near top of TS04-98

Start Jan. 22, 2005

Complete Jan. 25, 2005

Location: 52+34 E 45+14 N

Collar Orientation: 270°; -50°

Logged by: Dave Pawliuk

TS05-102	From	To	Description
Major	0.00	3.05	CASING
Major	3.05	41.60	RQFP; dark brownish to maroonish brick red; medium grained, faintly banded lapilli tuff 2-5% lenticular lapilli size clasts. Blocky to subrounded feldspar grains greenish white average 3mm across forms say 8% of rock volume. Dusty disseminated hematite throughout matrix colors rock brick red. Watery gray subhedral quartz crystals average 4-5mm across forms say 4% rock volume. 0.5% grayish white calcite (65%)-quartz (35%) veinlets, mostly @ 40-60° to core axis. Orange brown limonite coats fracture surfaces down to 24.50m depth; limonite also as disseminations. Generally hard, competent monotonous rock. Traces very finely disseminated pyrite throughout.
Point	10.80		Laminae @ 55° to core axis.
Sample	12.30	13.00	11951
Point	12.45		calcite (70%)-quartz (30%) vein 16mm wide @ 30° contains traces pyrite as blebby masses up to 2mm across along margins.
Point	12.80		quartz (85%) pinkish carbonate (?rhodochrosite) 15% vein 3cm wide @ 60° contains rare specs pyrite.
Point	19.39		calcite (off-white) vein 14mm wide @ 37°; no sulfides seen.
Point	24.86		FAULT. 5mm pale green silty gouge on irregular fracture @ 35°.
Minor	34.80	35.60	weakly bleached, light greenish brown interval. Alteration envelope along fault @ 34.97m marked by 2mm soft very finely broken core on fracture @ 32°.
Point	36.05		FAULT. 3mm silty gouge on fracture @ 67°.
Minor	39.40	44.35	somewhat broken core; pieces 6-7cm long.
Major	41.60	59.16	RQFP bleached light greenish brown, soft easily scratched with scribe. As for 3.05-41.60m above except rock unit here sericite altered and contains much less hematite. Bleached interval likely alteration envelope along fault.
Point	42.25		mottled off-white to cream-colored calcite vein 2cm wide @ about 12° to core axis; no sulfides seen.
Point	45.33		FAULT; 2mm light gray sticky clayey gouge on smooth slip @ 51° to core axis.
Point	49.15		FAULT; 20cm moderately to finely broken core between fracture @ ~50°.
Point	49.51		pale gray to off-white calcite vein 2cm wide @ 40°; no sulfides seen.
Point	50.54		FAULT; 6cm finely broken sand sized core; cannot determine orientation.
Point	51.58		FAULT; 15cm moderately broken core; fracture @ bottom of interval @ ~30° to core axis.
Sample	56.00	57.00	11952
Point	56.39		medium gray calcite veinlet 5mm wide @ 48° contains say 4% pyrite masses.
Point	56.52		Pale gray quartz (90%)-calcite (10%) veinlet 7mm wide @ 40° contains traces disseminated pyrite.
Sample	57.00	58.00	11953
Sample	58.00	59.16	11954

TS05-102	From	To	Description
Point	58.36		irregular mass vein calcite (70%)-quartz (28%) hematite (1%)-pyrite (1%) 10mm wide by 50mm long. Early pale gray vein quartz with later off-white calcite infilling; bright brick red hematite disseminated bands and disseminated pyrite masses within (later) vein calcite.
Major	59.16	70.78	LATE IGNEOUS DYKE, medium greenish gray, very fine grain, faintly porphyritic; often weakly magnetic, 0.5% gray white calcite veinlets up to 8mm wide mainly @ ~45° to core axis. Soft rock, easily scratched with scriber. Few cm broken core at upper contact, likely fault; cannot determine orientation. Lower contact discrete @ 20° with pale brown chill margin 5cm wide.
Minor	64.10	65.40	dyke rock altered to pale grayish brown color; alteration envelope along faults.
Point	64.69		FAULT; 7mm fine sandy gouge on fracture @ ~40°.
Point	64.78		FAULT; 7cm finely broken core; cannot determine orientation
Major	70.78	105.77	RQFP; dark brick red brown to medium brown, spotted by blocky feldspar phenocrysts average 3-4mm across and gray quartz eyes. Generally competent rock. 0.5% off-white calcite (85%) quartz (15%) veinlets average about 3mm wide and between 40-55° to core axis. Local trace very fine disseminated pyrite. Lenticular to round lapilli of felsic to intermediate composition up to 5cm across; lapilli average ~8mm across.
Sample	70.78	71.80	11955
Minor	71.40	74.74	bleached pale brown, soft, weakly to moderately sericite altered. 1% calcite veinlets usually irregular and lensoid with traces dusty disseminated hematite and pyrite within veinlet calcite.
Sample	71.80	72.80	11956
Sample	72.80	73.80	11957
Sample	73.80	74.80	11958
Minor	74.16	74.58	moderately brecciated, healed by brownish white to medium gray calcite (60%) and pale brownish gray vein quartz (40%); vein calcite mostly as later infilling of centers of veins. Vein quartz crystals usually line vein margins. 1% very fine disseminated pyrite and 2% dark sulfosalts? (or hematite?) within grayish vein calcite.
Point	78.32		off-white calcite (70%)-quartz (30%) vein 15mm wide @ 41°
Point	78.98		mottled pale gray to medium brown quartz vein 24mm wide @ 32° contains traces disseminated hematite and pyrite
Point	80.24		FAULT, smear pale gray gouge on smooth slip @ 44°.
Point	89.26		calcite breccia vein 20mm wide @ 58° contains 30% lenticular RQFP xenoliths / fragments oriented parallel vein margins.
Survey	102.41		acid test -42.5° (note this test result to be rechecked)
Point	103.89		pale gray quartz (10%) calcite (90%) vein 15mm wide @ 22° contains 1 speck pyrite.
Point	104.42		FAULT; 2mm soft waxy, pale green, finely crushed core on slip @ 40°; within pale brown bleached alteration envelope 20cm wide.
Point	105.77		END OF HOLE.
Survey	105.77		Sperrysun: 271° inclination, -45° dip

TS05-103

Purpose: Test Tommy Vein position in footwall of sill below TS95-14

Location: 51+72E 48+64N Collar Orientation: azimuth 265°; inclination -53°

Started: January 25, 2005 Completed: January 29, 2005

Logged by: Dave Pawliuk

TS05-103	From	To	Description
Major	0.00	3.05	CASING
Major	3.05	70.26	RQFP; medium brownish to medium greenish maroon with local light greenish brown to light brownish green intervals. Rock spotted by 10% pale greenish blocky feldspar grains average 3-5mm across. Say 2% watery gray subrounded quartz eyes average 5-6mm across. 3% lenticular to subrounded lapilli average 10 mm across. < 0.5% greyish white calcite veinlets, mostly at 40-50° to core axis. Rock unit has faint greenish cast throughout; can generally be scratched with scribe. Blocky ground. Dusty disseminated hematite within ash tuff matrix give rock maroon colour. Local traces very finely disseminated pyrite. Orange-brown limonite coats weathered fracture surfaces above 20.40 m; limonite also finely disseminated with patchy masses above 20.40 m. Note - below ~55 m feldspar crystals light gray with dusty dark disseminated hematite (?) throughout, rather than off-white and soft, weakly sericite altered as seen higher in the hole.
Point	9.32		Fault; 5 mm soft, finely crushed, sandy material on fracture @ 53°.
Point	11.86		Fault; 7 mm sandy, finely broken gouge on fracture @ 42°.
Point	13.54		Fault; 10 mm soft, finely crushed fracture @ 35°.
Point	19.57		Fault; 15 mm finely crushed core along fracture @ 19°.
Minor	20.95	22.06	LATE IGNEOUS DYKE; dark gray aphanitic to very fine grained, very weakly magnetic. Upper contact discrete @ 43°; lower contact discrete but irregular @ ~35°. Dyke cross-cut by ~0.5% greyish white calcite veinlets up to 3mm wide.
Point	23.22		mottled pale gray to off-white quartz vein 8mm wide @ 30° with black altered selvages 2-4mm wide within RQFP wallrock. Pyrite blebs to 4mm along margins of quartz vein.
Point	25.39		Orange alteration halo up to 20mm wide along margins of veinlet of waxy soft green mineral; veinlet 2mm wide @ 40°.
Point	30.24		Fault; 18 cm finely to moderately broken core; cannot determine orientation.
Minor	32.58	33.90	weakly brecciated; healed by 2% irregular, off-white calcite veinlets.
Point	32.58		Fault; 4 mm silty gouge and finely crushed core on fracture @ 50°.
Point	35.83		Fault; smear sandy gouge on irregular fracture @ ~30°.
Point	39.52		Mottled grayish white quartz (50%) - calcite (50%) vein 10mm wide @ 38° contains traces dark dusty disseminated hematite (?) along margins.
Point	42.40		laminae @ 55°.
Point	45.96		mottled pale gray to pale orange carbonate (85%) - quartz (15%) vein 10mm wide @ 40°; vein brecciated and re-healed by later carbonate.
Minor	47.83	49.40	bleached light brown-green interval; gradational contacts with adjacent RQFP. Relatively soft weakly sericite - altered.

TS05-103	From	To	Description
Point	48.84		lensoid mass 25mm by 5mm granular medium gray vein quartz contains dusty disseminated sulfosalts (?) and pyrite.
Point	48.97		banded off-white to light greenish gray granular quartz vein 15mm wide @ 53°; no sulfides seen.
Minor	51.55	52.70	very weakly bleached and weakly brecciated with 1% medium gray carbonate veinlets containing dusty disseminated hematite especially along margins.
Sample	55.50	57.00	11959
Sample	55.50	57.00	11960, duplicate.
Minor	55.55	56.92	very weakly brecciated; healed by 0.5-1% dark gray carbonate veinlets containing dusty disseminated hematite (?) and pyrite.
Point	67.13		Fault; 18 mm soft finely crushed core and clayey gouge on slip @ 55°.
Major	70.26	253.04	MICRODIORITE SILL; medium gray, very fine grained, locally very weakly magnetic, uniform rock unit. 0.5% off-white calcite veinlets to 80.0m depth; and below 113.5m depth. Between 80.0m and 113.5m only rare calcite veinlets. Rock spotted by white calcite filled amygdules throughout- these comprise up to 0.5% rock volume. Fine black biotite flakes throughout; rock is sugary, finely granular. Upper contact discrete @ 64°.
Minor	71.24	71.55	RQFP xenolith; RQFP moderately fractured.
Point	74.00		Fault; 5mm finely crushed sandy gouge on fracture @ 25°.
Point	76.13		Fault; 6mm sandy gouge on hematite coated fracture @ 13°.
Point	91.90		Fault; 5cm finely broken core; fault probably @ -65°.
Minor	100.86	106.02	Fault; somewhat broken to moderately broken core with 20 cm sandy gouge and finely broken core along fractures @ 30° at top of fault interval at 100.86m depth. 12 cm finely crushed core along fracture @ -18° to core axis at 106.02m depth. Finely crushed rock moderately altered to pale greenish clay but otherwise broken rock within fault interval relatively unaltered, - there doesn't appear to have been a large amount of fluid movement along the structure.
Point	113.97		Fault; 18 cm moderately broken and very weakly clay - altered core between fractures @ 50°.
Minor	120.73	120.97	probable fault; moderately brecciated.
Minor	124.63	125.27	Fault; moderately broken core along fracture @ ~70° to core axis.
Minor	136.48	137.61	moderately broken core.
Point	136.48		Fault; 2 mm sandy gouge along fracture @ 58°.
Survey	138.99		Sperrysun inclination -43°; azimuth 274°
Survey	138.99		acid test -41.5° corrected inclination.
Point	146.55		off-white to greenish carbonate veinlets 7mm wide @ 37°.
Point	177.69		banded pale gray carbonate veinlets 8 mm wide @ 40°. Hairline, reddish black hematite (?) bands within the central 3rd of carbonate veinlet; these hematite (?) bands parallel margins of veinlet.
Point	182.18		Fault; 2 cm soft crushed core and gouge along irregular fracture @ -40°.
Point	200.67		calcite (90%) - quartz (8%) - chlorite (2%) - hematite (trace) - pyrite (trace) banded vein 12mm wide @ 45°.
Point	201.48		Fault; 5 mm soft, finely crushed core and silty gouge on fracture @ 38°.
Point	222.85		Fault(?); moderately fractured across 15 cm; healed by 2% off-white vein calcite.
Survey	223.72		acid test -37.5°.
Survey	223.72		Sperrysun -43° inclination 277° corrected azimuth.

TS05-103	From	To	Description
Point	238.85		Fault, smear sandy gouge on hematite-coated fracture @ 11°.
Sample	253.00	254.00	11962
Major	253.04	260.91	RQFP; medium brownish gray with faint greenish cast. Rock spotted by rounded light gray quartz eyes average 4-6mm across forming ~5% rock volume. Blocky feldspar grains average say 3 mm across, subhedral, form 8-10% rock volume. These feldspars off-white at bottom of hole, and generally weakly to moderately altered to green chlorite in upper 2/3 of interval adjacent to intrusive contact with overlying sill. Light gray quartz veinlets to 4mm wide @ 45° to core axis form 1% rock volume local elongate masses of brick red hematite occur within quartz veinlets; <0.5% off-white calcite veinlets. Nonmagnetic. 3% subrounded to lenticular lapilli.
Point	253.04		discrete contact with underlying RQFP @ ~40° to core axis; Microdiorite black, glassy across 2cm chilled margin at contact.
Minor	253.38	253.82	moderately brecciated; healed by 20% pale gray vein quartz and 5% brownish cream colored carbonate. 4% brick red hematite as lensoid masses averaging few millimeters across within vein material and as selvages along vein margins. No sulfides seen. Some moderately silicified RQFP fragments within central third of brecciated interval.
Sample	254.00	256.00	11963
Minor	254.09	254.68	Microdiorite Dyke @ 42° with RQFP xenoliths up to 7+ cm across; chilled margins.
Point	255.88		banded hematite (60%) - calcite (30%) - quartz (10%) veinlets upto 8mm wide @ 36°; no sulfides seen.
Point	260.91		END OF HOLE.
Survey	260.91		acid test -35°. Corrected inclination.
Survey	260.91		Spemysun; azimuth 278°; inclination -41°
Sample	0.00	0.00	11961, blank

TS05-104

Purpose: Test Tommy Vein structure below sill (redrill of TS05-103 at steeper angle).

Started: Jan. 29, 2005 Completed: Feb. 3, 2005

Location: 51+72 E 48+64 N Collar Orientation: azimuth 265°; inclination -58°

Logged by: Dave Pawliuk

TS05-104	From (m)	To (m)	Description
Major	0.00	2.45	CASING
Major	2.45	25.00	RQFP; medium brownish maroon to brick red to light orange brown spotted by 10% creamy white blocky feldspar grains and 4% watery grey quartz eyes. 3% rounded lapilli up to 6 cm across. Weathered rock unit with orange-brown limonite coating fracture surfaces throughout. Limonite also as faint disseminated envelopes along fractures. Generally somewhat broken core. No sulfides seen.
Point	15.35		moderately brecciated band 12 mm wide @ 16° -healed by sand-sized crushed rock and limonite.
Point	18.27		FAULT; 4 mm sand and silt sized limonitic gouge along fractures @ 45°.
Minor	18.52	18.82	probable fault; moderately to finely broken core; cannot determine orientation.
Point	23.80		FAULT; 4 mm sandy limonitic gouge along fractures @ 31°.
Major	25.00	64.34	RQFP; medium greenish maroon to light greenish gray, spotted by 10% pale green blocky feldspar grains. Only local traces brownish orange limonite along weathered fracture surfaces. Traces very finely disseminated pyrite. < 0.5% off-white calcite veinlets.
Minor	26.22	27.94	LATE IGNEOUS DYKE; medium gray, very fine grained, moderately magnetic, crosscut by 0.5% off-white calcite veinlets. Broken core at both upper and lower contacts; cannot determine orientation.
Point	28.80		Late igneous dykelet 6 cm wide @ -50° to core axis.
Point	33.91		mottled light gray quartz (90%) - creamy carbonate (10%) breccia vein 4 cm wide @ 35° contains traces dark sulfosalts or hematite along margins of RQFP fragments within breccia vein.
Point	35.24		FAULT; 3 mm greenish sandy gouge on fracture @ 30°.
Point	36.37		FAULT; 8 mm soft, finely crushed core and gouge on slip @ 32°.
Point	40.30		faint banding @ 60°.
Point	45.80		FAULT; 2 cm finely broken, sandy core; cannot determine orientation.
Point	50.00		FAULT; 20 cm finely broken core; cannot determine orientation.
Point	55.75		off-white calcite vein 11 mm wide @ 37°.
Minor	60.75	62.23	fault (?); somewhat broken core, soft, finely crushed core along slips @ 58° and also subparallel core axis. Local 2% off-white calcite veinlets across 4cm cementing weakly brecciated intervals.
Minor	63.28	63.68	MICRODIORITE DYKE; lower contact @ -46° to core axis.
Major	64.34	232.05	MICRODIORITE SILL; generally medium gray with local dark gray to black patches very fine grained, sugary texture with finely disseminated bright black biotite flakes throughout. Competent, soft rock, easily scratched with scribe. < 0.5% off-white calcite veinlets. Weakly magnetic, discrete intrusive. Contact at top of sill ~ 39°; black glassy chilled margin 1 cm wide. Chilled margin bleached light brown across 10mm along lower contact @ 32°.
Minor	68.00	68.17	RQFP xenolith.
Minor	69.44	70.34	moderately fractured RQFP xenolith with dark green chlorite coating fracture surfaces.

TS05-104	From (m)	To (m)	Description
Point	93.17		mottled calcite vein 8mm wide @ -12° contains green chlorite (?epidote) along margins; No sulfides seen.
Point	98.42		banded greenish white calcite vein 15mm wide @ 18° contains traces disseminated hematite; No sulfides seen.
Point	101.83		banded light green calcite vein 13 mm wide @ 24°; traces disseminated hematite. No sulfides seen.
Point	103.73		Fault; smear dark chloritic gouge on smooth slip @ 55°.
Point	107.75		Fault(?); 6 cm weakly brecciated sill rock cemented by vein calcite between fractures @ -51°.
Minor	116.16	123.14	Fault Zone; moderately to locally finely broken, crushed core along fractures mainly oriented -35° to core axis
Minor	118.30	119.53	1% off-white calcite veinlets; these veinlets broken by later fault movements. No silicification nor appreciable clay mineral alteration has occurred along this fault structure similar to fault observed within sill in hole TS 05-103.
Minor	122.07	123.14	soft, finely to moderately crushed interval between fractures @ 30° - 37° to core axis.
Minor	124.39	124.64	Fault; soft finely crushed core between fractures @ 40°.
Survey	126.49		acid test -53.5°corrected inclination.
Minor	127.53	128.02	several fault slips @ ~45°, somewhat crushed core.
Point	146.32		Fault; smear sandy gouge on fracture @ 37°.
Point	161.12		Fault(?); thin smear sandy gouge on fracture @ 27°.
Minor	161.24	162.15	Ground core; 43 cm recovered; possible fault.
Point	162.76		Fault; 23 mm silty and sandy gouge on fracture @ 45°.
Minor	163.82	164.29	Fault(?); moderately broken core; cannot determine orientation.
Minor	166.48	167.30	Fault; soft, crushed, moderately broken core between fractures @ 40° to core axis.
Minor	169.10	188.00	light brown-gray microdiorite with rounded xenoliths of medium greenish gray very fine grained andesitic rock - these locally are subangular and have the appearance of lapilli-definite fragmental texture.
Survey	187.76		acid test; -51°corrected inclination.
Survey	190.80		Sperrysun; -56°/271°azimuth.
Point	213.36		Fault; thin smear clay gouge on fracture @ 32°.
Point	214.39		Fault; 2 mm clayey gouge on fracture @ 42°.
Point	214.68		Fault; 1 mm silty gouge on fracture @ 30°.
Major	232.05	314.35	RQFP medium to dark maroon-brown with local light brownish brick red intervals. Faint banding @ 60° to core axis. Say 2% subrounded to angular lapilli upto 5cm across. < 0.5% pale gray quartz-calcite veinlets, veins generally @ ~20-40° to core axis. These veinlets usually contains traces medium green chlorite along selvages and traces dark gray to brick red hematite; rare spec disseminated pyrite.
Sample	232.05	233.05	11964
Point	232.47		lensoid pale gray quartz veinlet up to 5 mm wide @ 40° contains 2% blebby pyrite masses up to 4 mm across, traces hematite and chlorite.
Sample	233.05	234.55	11965
Sample	234.55	235.55	11966

TS05-104	From (m)	To (m)	Description
Point	234.88		pale brownish gray quartz (95%) - calcite (5%) vein 10 mm wide @ 15° to core axis with 1% dark gray sulfosalt (?) or hematite as wispy short hairline veinlet material along quartz-calcite vein margins. Rare traces chlorite.
Minor	235.30	235.60	2% dark gray hematite (?) - calcite veinlets average 2mm wide @ -75° to core axis.
Minor	236.50	236.73	3% dark gray hematite (?) - calcite veinlets 3mm wide mainly @ 55°; local 5% brick red hematite within these veinlets.
Minor	238.50	239.90	weakly brecciated; healed by 0.5% pale gray, irregular quartz-calcite veinlets upto 4mm wide. Traces dark gray hematite or chlorite along margins. No sulfides seen.
Sample	238.50	239.90	11967
Point	240.56		Fault(?): thin smear gouge along fracture @ 50°.
Sample	241.75	242.25	11968
Point	241.98		mottled pale brownish gray quartz (60%) - calcite (40%) vein 15mm wide @ 15° to core axis; contains traces hematite and chlorite.
Point	243.58		brownish white calcite vein 8mm @ 22°; no sulfides seen.
Minor	244.90	245.68	possible fault subparallel to core axis; somewhat broken core.
Point	245.85		reddish maroon hematite (70%) - calcite (30%) veinlet 8mm wide @40°; no sulphides seen.
Point	253.5		banding @ 58° to core axis.
Point	253.91		Fault; smear sandy gouge on fracture @ 22°.
Point	257.68		light gray quartz vein 5 mm wide @ 42° to core axis; contains 3% white vein calcite and traces very finely disseminated pyrite.
Minor	259.8	259.98	6% off-white calcite veins up to 10 mm wide @ 55° to core axis; no sulfides seen.
Point	265.13		pale gray quartz (60%)-pale creamy pink calcite (40%) veinlet 3mm wide @ 11° to core axis; no sulfides seen
Sample	265.5	266.5	11969
Point	266.02		pale gray quartz (95%) - creamy white calcite (5%) vein 14 mm wide @ 42° contains traces waxy green chlorite (?) along margins. Local traces dusty disseminated red hematite within vein.
Point	266.1		off-white, irregular quartz breccia vein ~20 mm wide @ -30° to core axis; no sulfides seen.
Minor	269.9	272	bleached light greenish gray, weakly sericite-altered RQFP.
Sample	270	271.5	11970
Point	270.28		creamy white calcite (80%) - pale gray quartz (20%) vein 15mm wide @ 45°; no sulfides seen.
Point	270.72		Fault; 13 mm soft finely crushed core and silty gouge on fracture @ 34°. Bleached sericite-altered interval, likely alteration envelope, along this fault structure.
Point	270.95		weakly brecciated across 8cm: healed by 3% irregular pale gray quartz veinlets; no sulfides seen.
Point	276.12		weakly brecciated band 25mm wide @ 35° healed by 10% pale gray vein quartz; no sulfides seen.
Survey	276.45		acid test: -53°corrected inclination.
Point	279.67		pinkish cream colored calcite (60%) - pale gray quartz (40%) vein 25mm wide @ 24° contains local traces dusty disseminated hematite.
Sample	283.5	284.5	11971

TS05-104	From (m)	To (m)	Description
Point	283.62		breccia vein 10cm wide @ 33° to core axis contains ~75° subangular fresh looking RQFP fragments. Breccia cemented by greyish white vein calcite; traces medium green chlorite along the vein margins. No sulfides seen.
Point	283.89		breccia vein as above except 3cm wide @ 43°. Rare pyrite grains up to 0.75 mm across.
Point	284.37		mottled light gray quartz (70%) - cream-colored calcite (27%) - green chlorite (3%) vein material forms ovoid mass 5 x 8 cm across. Two small masses disseminated chalcopryite ~2 mm across seen within silicified RQFP xenolith within vein material. Otherwise local traces disseminated pyrite along margins.
Point	296.07		fault; 4 mm light greenish gray, silty gouge on fracture @ 85°.
Point	299.5		Fault; smear sandy gouge on fracture @ ~28°.
Minor	300.7	301.08	weakly brecciated; healed by 1% off-white, irregular calcite-quartz veinlets; no sulfides seen.
Sample	301.7	302.8	11972
Minor	301.73	302.8	as above, except for light gray quartz (75%) - calcite (25%) veinlet 7mm wide @ 35° to core axis at 302.61m contains traces dusty disseminated reddish maroon hematite and rare by disseminated pyrite.
Minor	303.77	304.4	weakly to moderately brecciated; healed by 4% creamy white calcite (95%)-pale gray quartz (5%) veinlets. Rare traces chlorite along margins; no sulfides seen.
Sample	306.6	307.6	11973
Point	306.7		Vein 23 mm wide @ 36° to core axis. Pale gray quartz (99%) - calcite (1%), contains 0.5% combined dark blue sulfosalt (mainly as subround masses up to 4 x 2 mm across), grayish sphalerite (subround mass ~2mm across) rimmed by dark sulfosalt and chalcopryite (mainly as irregular branching masses up to 1.5mm across) within or along margins of sulfosalt masses.
Point	307.39		irregular banded calcite (70%) - quartz (25%) - chlorite (5%) veinlet 7mm wide @ ~25° contains local traces dark sulfosalt along margins.
Point	312.16		pale gray faintly banded quartz vein 16mm wide @ 45°; local traces white calcite; no sulfides seen.
Minor	313.03	314.35	weakly brecciated; healed by 1% pale gray quartz (85%) - white calcite (15%) irregular veinlets; no sulphides seen.
Sample	313.03	314.35	11974
Minor	314	314.35	faintly bleached, medium gray brown RQFP.
Major	314.35	314.68	QUARTZ VEIN; mottled pale gray to creamy white to pink to medium gray; quartz (94%) - RQFP fragments (5%) - calcite (1%) - pyrite (traces very fine disseminated) - hematite (traces, dusty disseminated brick red). Upper vein contact discrete @ 40°; lower contact discrete @ 47°. Vein has been brecciated and re-healed by silica and calcite. Local traces dusty disseminated dark sulfosalts within bands up to 8 mm wide with faint margins. Photo taken.
Sample	314.35	314.68	11975
Major	314.68	328.27	RQFP as for 232.05 - 314.35 above.
Minor	314.68	315.18	Weakly brecciated; healed by 3% quartz-calcite irregular veinlets containing rare speck disseminated pyrite.
Minor	314.68	314.8	moderately silicified RQFP contains traces finely disseminated pyrite.
Sample	314.68	315.18	11976
Sample	315.18	316	11977
Sample	316	317	11978

TS05-104	From (m)	To (m)	Description
Sample	318	319.5	11979
Sample	318	319.5	11980 duplicate
Minor	318.6	319.24	five pale gray quartz veinlets @ -37° to core axis form 2% rock volume; weakly brecciated RQFP with irregular wispy dark sulfosalt veinlets; these sulfosalt veinlets both crosscut and are crosscut by the quartz veinlets. Local traces sulfosalt and pyrite as faint disseminated masses within the quartz veinlets.
Point	320.96		finely banded light gray quartz vein 14 mm wide @ 40°; no sulfides seen.
Minor	322.06	322.18	weakly brecciated; healed by 1% irregular interbranching network of calcite and dark sulfosalt veinlets. Traces pyrite as blebs up to 1.5 mm across.
Minor	323.85	324.01	moderately brecciated; healed by 2% irregular calcite-quartz veinlets; no sulfides seen.
Sample	325.8	327.4	11982
Point	326.1		pale gray quartz veinlet 6mm wide @ 70°; no sulfides seen. Wallrock RQFP bleached light orange brown across 2cm alteration envelope.
Point	326.56		pale gray quartz vein 8mm @ 30° contains traces dark sulfosalt; light brown bleached envelope ~5mm wide
Point	326.89		banded pale gray quartz (70%) - creamy white calcite (30%) veinlet 8mm wide @ 22° contains traces chlorite, dark sulfosalt and disseminated pyrite along margins; no bleached envelope.
Point	327.26		pale gray quartz veinlet 8mm wide @ 30° contains 10% angular RQFP fragments. No sulfides seen; no bleached alteration envelope.
Point	328.27		end of hole.
Survey	328.27		Sperrysun 276°; -47.5° inclination.
Sample	0	0	11981 blank

TS05-105

Purpose: To test Tommy Vein structure below sill

Location: 51+34 E 50+24 N Collar Orientation: azimuth 266°, dip - 61

Started: Feb 3, 2005

Completed: Feb 6, 2005

Logged by: Dave Pawliuk

Interval	From (m)	To (m)	Description
Major	0.00	1.54	CASING
Major	1.54	23.91	RQFP; light grayish brown with local medium brown-maroon patches. Generally weakly sericite altered, can be scratched with scribe. Orange limonite coats fracture surfaces throughout, often moderately fractured. Say 2% subrounded lapilli average ~8 mm across. Faint pale cream blocky feldspar grains 5-8% rock volume. Say 1% very fine disseminated hematite throughout siliceous matrix. Say 3% watery gray subhedral quartz eyes. No quartz calcite veinlets seen-unusual. Somewhat broken core 1.54 - 4.11 m.
Point	6.25		Fault; 1 mm silty, limonitic gouge on smooth fracture @ 32°.
Minor	6.92	12.60	somewhat broken core.
Minor	12.50	14.20	weakly to moderately brecciated; healed by 3% limonite and silica (?).
Sample	12.50	14.20	11983
Point	16.00		feldspars weakly chlorite-altered and also contains traces dusty disseminated hematite.
Point	23.00		banding at ~70°.
Major	23.91	169.46	MICRODIORITE SILL; medium gray, fine-grained, sugary, non-magnetic monotonous rock. < 0.5% off-white calcite veinlets, traces carbonate throughout. Bright black biotite flakes throughout.
Point	23.91		Lower RQFP contact @ ~80° with underlying sill.
Point	36.70		Fault(?); thin smear chloritic gouge along fracture @ 10°.
Minor	59.89	60.18	dark greenish gray-black, strongly magnetic band @ 67° to core axis. Probably xenolith as chilled margin is within sill at both upper and lower contacts. Dark xenolith(?) -andesitic composition; haven't seen anything similar to this on property.
Point	67.81		Fault; 25mm pale gray silty gouge and very fine broken core along fracture @ 42°.
Point	68.49		Fault; 18cm finely crushed sandy core, light grey-green, between fractures @ 50°.
Point	70.05		off-white calcite vein 12 mm wide @ 22° contains traces limonite and rare speck of pyrite.
Point	70.41		off-white calcite vein 16 mm wide @ ~40° emplaced along fault slip with thin smear silty limonite gouge.
Minor	81.38	84.43	Ground Core; core piece ~30 cm long dropped from tube and then redrilled at top of this run.
Minor	112.06	114.91	pale brownish-cream coloured carbonate vein average ~18mm wid, parallel core axis; local later infilling of vein centre by medium brown carbonate. No sulfides seen.
Survey	121.01		acid test; corrected inclination -54°

Interval	From (m)	To (m)	Description
Major	169.46	206.63	RQFP; medium gray-brown to dark brown, spotted by 5% watery gray subrounded quartz eyes average 4-5mm across. Blocky, pale brown feldspar phenocrysts average 3-4mm across form 8% of rock volume. 0.5% light gray to dark metallic blue veinlets throughout composed of ~45% carbonate 45% quartz and local 10% dark blue hematite and magnetite; local traces chlorite along margins of veinlets; rare speck pyrite. Veinlets generally lensoid, irregular and offset by small slips. Overall RQFP has greenish cast due to pervasive weak chlorite alteration of feldspars.
Point	169.46		discrete intrusive contact @ 42° with underlying RQFP. Chilled margin ~1cm wide within sill.
Sample	169.46	170.66	11984
Sample	170.66	172.16	11,985
Point	170.77		calcite (75%) - magnetite (20%) - hematite (5%) vein; 7 mm wide @ 13° offset by small slip @ 72° to core axis.
Minor	171.05	172.00	weakly brecciated with say 4% green chlorite along irregular discontinuous arcuate fractures. Bleached pale pink-brown alteration envelopes to say 6 mm wide along lensoid hematite veinlets within this interval.
Point	171.05		healed breccia band 3 cm wide @ 80° to core axis contains 30% light gray vein quartz fragments. No sulfides seen.
Sample	172.16	173.66	11,986
Point	172.53		Fault; 1 mm sandy gouge on irregular fracture at -20° to core axis.
Point	172.78		moderately silicified RQFP across 8 cm. Traces disseminated pyrite along margins of siliceous patches.
Point	172.86		banded pale gray quartz (85%) - hematite (10%) - chlorite (5%) pyrite (trace) veinlet 6 mm wide @ 20°. Hematite as late in filling of central portions of veinlet.
Point	173.43		light gray quartz veinlet 5 mm wide @ 14°.
Sample	173.66	177.66	11,987
Point	174.38		moderately silicified and moderately brecciated healed band 3 cm wide @ 30° contains traces disseminated pyrite throughout.
Point	187.92		Fault; 6 mm pale gray clayey gouge and sand-sized material on fracture @ 46°.
Minor	188.50	189.17	Fault; moderately broken core with sandy and clayey gouge along fracture surfaces at ~42°.
Minor	193.35	195.75	1-2% pale gray quartz veinlets 20-40° to core axis.
Point	193.58		wormy pale gray quartz veinlets ~5 mm wide @ 40° contains traces disseminated pyrite and wispy sulfosalt.
Sample	194.30	195.75	11,988
Sample	197.60	198.70	11,989
Minor	197.65	198.49	moderately brecciated; healed by 45% light greenish gray vein quartz; upper contact @ 45°, lower contact @ 35°. ~0.5% off-white calcite.
Sample	199.40	200.90	11,990
Minor	199.44	205.90	weakly to locally moderately brecciated; healed by 3% light greenish gray quartz veinlets and 0.5% cream colored carbonate. Local traces dusty disseminated red hematite; rare speck pyrite; bleaching within interval increases with depth.
Point	199.96		quartz-carbonate breccia vein 35mm wide @ 30° contains 50% RQFP fragments. Carbonate likely rhodochrosite; no sulfides seen.

Interval	From (m)	To (m)	Description
Sample	200.90	202.40	11,991
Sample	202.40	203.90	11,992
Sample	203.90	204.90	11,993
Sample	204.90	205.90	11,994
Point	205.22		pale pinkish gray quartz (70%) -carbonate (30%) vein; 15mm wide @ 32° contains traces dusty disseminated dark blue metallic mineral (? sulfosalt or hematite).
Minor	205.90	206.63	intensely brecciated, moderately bleached interval healed by grayish white vein quartz and patchy pervasive silica. Say 5% medium gray intensely silicified RQFP fragments; ~6% orange-brown RQFP fragments; RQFP otherwise pale brownish gray. Light gray quartz veinlets crosscut by pale orange-gray quartz-carbonate veinlets; both sets of veinlets ~30° to core axis. Traces dark metallic very fine dusty disseminated mineral (? sulfosalt or hematite). No pyrite seen.
Sample	205.90	206.60	11,995
Sample	206.60	207.70	11,996
Major	206.63	209.00	TOMMY VEIN; faintly mottled off-white to pale gray with local pink-red patches that have faint margins. Vein material 95% quartz, 5% carbonate; traces-0.5% dusty disseminated red hematite; local traces dark bluish sulfosalt as spotty disseminations mostly along discontinuous arcuate fractures. Upper contact @ -90°, lower @ 41°.
Sample	207.70	208.20	11,997
Minor	207.73	208.00	1% dusty disseminated hematite as irregular patches up to 15 mm across with faint margins.
Point	207.93		veinlet 1.5mm wide @ 27° contains ovoid chalcopyrite pyrite masses up to 1mm across rimmed by dark sulfosalt (?); this veinlet crosscuts area 12 mm across of red disseminated hematite within Tommy Vein quartz.
Sample	208.20	209.00	11,998
Major	209.00	254.51	RQFP; medium grayish brown to light brownish gray to medium brick red colour, generally with faint greenish cast due to chlorite (?) alteration of feldspar grains. Local banding @ 60°. Average 3% lapilli mostly subround; lapilli average ~8mm across, maximum 11cm. Local intervals to 2m wide of somewhat broken core; generally competent rock with good recovery. Average 0.5% off-white to pale gray calcite-quartz veinlets, irregular, lensoid, randomly oriented.
Minor	209.00	210.50	weakly brecciated, healed by pale gray-brown quartz veins and veinlets.
Sample	209.00	210.50	11,999
Sample	209.00	210.50	12,000, duplicate
Point	209.80		pale gray-brown quartz vein 5cm wide @ 57° crosscut by late calcite-hematite veinlets.
Point	210.37		pale gray-brown quartz vein 4.5 cm wide @ 27° contains traces very fine disseminated red hematite along hairline fractures. Local traces dark metallic disseminated sulfosalt?
Sample	210.50	212.00	12,002
Survey	212.44		Sperrysun - inclination -56°; azimuth 289°
Survey	212.45		acid test - corrected inclination -52°
Sample	215.25	215.75	12,003

Interval	From (m)	To (m)	Description
Point	215.55		mottled, light gray quartz vein 9cm wide @ 35° to core axis; contains 25% RQFP fragments. Fine mm scale calcedonic banding - multiple episodes of quartz mineralization. No sulfides seen.
Sample	216.60	217.60	12,004
Point	217.16		light gray quartz vein 5cm @ 20°; traces dusty disseminated dark metallic mineral (? hematite). No sulfides seen.
Minor	223.10	223.27	probable fault; moderately broken core, cannot determine orientation.
Minor	223.43	223.70	Fault(?); thin smears sandy gouge on irregular fractures @ ~32°.
Point	225.20		banded medium gray quartz vein 13mm wide @ 58° contains 3% dark sulfosalt (?) and traces very fine disseminated pyrite.
Point	238.62		Fault; 5mm sandy gouge on irregular fracture @ 56°. Bleached alteration envelope 2 or 3 m wide.
Point	242.62		Fault; 10 cm moderately to finely broken core between fractures @ ~50° to core axis.
Point	243.23		Fault; 20mm finely crushed, sandy core along fractures @ 40°.
Minor	246.27	246.50	moderately brecciated and moderately silicified RQFP healed by greenish cream coloured carbonate.
Minor	246.69	254.51	fractures throughout @ 32-38° to core axis spaced at 3-7cm apart.
Minor	248.00	250.70	weakly brecciated healed by 1% off white, irregular carbonate-quartz veinlets.
Survey	249.02		acid test - corrected inclination -51°
Point	254.51		EOH
Survey	254.51		Sperrysun - inclination -55°; azimuth 291°.
Sample	0.00	0.00	12001, Blank

TS05-106

Purpose: To test Larry Vein structure below sill

Location: 50+40 E 48+72 N Collar Orientation: azimuth 084°; inclination -65°

Started: Feb 7, 2005 Completed: Feb 11, 2005

Logged by: Pawliuk (0-294m) Meldrum (294-EOH)

Interval	From (m)	To (m)	Description
Major	0.00	6.10	CASING
Sample	0.00	0.00	12018, blank
Major	5.65	87.19	RQFP; maroon to light grayish brown to brick red, spotted by 8% creamy white to grayish white blocky feldspars average 2.5-3 mm across and 2% watery clear gray subround quartz eyes average 4mm across. Say 1-2% dusty disseminated hematite throughout aphanitic, siliceous matrix. About 2% lapilli. < 0.5% off white, irregular calcite (80%) -quartz (20%) veinlets; numerous veinlets oriented at ~10-30° to core axis. Brown-orange to light yellow brown limonite coats fracture surfaces throughout. Generally fair core recovery, with blocky, somewhat broken core recovered.
Point	9.10		Fault; 1.5 mm sandy gouge on fracture @ 30°.
Minor	18.10	18.65	breccia vein 10-30mm wide subparallel to core axis cemented by brownish white vein calcite.
Point	21.60		banding @ 60°.
Point	25.55		Fault; 20cm moderately broken core coated with sandy gouge between fractures @ 42°
Point	29.36		Fault; 5 cm finely broken, sandy core; cannot determine orientation.
Minor	29.75	30.30	breccia vein up to 4 cm wide cemented by grayish white calcite; vein sub-parallel to core axis.
Minor	39.30	41.61	series of fractures @ ~45° to core axis coated by dark brown limonite and limonitic sandy gouge (?).
Minor	53.95	54.50	possible fault; moderately broken and ground core; cannot determine orientation.
Minor	55.00	59.20	soft, somewhat bleached weakly clay-altered; moderately fractured with limonite coating irregular, arcuate fractures throughout.
Minor	63.09	63.85	probable fault; moderately to finely broken core with black oxides coating fracture surfaces; cannot determine orientation.
Point	73.00		Fault; 7mm pale brown clayey gouge on fracture @ -18°.
Point	77.99		Fault; 4 cm pale brown clayey gouge with sand-sized pieces; cannot determine orientation.
Minor	79.36	85.58	RQFP stained pervasive medium reddish-brown; pervasive hematite and limonite throughout interval which also appears weakly silicified.
Minor	86.30	87.19	light grayish maroon relatively fresh-looking RQFP; very weakly pervasively silicified (i.e. -hornfelsed)
Point	86.30		lower limit of extensive limonite along fracture surfaces and also lower limit of somewhat broken core.

Interval	From (m)	To (m)	Description
Major	87.19	217.10	MICRODIORITE SILL; generally medium gray, very fine grained with bright black disseminated biotite flakes throughout. Weakly magnetic throughout; < 0.5% off white calcite veinlets up to 6mm wide, average about 1.5mm wide. Total ~0.5% calcite as pervasive crystals and filling amygdules throughout microdiorite in addition to calcite and veinlets. Soft rock easily scratched with scribe. Upper contact discrete @ 67°; uppermost 25 cm of sill dark maroon-gray -chilled margin. Below 94.80 to 154m, abundant sections of moderately to finely broken and crushed core. Numerous faults throughout oriented mostly at ~30° to core axis. Thin smears grayish white calcite gouge along open fracture slips within bleached margins/alteration envelopes through sill, usually at moderate angles to core axis (20-45°).
Point	96.00		Fault; 25cm moderately to finely broken core and light gray sandy gouge along fracture @ 35°.
Point	97.62		Fault; 38cm moderately broken core with sandy gouge along fractures @ ~40°.
Point	100.04		Fault; 25cm finely broken core and sandy gouge between fractures @ ~22° to core axis
Point	104.35		Fault; 70cm finely crushed core and sandy gouge between fractures @ 35°.
Point	107.77		Fault; 10cm finely broken core and silty gouge between fractures @ ~50°.
Point	114.60		Fault; 7mm grayish white calcite gouge and finely broken, sandy gouge along fracture @ 18° to core axis.
Survey	117.96		acid test - corrected inclination -60.5°
Minor	135.12	138.53	Major Fault; bleached light gray finely crushed core and sandy gouge. Difficult to determine orientation; possibly ~30° to core axis. Below 138.53m, core moderately to finely broken not finely crushed and bleached as with overlying fault zone.
Minor	143.85	144.40	Fault; 55cm finely crushed, sandy core between fractures at ~40°.
Point	149.96		Fault; 4cm silty gouge and very finely broken core along fracture @ 35°. Below ~154.0m, rock unit generally medium grayish brown and fragmental. Subround to locally lenticular lapilli-size fragments usually dark gray and aphanitic with faint margins form ~5% of rock volume. ?Intermediate lapilli tuff? This "fragmental" unit has a very gradational contact with the usual microdiorite sill and so many only be a portion of microdiorite that contains faint andesitic xenoliths.
Minor	157.10	159.47	Fault; finely broken and sandy, crushed core with some fractures @ ~25° to core axis but cannot determine fault orientation.
Survey	157.58		Sperrysun - inclination -63°; azimuth 084°
Point	161.63		Fault; 15 cm finely crushed, soft core between fractures @ 30°.
Minor	163.29	163.94	Fault; finely broken and crushed core along fracture @ 50°.
Point	187.85		Fault; thin smear sandy gouge along fracture @ 31° within interval of moderately broken core 30cm wide.
Point	196.06		cream colored calcite-quartz vein 14mm wide emplaced along fault slip @ 49° marked by thin smear light gray silty gouge.
Major	217.10	233.48	RQFP; dark brick red with local medium reddish-brown intervals. Generally harder and more competent than RQFP seen higher in hole, otherwise similar to RQFP above. Here 0.5% light grayish green carbonate as irregular veinlets and patches up to 2cm wide that pinch and swell; this vein carbonate occurs along the margins of medium brick red hematite veinlets (i.e. carbonate veinlets cored by hematite ?infilling). No sulfides seen within these carbonate-hematite veinlets.

Interval	From (m)	To (m)	Description
Point	217.10		discrete intrusive contact with underlying RQFP @ -75° to core axis.
Sample	217.10	218.90	12,005
Point	221.46		Fault; 3mm sandy gouge along irregular fracture at -25°.
Minor	223.20	227.40	magnetite (60%) - hematite (10%) - calcite (30%) veinlets form 0.5% rock volume.
Point	226.26		Fault; 2mm light gray silty gouge on fracture @ 10°.
Minor	233.02	233.48	RQFP; medium green-brown colour possibly weakly chlorite altered.
Major	233.48	241.88	LATE IGNEOUS DYKE; steel gray with local light brown bleached alteration envelopes along late crosscutting veinlets. Very fine grained matrix; porphyritic. Andesitic? composition. Moderately magnetic. Upper contact slip with smear of silty material along break @ -90° to core axis but cannot be sure of orientation of contact.
Minor	233.48	234.76	1% late crosscutting dark hematite (75%) - calcite (25%) veinlets. Veinlets rare below 234.76m.
Point	240.60		Fault; 15cm of moderately to finely broken core. Cannot determine orientation.
Major	241.88	243.90	RQFP; medium reddish-brown; crosscut by 0.5% grayish white calcite-quartz veinlets. RQFP moderately brecciated, healed across 25cm at lower contact which is irregular - possibly oriented -40° to core axis.
Point	241.88		discrete lower dyke contact @ 33°.
Major	243.90	257.34	LATE IGNEOUS DYKE; dark to medium gray-green, very fine grained, faintly porphyritic, moderately magnetic, Dyke crosscut by 0.5-1% grayish white calcite veinlets up to 5mm wide; these veinlets usually have black altered wallrock selvages ~3 mm wide. Lower contact irregular.
Survey	245.97		acid test - corrected inclination -59°
Sample	257.30	258.30	12,006
Major	257.34	259.16	RQFP; medium grayish brick red, weakly brecciated throughout, healed by 1% off-white irregular calcite veinlets and rare pale gray quartz veinlets. Rare speck of very fine pyrite within veinlets.
Sample	258.30	259.16	12,007
Major	259.16	261.72	LATE IGNEOUS DYKE; medium gray, very fine grained, faintly porphyritic. Light brownish green chilled margins ~1 cm wide along lower contact @ 40°. Locally weakly magnetic.
Sample	261.70	263.00	12,008
Major	261.72	268.62	RQFP; dark brick red with faint pale brown banding @ 55°. Feldspar grains often stained pale orange, likely due to very finely disseminated hematite. Weakly brecciated; healed by 2% off white, irregular calcite veinlets. Occasional traces dark sulfosalts as short, stylonitic, hairline wispy masses to 3 or 4mm length above 263.0m; also rare speck pyrite above 263.0m. Otherwise no sulfides seen within veinlets in remainder of interval. Lower contact discrete @ 20°.
Major	268.62	271.58	LATE IGNEOUS DYKE; as for 259.16-261.72m above. 1 cm red-brown chilled margin along lower contact @ 52°.
Major	271.58	280.00	RQFP; medium greenish maroon colour; feldspars bright pale green. Central third of interval weakly magnetic, medium gray matrix where magnetite has likely replaced hematite. Lower contact @ 20°, along which has been intruded a pale orange-white calcite vein 17mm wide. No sulfides seen within this vein.
Major	280.00	281.76	LATE IGNEOUS DYKE; light gray, finely porphyritic. Lower contact somewhat irregular @ -90°.

Interval	From (m)	To (m)	Description
Major	281.76	283.58	RQFP; medium brown, moderately brecciated, healed by 2% off-white calcite veinlets. Lower contact @ -80° to core axis.
Major	283.58	294.98	LATE IGNEOUS DYKE; medium gray, porphyritic, weakly magnetic. Crosscut by 0.5% off-white calcite veinlets mostly @ -55° to core axis.
Major	294.98	303.89	RQFP; upper contact not distinct, arbitrary over 65cm where is intruded by a chloritized dyke-like portion of core. Some textures within chloritized region are similar to RQFP; dark green grains 1-2mm across resemble completely chloritized feldspars; this dyke-vein structure runs -parallel to core axis; from 295.91-303.89 relatively normal RQFP; brick red to greenish gray, numerous flame-like fragments of hematite rich clasts mostly 0.5-2cm across and up to 5 cm. These clasts are typically 70-90° to core axis; may comprise 5% of interval; RQFP here is abundant in lithic clasts; 3-5% interval is comprised of lithic fragments mostly 0.5-1cm across; rare breccia infilling 10cm across; numerous quartz veins cut core @ many angles; quartz bright creamy white to smoky gray, very little carbonate vein material present (<1%); quartz vein makes up 5% of interval; very little sulfide present (trace sulfosalt; trace hematite; trace-no pyrite), trace-1% chlorite as discrete veins.
Major	303.89	325.22	BRECCIATED RQFP + Quartz Vein; interval variably brecciated and healed by vein material, overall say 25% vein material (75% quartz + 20% carbonate + 3% hematite + 2% chlorite). Two large veins with true widths 8cm and 15cm occur at 305.75 and 306.15m respectively within sample 12,010. A third occurs @ 307.78m; trace hematite can be observed as dusty disseminations especially in middle vein; brecciation is quite variable locally fragments range from dust to 10 cm across; hematite also occurs as small 1-3mm wide veinlets.
Sample	303.89	305.65	12,009
Sample	305.65	306.20	12,010
Point	305.75		vein has sharp -planar contacts ~30° to core axis; feldspars within this interval have been sericitized a few chloritized; at least two episodes of vein can be observed with creamy white quartz cross cutting smoky quartz; sulfosalts can be seen (trace) usually at the boundary of quartz vein's; trace pyrite is observed in wallrock adjacent to vein material
Point	306.15		vein has diffuse upper contact and a sharp planar Lower contact @ 40° to core axis;
Sample	306.20	307.15	12,011
Sample	307.15	308.20	12,012
Minor	307.25	307.50	quartz veinlets rimmed by chlorite; very irregular orientations/contorted.
Point	307.78		vein 5cm wide with sharp but irregular contacts ~90° to core axis;
Sample	308.20	309.20	12,013
Minor	309.20	312.68	less brecciated RQFP; brick red to grayish vein material; ~3-5% of rock mostly as 1-4mm veins that cut core @ many angles. Vein material is 90+% quartz, 5% carbonate; trace pyrite, hematite, sulfosalt; hematite and sulfosalt occur as small <1 mm dots within quartz vein; pyrite occurs as fine <1 mm cubes disseminated within wallrock; rock has abundant (10%) subangular-angular primary lithic fragments; mostly fine grained green gray volcanics; many clasts are >1cm.

Interval	From (m)	To (m)	Description
Sample	309.20	310.20	12,014
Minor	312.68	314.68	brecciated RQFP + vein material; pale-medium gray, locally gray with brick red groundmass; vein material 75% quartz, 25% carbonate. ~ 20% of interval is vein; rock is variably brecciated, some fragments <1mm-5+cm in size. 5 cm quartz/carbonate/hematite/sulfosalt vein @ 313.68-313.83 m. Zone of intense hematite impregnation (hematite dominates groundmass) from 313.33-313.46 m.
Sample	312.68	313.68	12,015
Sample	313.68	314.68	12,016
Sample	313.68	314.68	12019, duplicate 12,016
Minor	314.68	316.80	RQFP (relatively unbrecciated) brick red @ top of interval progressively getting greyer (bleached) towards bottom of interval; flattened lapilli 60-70° to core axis; 2-3% quartz veins mostly cut core @ 40-60° to core axis; most veins are 1-4mm wide and range from white to smoky gray; a few the veins have streaks (1mm across) of hematite.
Sample	314.68	315.68	12,017
Survey	316.08		Sperrysun - inclination -60°; azimuth 083°
Survey	316.08		acid test - corrected inclination -58°
Minor	316.80	318.90	dyke; tan to brownish gray, very fine grained. Upper contact 2cm chloritic gouge @ 80° to core axis; lower contact 25cm of broken core with 2cm soft chloritic gouge @ -80° to core axis; bottom half is very sheared locally can break rock with hands.
Minor	318.90	322.22	RQFP; brick red to brownish to pale gray, locally brecciated and healed by quartz; lowermost 2m is riddled by small (2mm) tension gashes and gash-like veins of quartz cutting core @ many angles; no sulfides observed in this lower section.
Sample	318.90	319.48	12,020
Point	319.00		1 cm wide quartz vein with abundant (30%) hematite @ 60-70° to core axis; irregular shape with a few small (1 mm) tension gashes filled with same vein material perpendicular to vein.
Minor	321.25	322.22	RQFP; brecciated and healed by quartz; 30-40% quartz, 60-70% RQFP fragments, 2-3% hematite, no sulfides observed.
Sample	321.25	322.22	12,021
Point	322.22		EOH

TS05-107

Purpose: To test the central portion of Larry Vein below microdiorite sill.

Location: 50+44 E 49+24 N Collar Orientation: -66° dip, 090° azimuth

Started: Feb. 12, 2005

Completed: Feb. 16, 2005

Logged by: Dan Meldrum

Interval	From (m)	To (m)	Description
Major	0.00	4.27	CASING
Major	4.27	44.55	RQFP; maroon to light grayish to brownish to brick red; feldspars make up 10-15% of rock as 1-3mm grains often altered to sericite; quartz eyes make up 2-3% of unit (2-4mm across) subrounded; from 4.27-32.25m is limonite-stained. Numerous quartz (30%) - carbonate (70%) veins cut core @ many angles; calcite white to pale pink, quartz white to smoky gray. Vein material makes up 1-3% of core; <1% ilitic fragments, subangular-subrounded up to 2cm across, appear to be more common near bottom of interval. Lower contact is sharp and curvilinear @ ~20° to core axis.
Minor	33.00	34.00	interval bleached to a pale gray colour with some rusty staining; fiamé 90° to core axis
Point	43.29		irregular quartz vein with magnetite center (i.e. wallrock/quartz/magnetite/quartz/wallrock).
Major	44.55	52.67	IGNEOUS DYKE; fine-medium grained and likely diorite; locally plagioclase crystals up to 1mm across make up 20% of rock, in other places a mafic mineral makes up ~20% a rock. Small 1-2mm specs of round carbonate locally may make up 10% of rock; unit is moderately magnetic throughout; range from medium green to dark green to gray green; <1% vein material; lower contact sharp ~undulatory ~60° to core axis.
Minor	46.55	47.75	very unusual rock; very rusty; appears to be covered by "desiccation cracks"; quite rubbly most pieces 3-4cm ; not able to get fresh surface.
Minor	51.10	52.50	rock locally brecciated.
Major	52.67	63.62	RQFP; pale green @ top, medium green by halfway and very dark maroon-nearly black in lower half of interval; vein material <1% consists of carbonate + magnetite + chlorite + hematite; most veins 1-2mm across cutting core @ many angles; hard competent unit; lower contact is in broken core.
Major	63.62	69.17	IGNEOUS DYKE; medium-dark gray, very fine grained. Locally 1 mm specks of carbonate make up 10% of rock; moderately magnetic; moderately hard but can be scratched with nail.
Major	69.17	85.57	RQFP; maroon to very dark maroon (nearly black). From top to 75.29 m, <1% vein material; no veins in lower portion. Veins mostly 1-2mm carbonate +/- chlorite +/- magnetite cutting core at many angles; lower contact is irregular, undulatory.
Minor	75.29	75.79	40% vein material; core very brecciated heated by carbonate + quartz + magnetite, chlorite often at the edge between vein and wallrock; one large (1 cm) clot of magnetite occurs in center of quartz-carbonate vein.
Sample	75.29	75.79	12022
Point	79.70		fiamé @ 65° to core axis.
Major	85.57	214.19	MICRODIORITE SILL; medium gray, fine grained, with salt and pepper texture. Very monotonous unit; rare hairline (< 1mm) veinlets; overall <1% vein material; lower contact sharp ~70° to core axis.
Minor	113.58	114.05	very broken core - possible fault.
Minor	115.10	116.20	very broken core - possible fault.

Interval	From (m)	To (m)	Description
Minor	126.06	127.00	moderately broken core - possible fault.
Minor	132.00	132.90	very broken core - possible fault
Minor	133.20	133.50	moderately broken core - possible fault
Survey	147.52		acid test - corrected inclination -61°
Survey	154.53		Sperrysun - dip -62.5° ; azimuth 097°
Minor	191.11	191.33	moderately broken core - possible fault
Minor	206.90	207.10	moderately broken core -possible fault
Minor	207.42	213.36	fault zone; very broken core; locally rock is crushed to paste/powder.
Major	214.19	297.18	RQFP; maroon to brick red to locally gray; very little vein material (<1%); mostly hairline to 1mm veins of carbonate (white) and smoky quartz; lithic fragments, mostly dark gray-black-green (locally up to 10% rock volume) subrounded-subangular very few angular clasts; some broken surfaces have chloritic coatings.
Point	227.33		2cm wide pinkish quartz vein with 1-2% hematite; trace pyrite and sulfosalts @ 50° to core axis.
Survey	231.04		acid test - corrected inclination -55°
Point	231.59		4cm wide quartz-carbonate vein @ 80° to core axis.
Minor	234.09	234.37	ground core.
Minor	234.88	235.18	ground core.
Minor	237.00	241.20	fault zone; very broken core locally pulverised to dust especially near top of interval. 60° to core axis; 4-5mm of chloritic gouge.
Minor	246.67	249.50	fault - very broken core locally pulverised to dust.
Minor	259.00	260.45	fault - very broken core, locally pulverised to dust.
Point	268.98		1cm quartz vein @ 35° to core axis; white; no sulfides or hematite noted.
Point	271.95		possible fault - 1cm wide zone of chloritic paste.
Minor	272.65	273.10	20% of interval is quartz-carbonate vein material (40% carbonate, 60% quartz). Two small specks of pyrite observed. Veins tend to cut core ~50° to core axis; 5 x 1cm veins along with numerous 1-2mm veinlets.
Minor	278.90	279.10	fault gouge.
Survey	279.18		Sperrysun - dip -58.5°; azimuth 099°.
Point	286.27		2 cm wide carbonate - chlorite vein @ 30° to core axis. 40% carbonate, 60% chlorite. One speck of pyrite observed; no other sulfides.
Minor	287.83	288.00	vein zone - quartz 65%- wallrock 25% - calcite 5% - chlorite 5%; vein boundary is irregular; calcite seems to crosscut quartz; chlorite occurs at the quartz-wallrock boundaries; trace pyrite.
Minor	291.00	291.10	3cm quartz (85-90%) - calcite (5%) - hematite (2%) - wallrock (2%) vein with traces of pyrite and chlorite vein @ 50° to core axis.
Minor	296.55	296.58	3cm wide quartz vein ~90° to core axis; 95-97% quartz . 3% chlorite; trace pyrite.
Point	297.18		EOH

TS05-108

Purpose: To test Larry Vein above sill and Tommy Vein below sill.

Location: 51+96 E 49+08 N

Collar Orientation: dip -53°; azimuth 270°

Started: Feb. 17, 2005

Completed: Feb. 21, 2005

Logged by: Meldrum (0 - 216), Pawliuk (216 - EOH)

Interval	From (m)	To (m)	Description
Major	0.00	3.05	CASING; no core recovered.
Major	3.05	5.50	RUBBLE; redrilled core, likely boulders; maroon and green RQFP.
Major	5.50	40.27	RQFP; maroon to greenish gray; ~10% rock is plagioclase phenocrysts, white to pale green, subhedral to anhedral, 2-3mm across; 2-3% quartz eyes, rounded 3-5mm across, clear to pale smoky gray; 5% lithic fragments, mostly subangular-subrounded clasts of fine grained volcanics. Numerous 1-4mm veins of calcite and/or quartz cut core at many angles. Locally rock is brecciated and healed by quartz vein material; limonite staining on rare fracture surfaces.
Point	7.92		carbonate vein, 2cm wide ~parallel to core axis; pinkish in color due to fine dusty (3%?) hematite; trace pyrite.
Minor	11.65	11.95	Fault?; very rusty broken core; 5mm of clayey gouge @ 55 degrees to core axis
Minor	17.55	19.35	zone of variable brecciation; rock is brecciated and healed by quartz vein material (15%).
Minor	21.47	24.65	intervals of moderate to intense bleaching, discoloration varies from pale pink to creamy very pale pink; intervals are very hard (silicified) the bleached intervals make up 30% of the entire interval; bleached intervals oriented ~70-90° to core axis.
Sample	21.90	22.67	12023, hematite plus chlorite plus magnetite in a silicified zone.
Minor	24.00	25.00	quartz-carbonate vein 1-7mm wide with magnetite selveges; vein parallel to core axis; 40-45% quartz; 40-45% calcite; 5-10% magnetite.
Minor	26.45	30.90	fracture surfaces in this interval are very rusty.
Minor	27.30	27.80	brecciated core healed by white quartz, 10% quartz; 90% wallrock.
Sample	30.95	40.27	12,025
Minor	31.10	35.65	numerous veins of magnetite +/- carbonate 2-3mm across cut core at many angles. Two sets of veins occur perpendicular to each other. Trace pyrite.
Minor	36.80	36.90	6cm wide quartz-carbonate-hematite-magnetite vein @ ~40° to core axis; no pyrite observed in vein, but wallrock adjacent to veins has tiny <1mm specks of pyrite.
Minor	37.75	38.60	magnetite + calcite veins 2-10mm wide ~parallel to core axis; trace pyrite as <<1mm specs both in vein and in wallrock.
Sample	37.87	38.95	12,024
Minor	38.95	40.27	8-10cm vein at top of interval, 85% quartz - 5% carbonate - 2-3% hematite - 2-3% magnetite. Vein heals brecciated RQFP in lower half of interval. From 39.62 - 40.27 the interval becomes more abundant in vein material; near the bottom clasts of quartz vein (subangular-angular) can be seen (1-3cm across) healed by magnetite / hematite / carbonate vein material.

Interval	From (m)	To (m)	Description
Major	40.27	42.60	LARRY VEIN; defined as >50% vein material; both above and below vein are >1m of +25% quartz vein material; planar sharp upper contact ~50° to core axis; lower contact is gradational. 80% quartz, 10% carbonate, 5% magnetite, 5% hematite. Upper half of the interval is characterized by rusty to black coatings on fracture surfaces; these rusty surfaces can also be seen as veins partially dissolved in competent core, and tend to be oriented ~parallel to core axis and react with HCl. The lower half of the interval (41.45-42.60m) is characterized by orange-rusty carbonate veinlets (<1mm wide) and hematite/magnetite masses. Some of the magnetite may be sulfosalt difficult to discern but large clots of black fine grain material is magnetite; trace pyrite and sphalerite occur as dots <1mm disseminated throughout interval.
Sample	40.27	41.27	12,026
Sample	41.27	42.27	12,027
Minor	42.27	44.27	decreasing amount of vein material from top to bottom of interval ranging from 100%-3% at bottom; veins cut core @ many angles.
Sample	42.27	43.27	12,028
Major	42.60	53.44	RQFP; Green to grayish; overall ~ 5% vein material most of which is from 42.60-45.60 m; lower contact ~40°, sharp and undulatory.
Survey	45.72		acid test - corrected inclination -49.5°
Major	53.44	215.96	MICRODIORITE SILL; gray to slightly greenish gray; fine grained with small phenocrysts of plagioclase and ?biotite; salt and pepper texture; small barren looking white calcite veins mostly 1-2mm but up to 1cm across cut core at many angles; rock has several % calcite in matrix and also 1-2% discrete white circular masses mostly 1-2mm. Very monotonous unit; weakly to nonmagnetic; locally very fractured; lower contact discrete @ 48°.
Minor	77.83	81.80	fault zone; very broken core; a top of interval chloritic slips @ 45° to core axis; much of this interval is broken into dust.
Minor	89.50	90.85	moderately broken core; 40cm+ of re-milled rock - possible fault.
Minor	95.10	96.36	moderately broken core.
Minor	98.07	107.05	fault zone - very broken core; varies from dust to 10cm chunks of core; calcite cement locally has been eroded.
Survey	105.77		acid test - inclination -47°, but very suspect reading; test left in hole for 8 hours while reaming!
Minor	108.15	108.55	moderately broken core most chunks are 1-3cm in size - possible fault.
Minor	114.70	114.90	fault; 2cm of fault gouge possible orientation 30° to core axis.
Minor	119.23	119.53	brecciated and healed by white calcite; angular fragments of sill and ~10% calcite.
Minor	119.74	120.70	brecciated and healed sill much like 119.23-119.53m.
Minor	126.32	126.65	broken core 1-6cm chunks; 20% calcite vein material.
Minor	155.57	157.00	few cm crushed core (?fault) @ top of interval. Remainder is moderately broken; 2mm wide calcite veins along many breaks.
Minor	162.26	162.79	crushed and broken core - possible fault
Survey	184.71		Sperrysun - dip -59°; azimuth 263°

Interval	From (m)	To (m)	Description
Major	215.96	220.56	RQFP; variable medium brown to dark brown with local red, green to gray patches. Lower third of interval moderately to intensely brecciated with about 35% vein material. Quartz-hematite veinlets and veins mainly @ 35 - 40° to core axis.
Minor	215.96	218.90	3% quartz (90%)- hematite (5%) veinlets and veins, increasing in abundance and width with depth.
Point	215.96		quartz-calcite-hematite veinlets cross cut by microdiorite sill.
Sample	215.96	217.00	12,030
Sample	217.00	218.00	12,031
Point	217.12		irregular mass of chalcopyrite 3mm across within central portion of 5mm wide veinlet @ 34° to core axis.
Point	217.34		15mm wide hematite (65%)-calcite (35%) vein.
Sample	218.00	218.90	12,032
Point	218.12		13cm wide hematite (60%)-calcite (30%)-quartz (10%) vein @ 28°, crosscuts earlier pale gray quartz vein.
Point	218.65		fault; 7mm clayey and sandy gouge along fracture @ 70°.
Point	218.79		20mm wide pale gray quartz vein @ 35°; no sulfides seen.
Minor	218.90	220.56	brecciated RQFP; 60-65% RQFP fragments, 30% calcite, 5% quartz, 3% hematite. Hematite generally in central portions of calcite veins. No sulfides seen. About 1% black mineral (not magnetite) occurring mainly as blebby masses a few mms across along margins of calcite veins.
Sample	218.90	219.90	12,033
Sample	219.90	220.56	12,034
Point	220.13		35mm wide calcite-hematite-quartz vein @ 20°.
Major	220.56	234.93	QUARTZ VEIN (Tommy Vein); mottled light greenish gray to pale gray. Vein material has been brecciated and re-healed throughout with off-white calcite vein material filling the late fractures. Calcite also occurs as round, somewhat irregular masses up to 15-20mm across throughout, and makes up ~2-3% rock volume. About 0.5% dusty disseminated brick red hematite mainly within or along late quartz or calcite veinlets but also as faint masses within vein quartz. Overall say 96% quartz, 4% calcite, 0.5% hematite, traces chlorite. Rare spec very finely disseminated pyrite. Upper contact @ ~70°; irregular. Above 224.25m vein moderately brecciated and re-healed by more calcite than is present below 224.25 m depth.
Sample	220.56	221.56	12,035
Sample	221.56	222.56	12,036
Sample	222.56	223.56	12,037
Sample	223.56	224.26	12,038
Sample	224.26	225.56	12,039
Sample	224.26	225.56	12,040, duplicate of 12,039
Sample	225.56	226.56	12,042
Sample	226.56	227.56	12,043
Minor	226.80	228.90	vein material finely banded on mm scale.
Sample	227.56	228.12	12,044
Minor	228.12	231.95	35% RQFP fragments and bands brecciated and re-healed by Tommy Vein quartz.
Sample	228.12	229.42	12,045

Interval	From (m)	To (m)	Description
Sample	229.42	230.42	12,046
Minor	229.43	230.42	RQFP band; Upper contact @ 20°, lower contact @ 33°.
Sample	230.42	231.55	12,047
Minor	231.55	231.95	RQFP band @ 28-30° to core axis.
Sample	231.55	232.55	12,048
Minor	232.00	234.93	mottled vein, with locally weakly brecciated or crackled with dark green metallic hematite(?) (35%) - calcite (64%) - brick red hematite (1%); the veinlets healing the brecciated Tommy vein.
Sample	232.55	233.55	12,049
Sample	233.55	234.35	12,050
Sample	234.35	234.93	12,051
Major	234.93	247.80	RQFP; brick red to medium brown with <1% lapilli sized clasts. Average 0.5% light gray quartz veinlets and veins generally @ 43-55° to core axis; these veinlets contain traces calcite and hematite; no sulfides seen.
Point	234.93		lower Tommy vein contact @ 40°.
Sample	234.93	235.93	12,052
Minor	235.55	238.25	weakly brecciated, healed by quartz-calcite-hematite veinlets with black chlorite(?) along selvages.
Sample	235.93	236.93	12,053
Sample	236.93	238.23	12,054
Minor	240.54	240.87	somewhat broken core - possible fault.
Point	247.80		EOH
Sample	0.00	0.00	12041, blank

TS05-109

Purpose: To test bedrock underlying Adrian Lake at outlet of Adrian Creek

Location: 366080E ;5876864N +/-6m

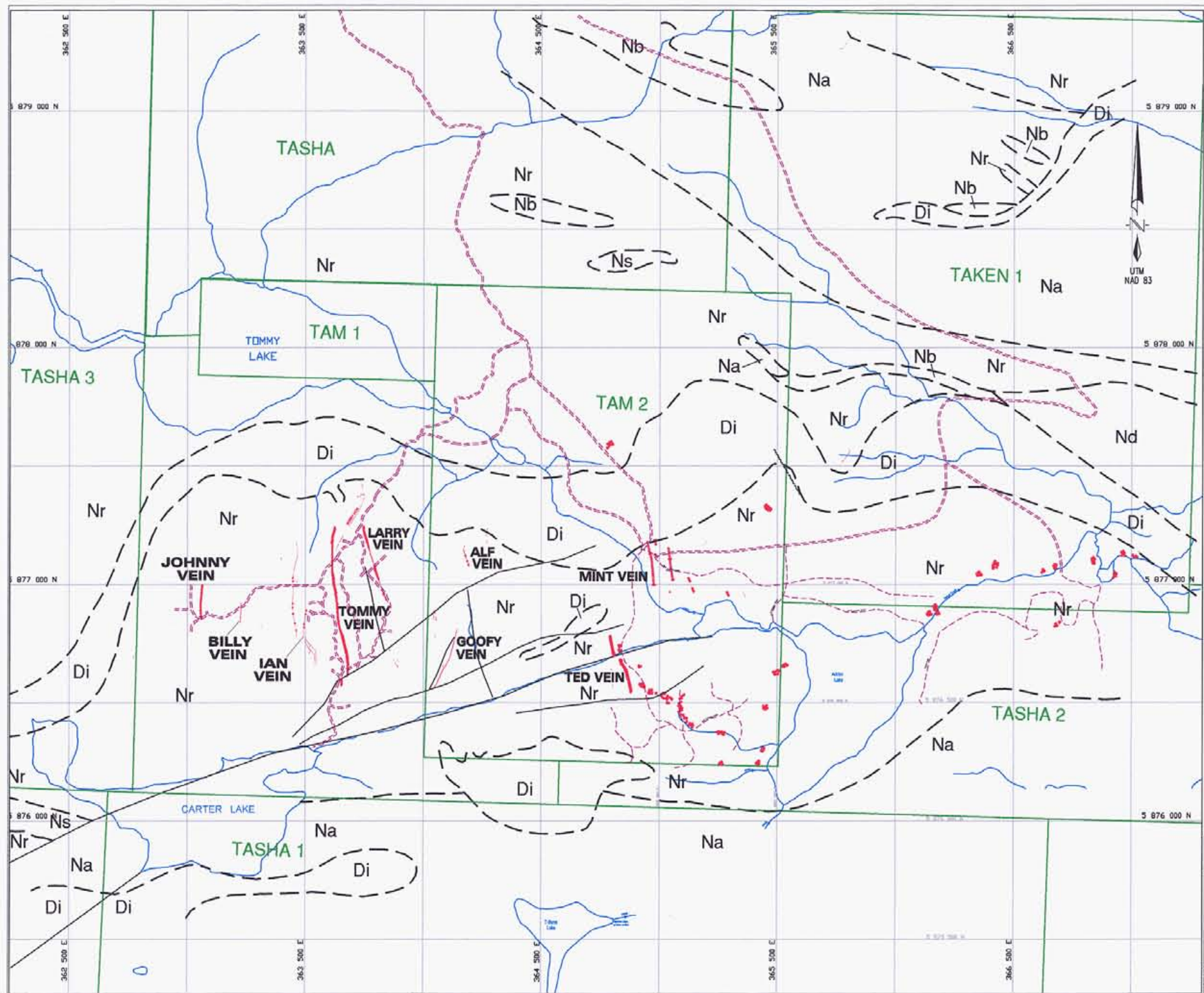
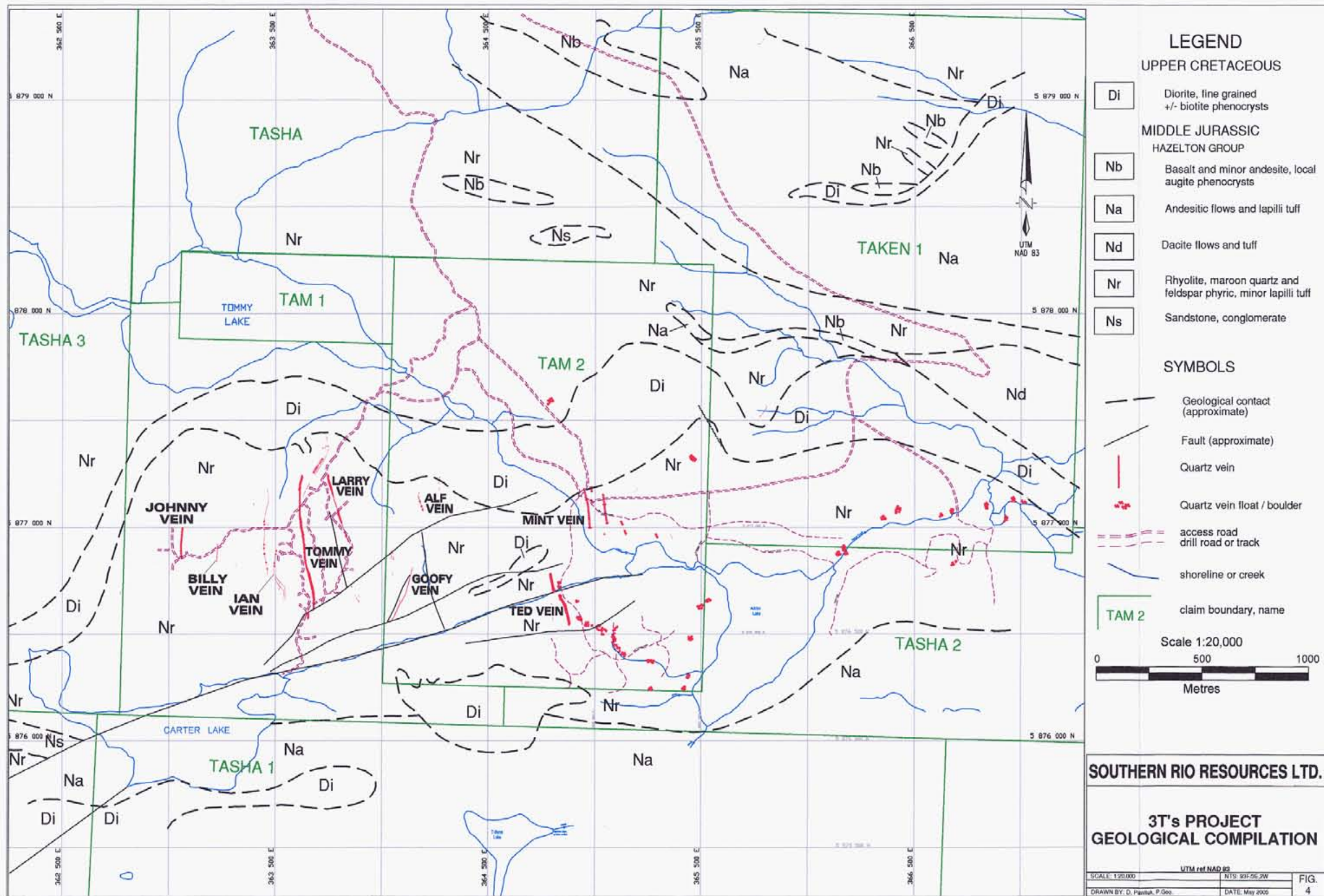
Started: Feb 22, 2005

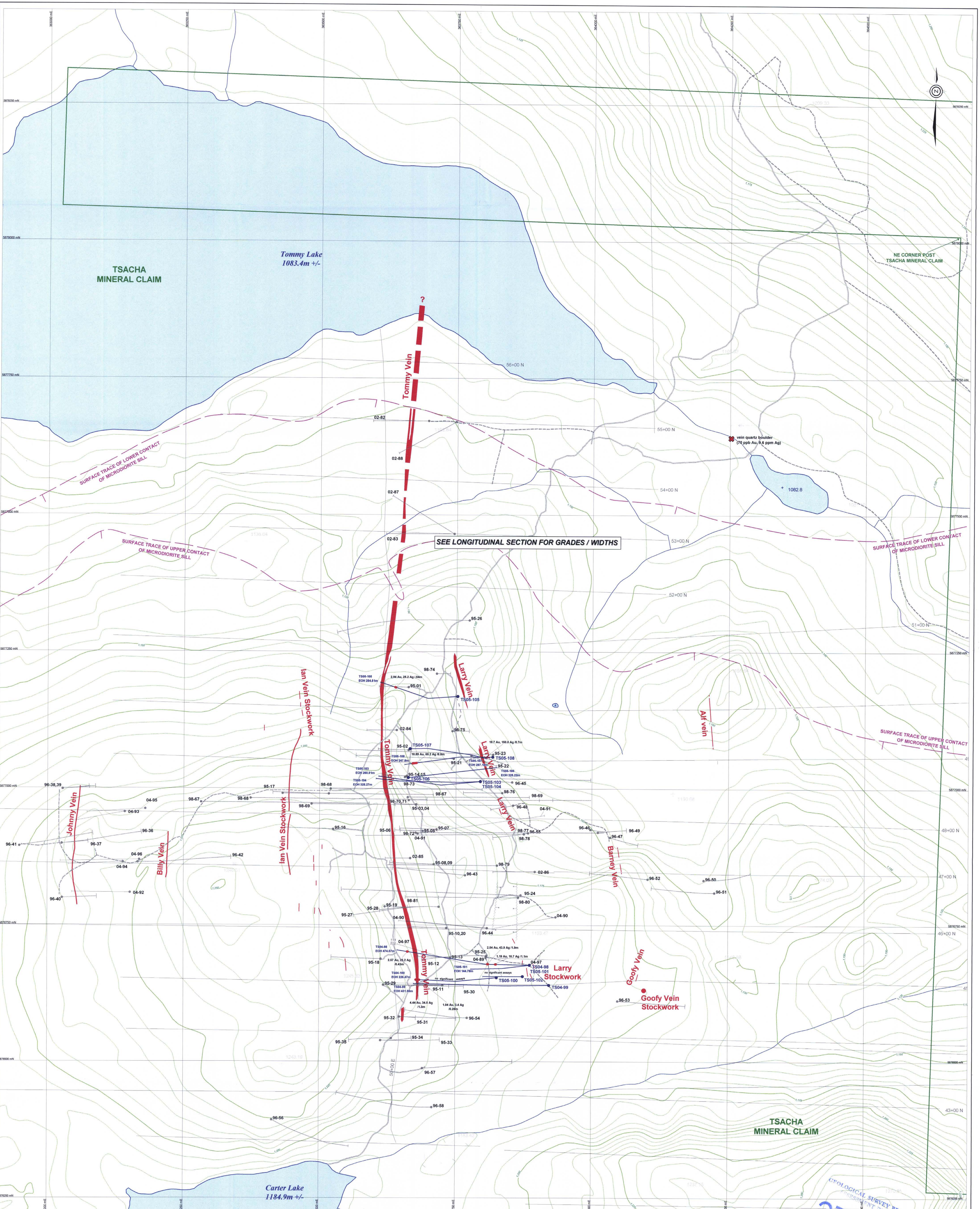
Completed: Feb, 24 2005

Logged by: D. Pawliuk

Collar Orientation: dip -50°; azimuth 135°

Interval	From (m)	To (m)	Description
Major	0	35.97	CASING; variety of volcanic rock types within recovered gravel-size pieces of core. Many pieces drilled more than once. Rubble approx. 70% medium-dark gray andesite, 10% RQFP, 10% dacite and 10% granitic rocks. No vein quartz seen. Drilling stymied by gravels, could not reach bedrock because of difficult drilling conditions. No RQDs done; no samples taken; no acid tests or Sperry Sun readings performed.
Point	28.96		bed of dark gray silty sand approx. 1 m thick; smell of methane gas.
Point	35.97		EOH





SEE LONGITUDINAL SECTION FOR GRADES / WIDTHS

TSACHA MINERAL CLAIM

Tommy Lake
1083.4m +/-

NE CORNER POST
TSACHA MINERAL CLAIM

Johnny Vein

Billy Vein

Ian Vein Stockwork

Larry Vein

Barney Vein

Tommy Vein

Larry Stockwork

Goofy Vein

Goofy Vein Stockwork

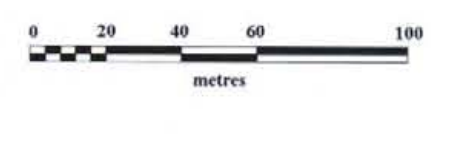
TSACHA MINERAL CLAIM

Carter Lake
1184.9m +/-

GEOLOGICAL SURVEY BRANCH
COMPLETION REPORT

SYMBOLS

- TS04-99
431.90m
4.44 Au, 34.5 Ag (1.3m)
- 95-32
 surface projection of previous diamond drill hole, identifier.
- surface trace of mineralized quartz-calcite vein
- surface trace of fault, down-dropped side indicated
- at gold, or silver
estimated true width of mineralized intercept in metres
- access road



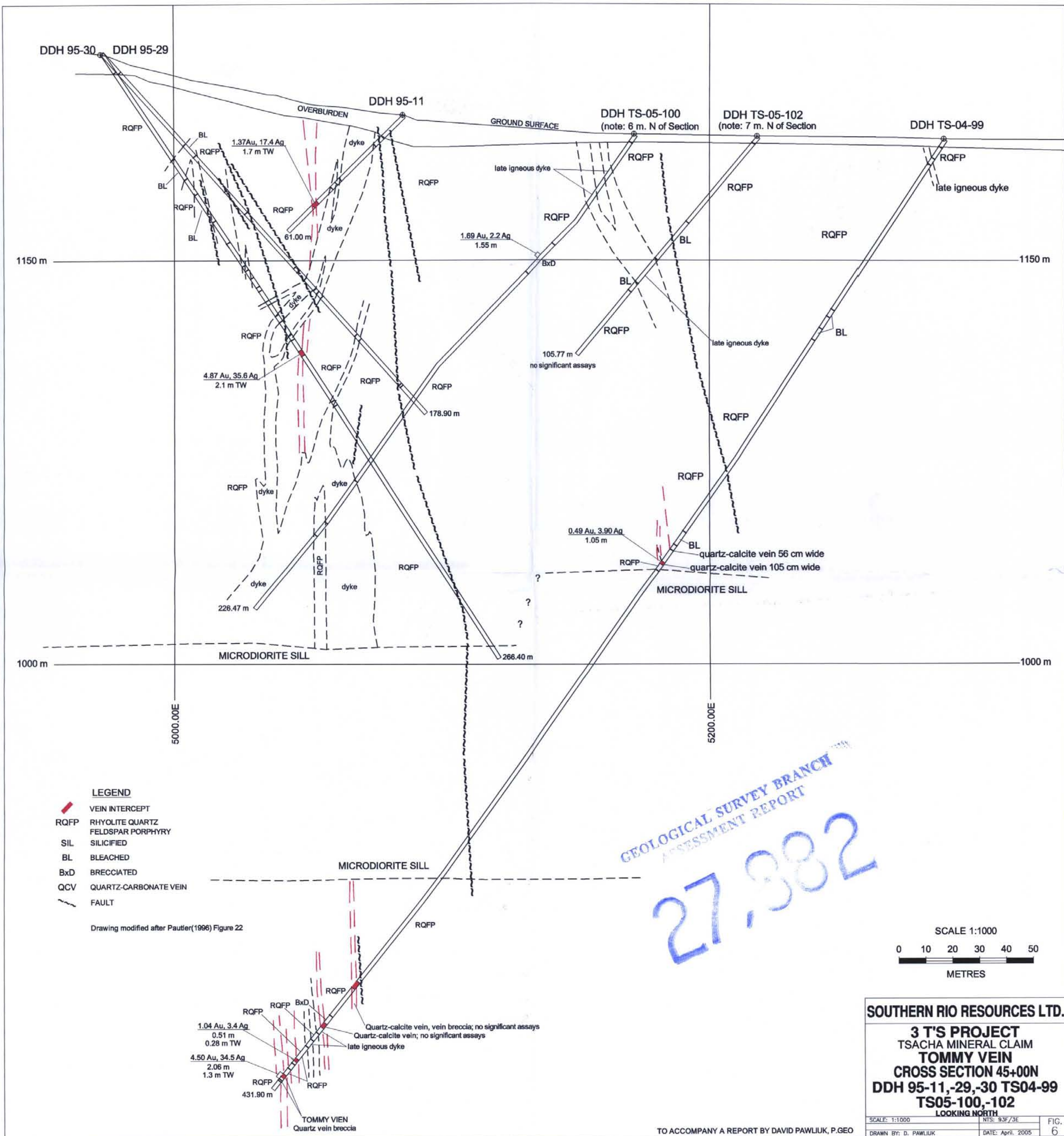
SOUTHERN RID

TSACHA PROPERTY

DIAMOND DRILLING PLAN MAP

Date: April 12/05
 Author:
 Office: Vancouver
 Drawing:
 Scale: 1:2000
 Projection: UTM Zone 10 (NAD 83)

To accompany a report by: David Pamuk, P. Geo



DDH 95-30 DDH 95-29

DDH 95-11

DDH TS-05-100
(note: 6 m. N of Section)

DDH TS-05-102
(note: 7 m. N of Section)

DDH TS-04-99

1150 m

1150 m

1000 m

1000 m

5000.00E

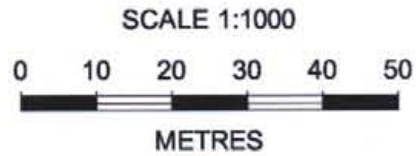
5200.00E

- LEGEND**
- VEIN INTERCEPT
 - RQFP RHYOLITE QUARTZ FELDSPAR PORPHYRY
 - SIL SILICIFIED
 - BL BLEACHED
 - BxD BRECCIATED
 - QCV QUARTZ-CARBONATE VEIN
 - FAULT

Drawing modified after Pautier(1996) Figure 22

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

27,382



1.04 Au, 3.4 Ag
0.51 m
0.28 m TW

4.50 Au, 34.5 Ag
2.06 m
1.3 m TW

431.90 m

TOMMY VEIN
Quartz vein breccia

Quartz-calcite vein, vein breccia; no significant assays

Quartz-calcite vein; no significant assays

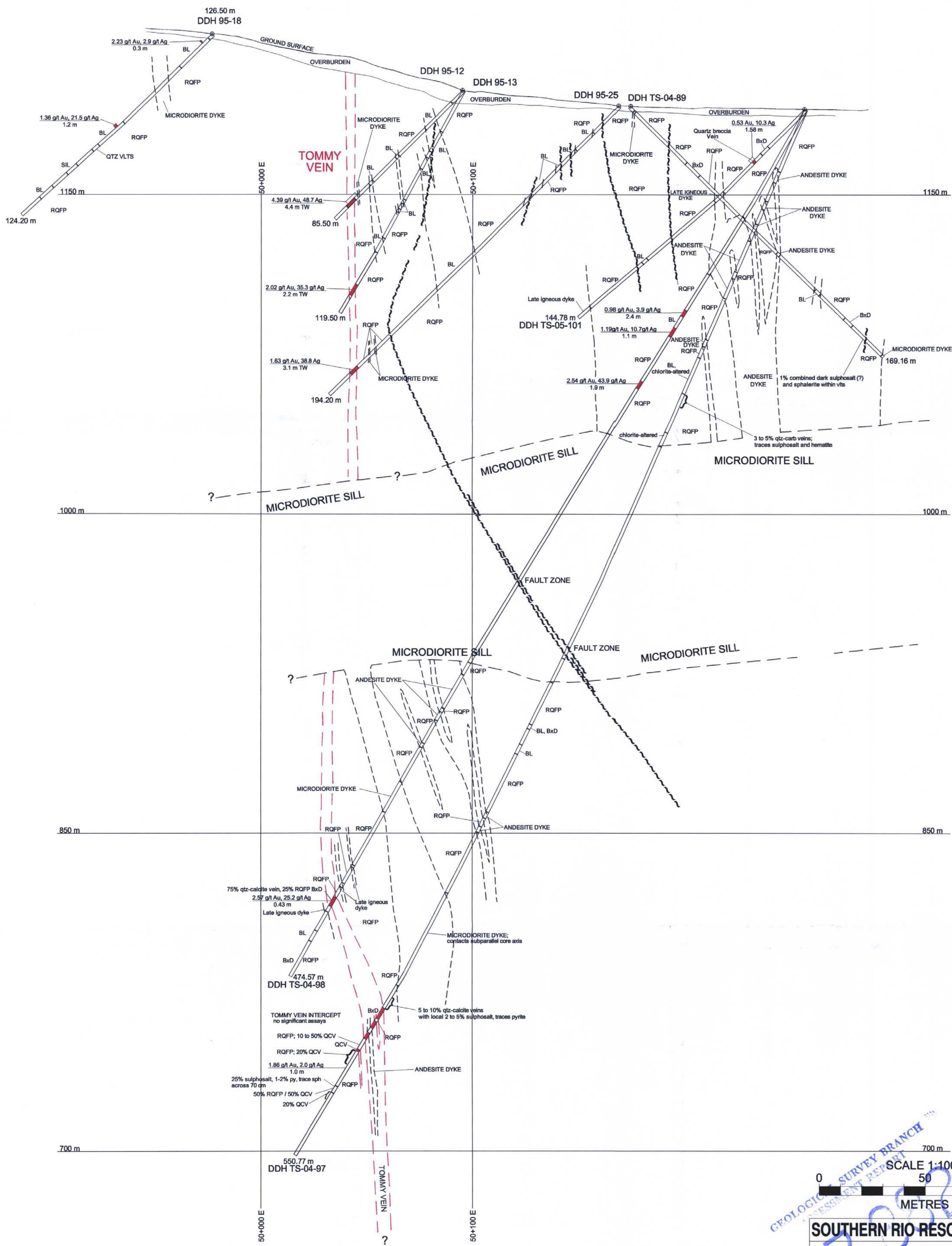
late igneous dyke

TO ACCOMPANY A REPORT BY DAVID PAWLIUK, P.GEO

SOUTHERN RIO RESOURCES LTD.

3 T'S PROJECT
TSACHA MINERAL CLAIM
TOMMY VEIN
CROSS SECTION 45+00N
DDH 95-11,-29,-30 TS04-99
TS05-100,-102
LOOKING NORTH

SCALE: 1:1000	NTS: 9.3F/3E	FIG. 6
DRAWN BY: D. PAWLIUK	DATE: April, 2005	



- LEGEND**
- VEIN INTERCEPT
 - RQFP RHYOLITE QUARTZ FELDSPAR PORPHYRY
 - SIL SILICIFIED
 - BL BLEACHED
 - BxD BRECCIATED
 - QCV QUARTZ-CARBONATE VEIN
 - FAULT

0 50 100
 SCALE 1:1000
 METRES

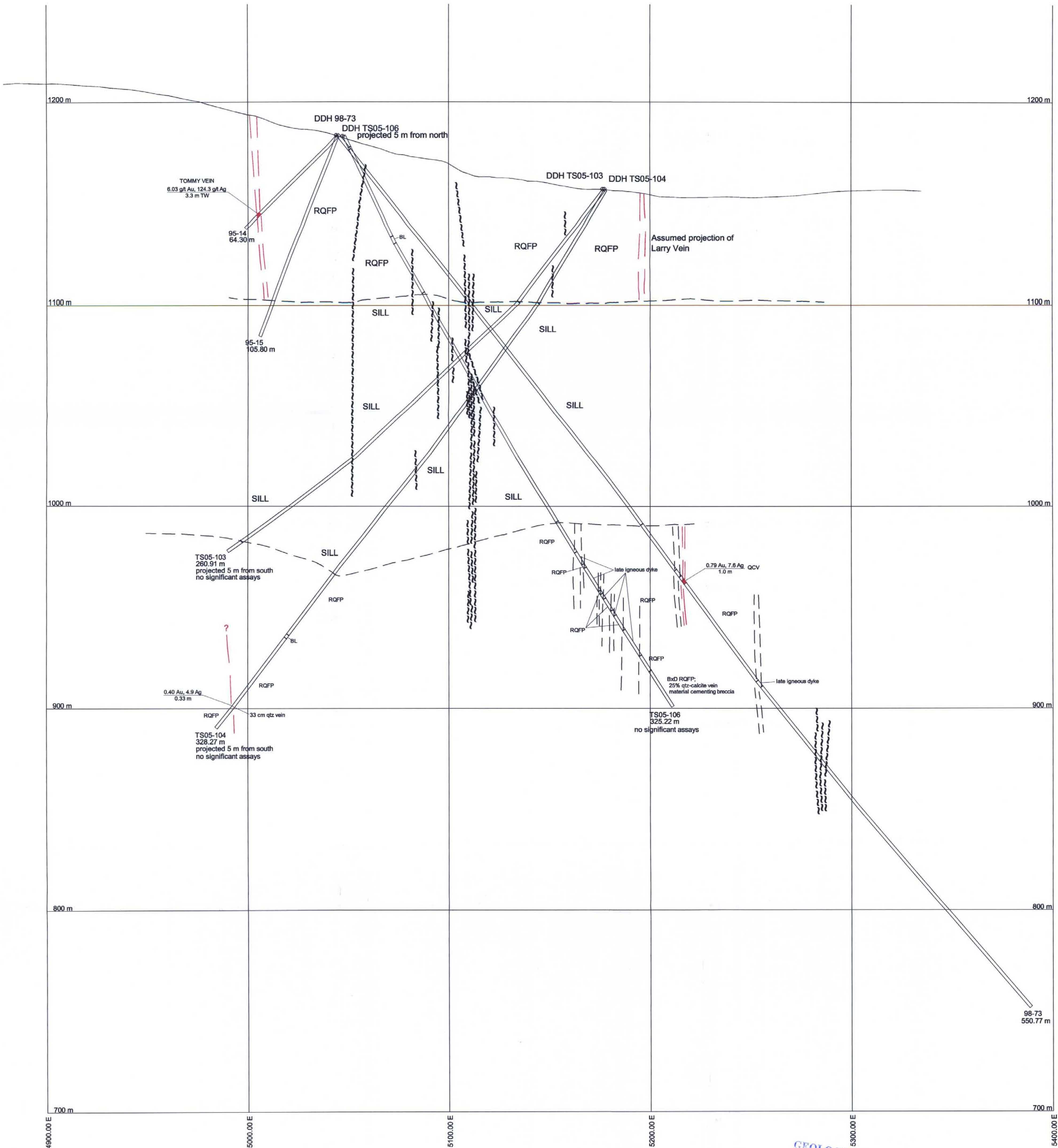
SOUTHERN RIO RESOURCES LTD

3 T'S PROJECT
TSACHA MINERAL CLAIM
TOMMY VEIN
CROSS SECTION 45+50N
DDHs 95-12,-13,-18,-25
TS-04-89,-97,-98, TS05-101

LOOKING NORTH

Drawing modified after Pautler(1996) Figure 21

TO ACCOMPANY A REPORT BY DAVID PAWLJUK, P.GEO



GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT
SCALE 1:1000
0 50 100
METRES

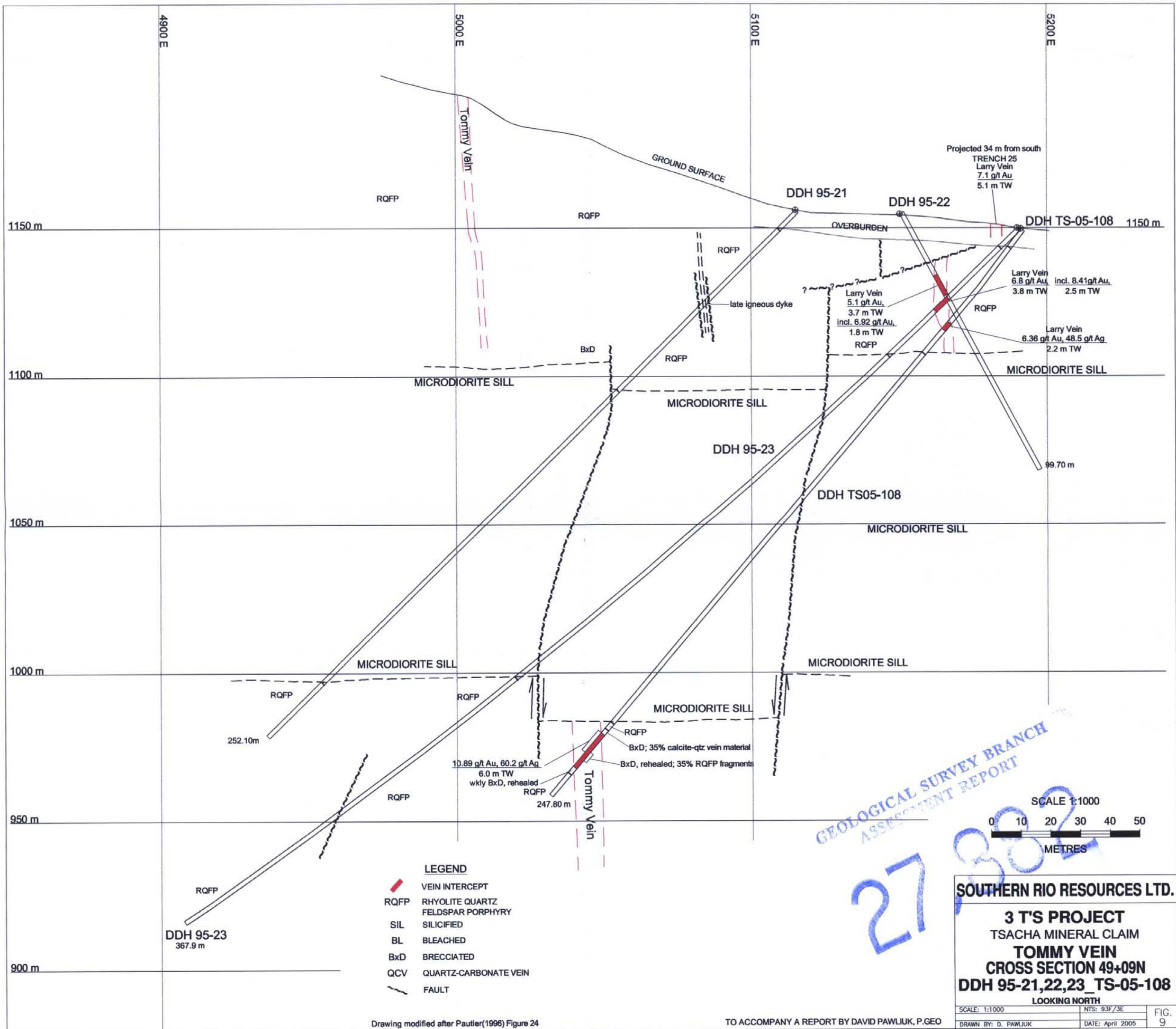
27,882

SOUTHERN RIO RESOURCES LTD.
3-T'S PROJECT
TSACHA MINERAL CLAIM
TOMMY VEIN
CROSS SECTION 48+70N
DDH 95-14, -15; 98-73
TS-05-103, -104, -106
LOOKING NORTH

- LEGEND**
- VEIN INTERCEPT
 - RQFP RHYOLITE QUARTZ FELDSPAR PORPHYRY
 - SIL SILICIFIED
 - BL BLEACHED
 - BxD BRECCIATED
 - QCV QUARTZ-CARBONATE VEIN
 - FAULT

MODIFIED AFTER PAUTLER(1996) FIGURE 22 AND SMITH(1999) FIGURE 11

TO ACCOMPANY A REPORT BY DAVID PAWLUK, P.GEO

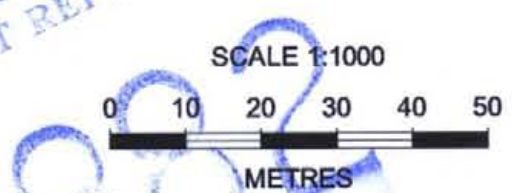


Drawing modified after Pautler(1996) Figure 24

TO ACCOMPANY A REPORT BY DAVID PAWLJUK, P.GEO

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

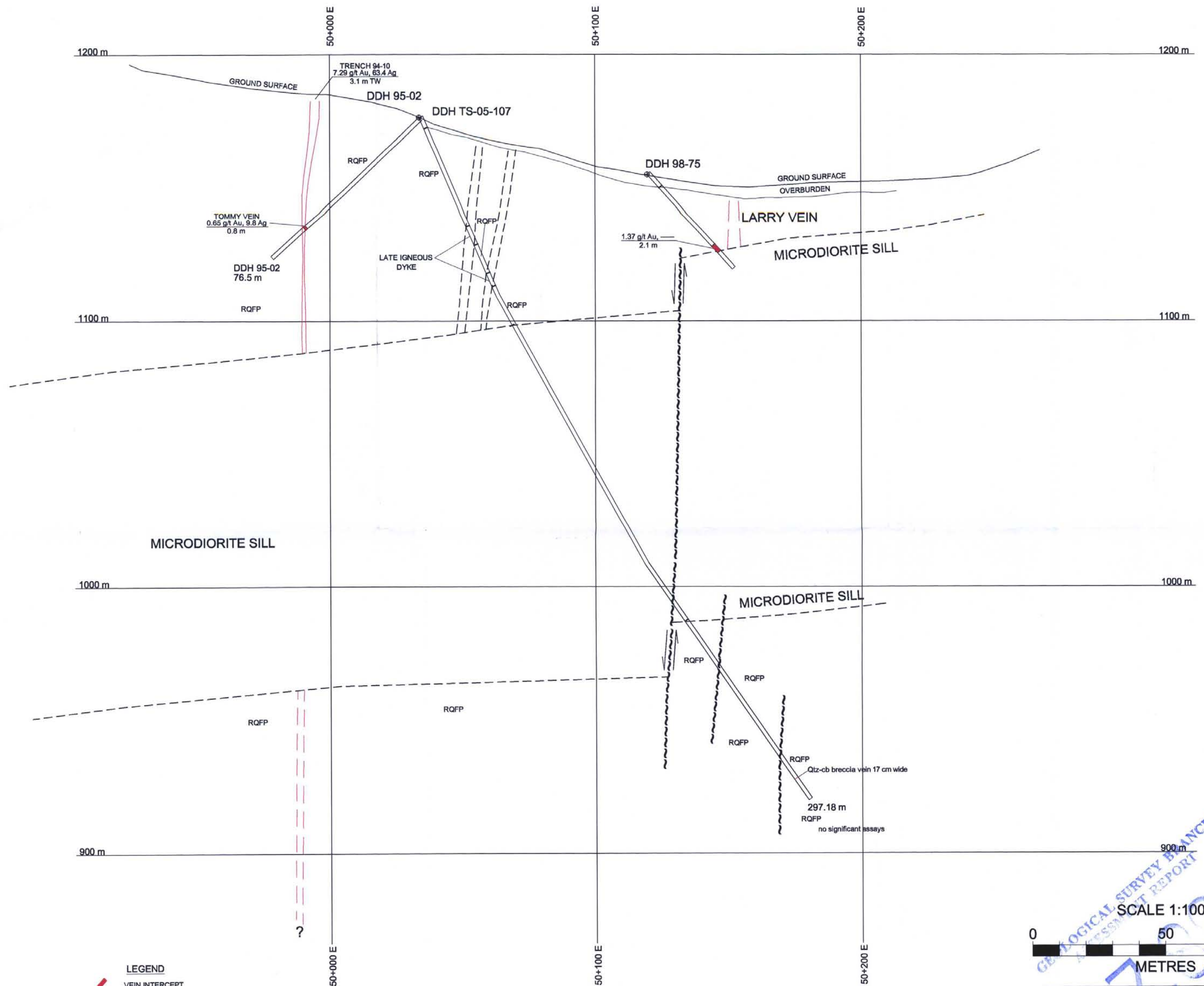
27



SOUTHERN RIO RESOURCES LTD.

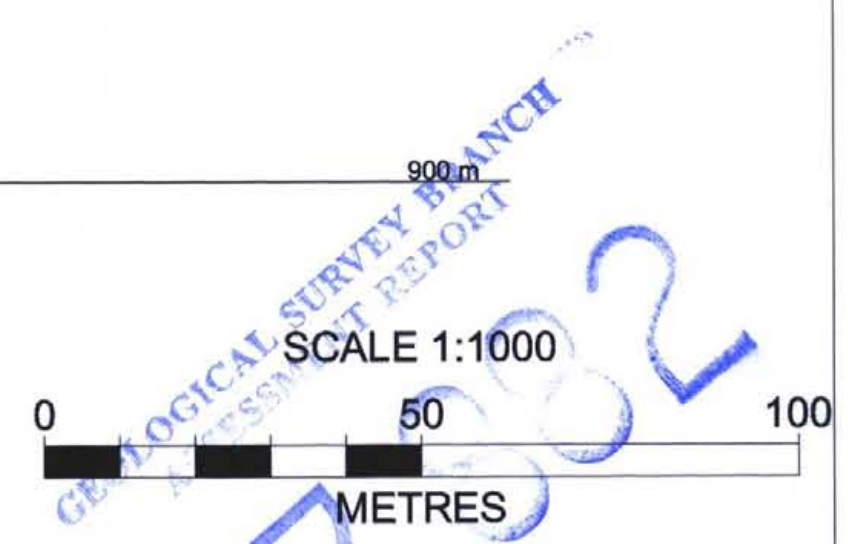
3 T'S PROJECT
TSACHA MINERAL CLAIM
TOMMY VEIN
CROSS SECTION 49+09N
DDH 95-21,22,23 TS-05-108
LOOKING NORTH

SCALE: 1:1000	NTS: 93F/3E	FIG. 9
DRAWN BY: D. PAWLJUK	DATE: April 2005	



- LEGEND**
- VEIN INTERCEPT
 - RQFP RHYOLITE QUARTZ FELDSPAR PORPHYRY
 - SIL SILICIFIED
 - BL BLEACHED
 - BxD BRECCIATED
 - QCV QUARTZ-CARBONATE VEIN
 - FAULT

Drawing modified after Pautler(1996) Figure 21

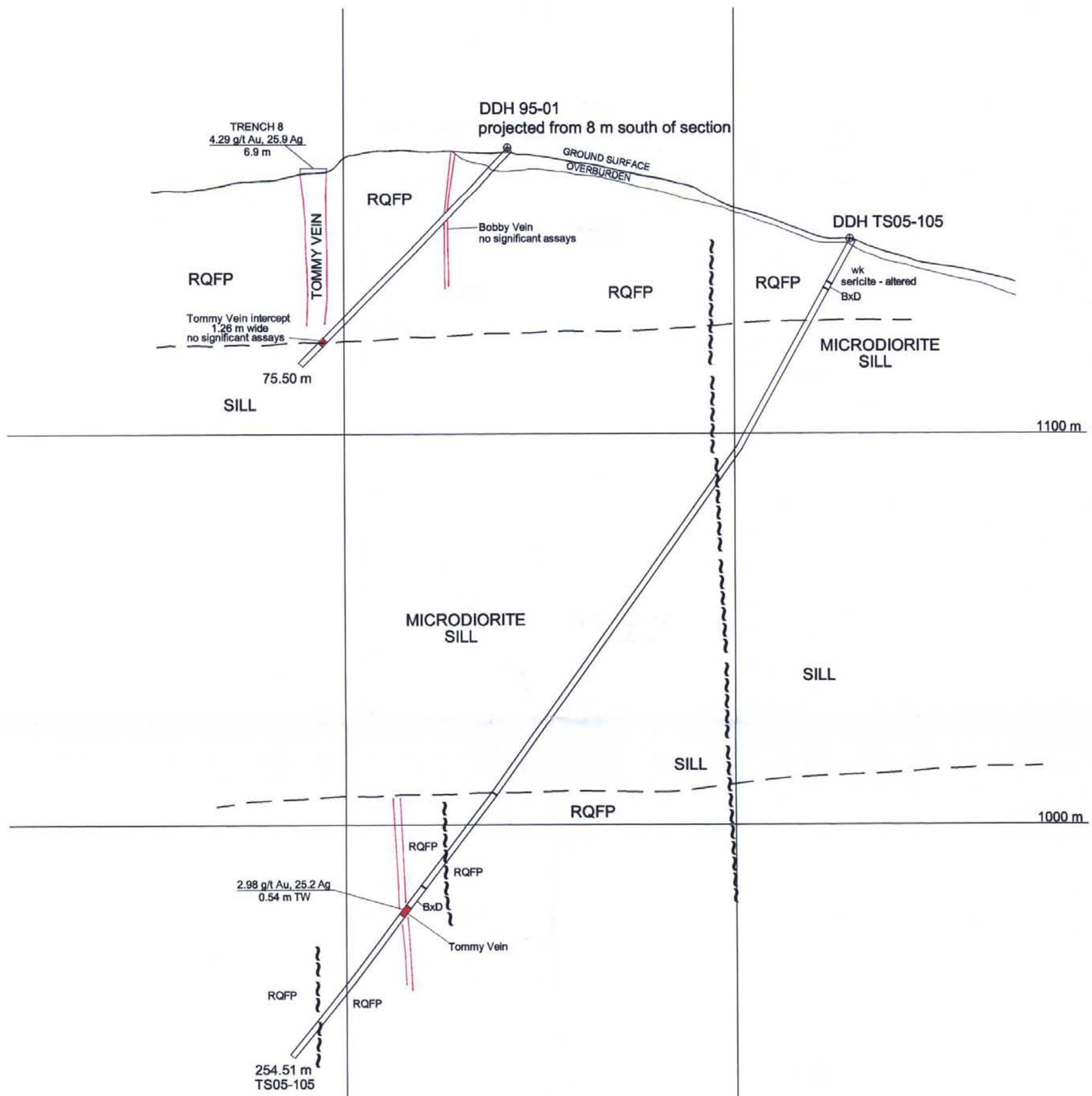


SOUTHERN RIO RESOURCES LTD.

**3 T'S PROJECT
TSACHA MINERAL CLAIM
TOMMY VEIN
CROSS SECTION 49+50N
DDH 95-02, 98-75, TS-05-107
LOOKING NORTH**

TO ACCOMPANY A REPORT BY DAVID PAWLIUK, P.GEO
MODIFIED AFTER SMITH(1999) FIGURE 12

SCALE: 1:1000	NTS: 93F/3E	FIG. 10
DRAWN BY: D. PAWLIUK	DATE: Mar 2005	



GEOLOGICAL SURVEY BRANCH
 ASSESSMENT REPORT
 27,882

- LEGEND**
- / VEIN INTERCEPT
 - RQFP RHYOLITE QUARTZ FELDSPAR PORPHYRY
 - SIL SILICIFIED
 - BL BLEACHED
 - BxD BRECCIATED
 - QCV QUARTZ-CARBONATE VEIN
 - - - FAULT

SOUTHERN RIO RESOURCES LTD.

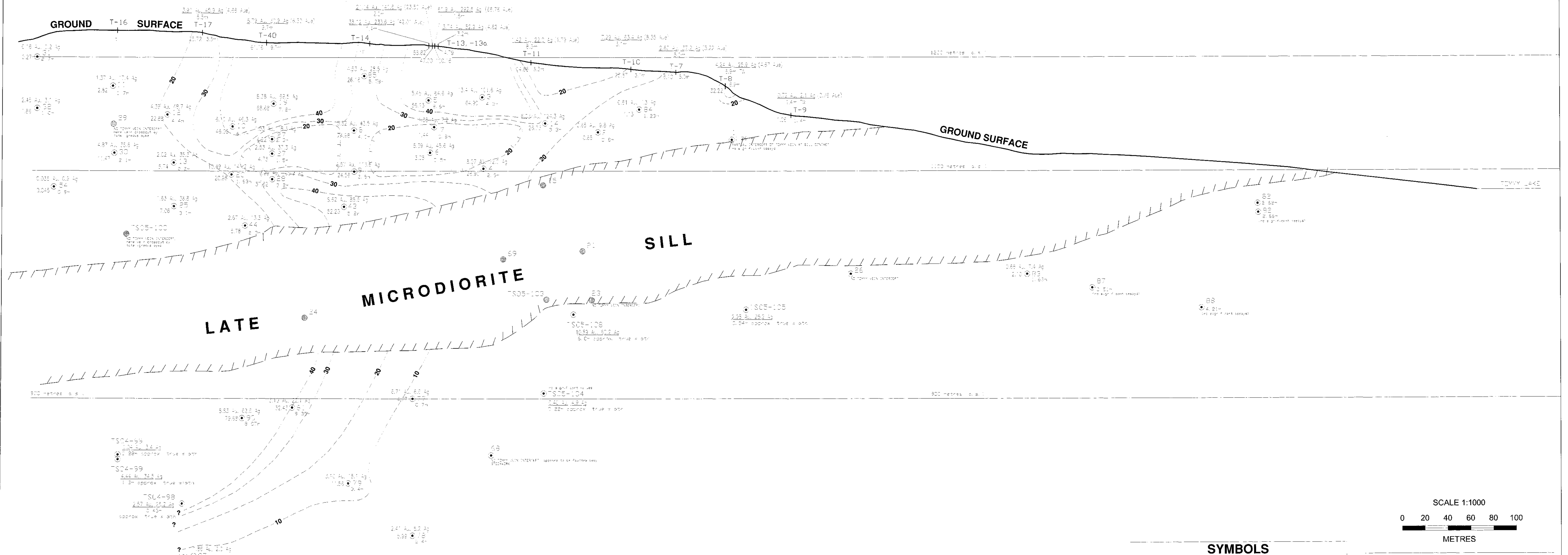
**3 T'S PROJECT
 TSACHA MINERAL CLAIM
 TOMMY VEIN AREA
 CROSS SECTION 50+47N
 DDH 95-01, TS-05-105
 LOOKING NORTH**

TO ACCOMPANY A REPORT BY DAVID PAWLIUK, P.GEO
 MODIFIED AFTER PAUTLER(1996) CROSS SECTION 50+35N

SCALE: 1:1000	NTS: 93F/3E	FIG. 11
DRAWN BY: D. PAWLIUK	DATE: Mar 2005	

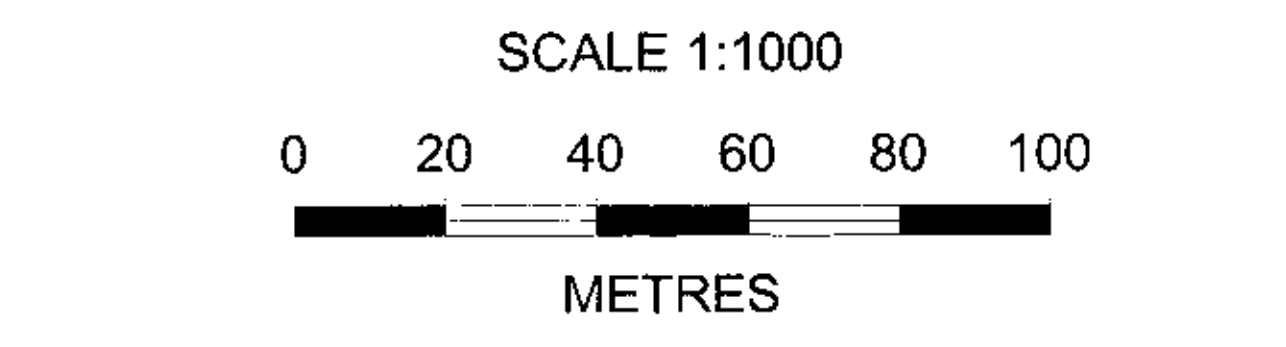
S

N



SYMBOLS

- Tommy vein (dashed line)
- Diagonal of hole number (solid line)
- True width of mineralized interval (m) (circle with number)
- Used equivalent (Aue) g/t x true width of mineralized interval (m) (circle with number)
- Aue calculated as if over sight Aue = g/t Au = $\frac{Aue \times W}{L}$ (circle with number)
- 26 Diagonal of hole did not intersect Tommy Vein (circle with number)
- T-8 Surface rock trench number (circle with number)
- 32.22 1.80 True width of mineralized interval (circle with number)
- 15 x true width (m) (circle with number)



SOUTHERN RIO RESOURCES LTD.

**3 T'S PROJECT
TSACHA PROPERTY
Longitudinal Section through
TOMMY VEIN
GRADE - WIDTH PRODUCT**

(LOOK TO WEST)

SCALE: 1:1000 NTS: 837/35/20 5/0
NTS No: 837/35
DRAWN BY: D. PAWLUK DATE: Apr 2005 2

NOTE: Drawing modified after McIvor(2002), Smith(1999) and Pautler(1994, 1997) TO ACCOMPANY A REPORT BY DAVID PAWLUK, P.GEO



TAKEN 1 MINERAL CLAIM
TASHA 2 MINERAL CLAIM

Drill Access Road

Adrian Creek

5877000 N

TS05-109

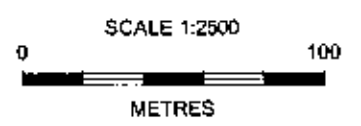
84.300, 592.00
 0.050, 1.50
 0.220, 4.10
 0.030, 1.20
 0.100, 2.90
 0.040, 1.40
 0.150, 5.90
 0.065, 1.40
 0.200, 8.30
 0.045, 1.10
 0.090, 2.40
 0.065, 1.30
 0.120, 0.20
 0.100, 0.000

bulldozer track

Adrian Lake
± 1065.8

- Boulder Sample Location
Gold (g/t), Silver (g/t)
- ⊕ Diamond Drill Hole

Handwritten signature and date: Paul J. Pankuk, 2025



5876500 N

SOUTHERN RIO RESOURCES LTD.
TASHA 2 MINERAL CLAIM
ADRIAN CREEK AREA

DIAMOND DRILLING PLAN MAP

SCALE: 1:2500
 DRAWN BY: PANKUK
 DATE: April 2025
 FIG. 13

365500E

366000E

366500E

DDH TS05-109

GROUND SURFACE

OVERBURDEN

1050 m elevation

35.97 m³

CROSS SECTION DDH TS05-109

27032

SCALE 1:500



SOUTHERN RIO RESOURCES LTD.

**3 T'S PROJECT
TSACHA 2 MINERAL CLAIM
Adrian Lake Area**

**CROSS-SECTION
DDH TS05-109
LOOKING NORTHEAST**

TO ACCOMPANY A REPORT BY DAVID PAWLUK, P.GEO

SCALE: 1:500	DATE: 05/03/2004	1/10
DRAWN BY: B. Pawluk, UK	DATE: 05/03/2004	1/4