

Wildrose 82E/02
825101

HOLE NUMBER: TM 91-14

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS:

METRIC UNITS: X

PROJECT NAME: TAM
PROJECT NUMBER: 672
CLAIM NUMBER:
LOCATION:

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PLOTting COORDS  GRID: TAM91 GRID
                  NORTH: 200.00N
                  EAST: 1750.00E
                  ELEV: 1090.00

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ALTERNATE COORDS  GRID:
                   NORTH:  0+ 0
                   EAST:   0+ 0
                   ELEV:    0.00

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COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 123.75m
START DEPTH: 0.00m
FINAL DEPTH: 123.75m

COLLAR GRID AZIMUTH: 70° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 70° 0' 0"

DATE STARTED: October 31, 1991
DATE COMPLETED: November 3, 1991
DATE LOGGED: November 7, 1991

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: NO

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: ATLAS DRILLING
CASING: 10 FEET LEFT IN HOLE
CORE STORAGE: GREENWOOD

PURPOSE: To test Permian seds and andesitic volcanics for stockwork and/or sediment hosted disseminated mineralization.

DIRECTIONAL DATA: zation.

[illegible]

HOLE NUMBER: TM 91-14

DRILL HOLE RECORD

LOGGED BY: C.NAGATI

PAGE: 1

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 7.60	«CSG»					
7.60 TO 15.85	«SIL ARG»	The interval consists of argillite. The argillite is black except in zones of extreme silicification where the core is grey. The argillite is crosscut by 1% white Q/C (97/3%) stringers. 13.8-14.15m: Pyritiferous qtz vein. 14.4-14.6m: Pyritiferous qtz vein with 5% white carbonate. 15.14-15.6m: «Siliceous Bx Zone» 95% of the clasts are pale, sericite altered; 5% qtz or silicified fragments. The lower contact is oriented at	45	The argillite is moderately silicified except as indicated below: 7.6-10.97m: «Int. Sil» 13.7-15.14m: «Int. Sil» The fractures are highly limonite stained to 12.2m. 15.14-15.6m: Strong sericitic alteration of clasts. 4% fuchsite. Fuchsite is largely concentrated at top of interval.	1% fine grained disseminations and stringers of pyrite. 13.8-14.15m: «60%Py, Tr Cp in QV» 14.4-14.6m: «35% Py in QV» 15.14-15.6m: 3% fine grained pyrite stringers.	Core Recovery: 7.9-10.97m: 19% 10.97-12.2m: 36% The core is extremely rubbled to a depth of 14.2m.
15.85 TO 20.50	«(PEB-LITH) WACKE»	The interval consists of interbedded intervals of silty to fine grained (<1mm) sandstone and coarser sand/pebbly beds. Pebbly material is generally <1cm in diameter. The larger fragments are sub-angular to rounded. Some of the interval is weakly conglomeratic. Much of the coarser grained intervals have been moderately to intensely altered which has obscured the original textures. Bedding plane is commonly ill-defined. Bedding at Orientation of beds is uncertain but there appears to be some fining downhole: tops downhole? Between 15.85-17.3m the unit consists primarily of grey wacke unit. Between 17.3-20.5m the unit is greenish in colour; coarser grained and altered. There are 1% Q/C (20/80%) stringers randomly crosscutting the core. There is a concentration of these stringers (3%) between 18.1-18.45m which weakly brecciate the core. Larger fragment composition consists of chert fragments and chlorite, sericite altered material.	40	The interval contains minor patches of moderate intensity silicification; grey to white in colour. Between 17.3-20.5m the interval is moderately chlorite/sericite altered. The core is weakly calcareous. Minor fuchsite is present, occurs at 18.3m.	Overall Py content is approx. 4%. Py is fine grained and occurs as coarse disseminations and stringers. Trace chalcopyrite associated with Q/C stringers.	
20.50 TO 21.25	«CHERT»	The chert is finely stockworked by fractures. Some brecciation and Q/C veining is also present. Chert appears to have a minor argillite component. Contacts are irregular and core is rubbled.			The top 20cm of the interval contains 4% Py disseminations and stringers. The remainder of the unit contains 1% Py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
21.25 TO 22.00	«WACKE»	Max grain size is approx 1mm. There appears to be some graded bedding, fining downhole. <1% white Q/C patches. Preferential fracture orientation at	30	The wacke is weakly calcareous. There may be some fine grained sericite alteration.	1% disseminated Py except between 21.7-22m where there is 3% Py occurring in patches and stringers along fractures.	
22.00 TO 23.10	«CHERT»	Similar to the chert at 20.5-21.25m. Some faint banding (relict bedding?) at	40		Core recovery: 21-23.2m: 86%	
23.10 TO 44.80	«SIL ARG FL T BX»	The argillite is intensely stockworked by fine fractures where the core is competent. 80% of the interval consists of rubbled, fault brecciated core. There may be some minor cherty material interbedded with the argillite. The chert forms highly siliceous bands oriented at 43-44.2° Patchy white «Qtz Vn» Vein is crosscut by white Q/C stringers.	50	The argillite is moderately to intensely silicified throughout. Silicification takes form of pervasive silica flooding and Q/C stringers. Very intense sil zones are bleached to grey.	The unit contains 1-3% coarsely disseminated and stringer Py.	Core Recovery: 23.2-26.2m: 27% 26.2-29.3m: 26% 29.3-32.3m: 23% 32.3-34.4m: 24% 34.4-36.9m: 28% 37.5-40.2m: 60% 40.2-43.0m: 80%
44.80 TO 45.40	«ALT LITHIC WACKE?»	Matrix is very fine grained, apparently largely plagioclase which supports approx 40% frags to 3cm. Interval is moderately to strongly altered so that original textures are destroyed. Only the cherty frags remain identifiable. Fragments are generally rounded. Some clasts appear to have been volcanic (lithic fragments). <1% Q/C stringers/patches. Lower contact at	50	The interval has been moderately but pervasively altered to clay and sericite. The volcanic clasts are particularly strongly affected. The unit is weakly to moderately calcareous.	<1% coarsely disseminated Py.	Presumably the matrix of the unit was somewhat porous which allowed hydrothermal fluids to more readily percolate causing the unit to be more highly altered than the surrounding units.
45.40 TO 45.90	«ANDESITE»	Massive unit of andesitic volcanic. 3% white Q/C stringers present. Lower contact is fault brecciated at The core is well fractured. Fractures are coated with carbonate.	60	The volcanic is chloritically altered.	Minor pyrite.	The interval is relatively strongly rubbled.
45.90 TO 50.80	«HYDR BX SIL ARG»	The unit varies from a finely fractured black massive argillite to a greyish intensely hydrothermally brecciated argillite. The argillite contains minor cherty bands. The intensely brecciated zone comprises 50% of the interval. Arg clasts are angular. The supporting matrix is Fe-carbonates. 46.1-46.4° «Flt BX» 48.9-49° «Flt BX» Core continues broken to a depth of 50.3m.		The argillite is intensely silicified throughout. The argillite ranges from black to grey with increasing levels of silicification. Very minor graphite is present.	<1% pyrite.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
50.80 TO 51.80	«ALT LITHIC WACKE»	The matrix of the unit consists of aphanitic to fine grained, buff, weakly calcareous material. Composition of the matrix appears to be (after staining) plagioclase which is altering to clay+sericite. The initial 40cm of the interval contains 40% clastic material: 10% argillite, 30% very fine grained clasts of a composition similar to that of the matrix and some siliceous clasts. Clasts are angular. In the remainder of the interval there is an increasing amount of grey to black silicified argillite clasts present as the hole nears the next argillite unit. The matrix is slightly greener in the latter part of the interval.		The matrix is weakly sericitic, calcareous, and clay altered. The argillite is silicified.	Minor pyrite.	Matrix composition and textures similar to that seen in 44.8-45.5m. Some of the textures appear to be brecciated. Possibly some slump features.
51.80 TO 54.15	«SIL ARG CR CKL BX»	The argillite is pervasively brecciated by a fine stringer stockwork of Q/C (80/20%). The stringers comprise 15% of the interval. The stringers reach a maximum width of 1mm.		The argillite is well silicified throughout. 52.3-52.6m: Intense silicification/flooding bleaches core.	<1% Py except between 52.3-52.6m where there is 3% Py.	The unit is p
54.15 TO 56.50	«CHT/ARG LI THIC WACKE»	The unit consists of coarsely brecciated chert and silicified argillite. Clasts comprise 70% of the interval. Clast composition is 70% chert:30% arg. The matrix is the fine grained buff altered plagioclase as in the intervals 44.8-45.4m and 50.8-51.8m. Clasts are up to 10cm long. The unit has subsequently been strongly fractured.		The argillite is intensely silicified. The plagioclase-rich matrix is weakly altered to clay, carbonate.	Minor Py.	The unit is probably a debris flow which has not travelled extensively. The matrix is probably an altered fine sand.
56.50 TO 59.20	«ALT LITHIC WACKE»	A fine grained buff plagioclase matrix supports <70% clastic material ranging from <1mm to 10cm. Clasts are sharply angular to rounded. Clast composition includes argillite, chert, quartz, sericite altered clasts and clasts of a similar composition as the matrix. The base of the unit from 58.8-59.2m is massive, light brown, uniform (no apparent clasts); probably an altered silt or claystone. The unit contains <1% Q/C stringers. At 58.1m there is 2cm calcite vein oriented at 45° 58.6-59.2m «Wk Flt Bx»	45	The unit is weakly carb, ser, clay altered except between 57.2-57.6m where there is moderate yellowish sericite alteration; and 58.8-59.2m where there is more clay alteration at the expense of sericite, carb.	The unit contains minor Py except between 57.2-57.6m where there is 1% Py.	The matrix is again similar to the previous brecciated units.
59.20 TO 60.30	«ARG/ARG BX »	The unit starts out as a massive argillite containing <1% discontinuous white Q/C stringers and patches. Starting at 59.6m the core takes on a brecciated texture with subangular to subrounded clasts which are greyish in colour. Some of these "clasts" may actually be small alteration/replacement zones. The interval contains minor buff col-		Arg is weakly sil.	<1% disseminated and blebs of Py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		oured patches of the plag rich, aphanitic material (which previously and subsequently brecciates the core). Sharp lower contact at	65			
60.30 TO 62.60	«ALT ARG»	60.3-62.2m: The arg is brecciated by and altered to a buff, aphanitic silicic/felsic rock similar to the matrix seen in the altered lithic wackes previous to this interval. Clastic textures are much less common and clasts consist primarily of argillite. The hydrothermal fluids responsible for alteration of the lithic wackes, here tend to replace and alter the argillite rather than a coarser unit. Some brecciation is present. There is 2% white carbonate veining. 62.2-62.6m: There is much less felsic material in the interval (approx 40%). Argillite becomes more prevalent with depth.		Some sericite, clay and carbonate altn of felsic material.	Minor dissem Py.	Core Recovery: 59.1-62.2m: 65% Most of the loss occurs at 59.1m. 62.2-63.7m: 60%
62.60 TO 72.40	«ARG FLT BX »	Massive argillite bed. 2% discontinuous white Q/C stringers; local concentrations to 4%. The core is rubbed throughout the majority of the interval. ‡62.6-69.5‡ «Flt Bx» More intermittent fault bx zone occurs between ‡71-71.9‡ «Flt Bx»		The argillite is locally weakly graphitic.	1% Py patches and stringers.	Core Recovery: 63.7-65.8m: 19% 65.8-66.75m: 30% 66.75-68.3m: 39% 68.3-69.5m: 50% 69.5-71.6m: 90%
72.40 TO 78.45	«WACKE/LITH IC WACKE»	The interval varies between a fine grained wacke with 10% lithic fragments to 3mm to a coarse lithic wacke with fragments to 2cm and very little fine grained matrix. Local fining of the sediments indicates that tops are downhole. Bedding oriented. Some preferential orientation of fractures at (presumably along bedding). There is some cream coloured carbonate coating some fracture surfaces.	70 70	There is some moderate to weak local silicification. Between 75-76.8m the core is moderately bleached and silicified with subordinate amounts of carbonate, sericite? Alteration varies from pervasive to patchy within the interval and this altn can have distinct, sharp fronts to diffuse boundaries.	Up to 1% Py as dissem and stringers which commonly occur along fractures.	
78.45 TO 93.90	«INTERB ARG /WACKE»	75% of the interval consists of black argillite and 25% of fine grained grey wacke. The argillite beds tend to be quite massive with a high density of tight fractures and 2% white Q/C stringers. The wacke generally has a grain size of <1mm and contains 3% lithic fragments (generally argillite). ‡79.1-79.86‡ «Flt Bx» ‡81.4-81.5‡ «Flt Bx» ‡83.3-85.5‡ «Flt Bx»		The unit is weakly silicified. Sil tends to wash out some of the granular textures of the coarser sediments. 80.5-81m: The argillite is bleached to grey colour; weakly silicified. 79.1-79.86m: Minor graphite. 87.17-88.7m: Minor graphite. 93.3-93.9m: The argillite is increasingly altered with depth. Alteration	The argillite contains up to 3% Py stringers and patches. The wacke contains only minor Py.	Core Recovery: 82.9-84.12m: 90% 84.12-85.04m: 52% 85.04-87.17m: 47% 87.17-87.7m: 47%

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		<p>‡87.17-88.7‡ «Flt Bx»</p> <p>‡93.3-93.5‡ «Flt Bx»</p>		consists of patchy grey silicification and some carbonate alteration. Minor sericite.		
93.90 TO 97.50	«INTERB ALT VOLC/SEDS»	<p>The unit consists of 50% green, intensely altered volcaniclastic rock and 50% somewhat less altd grey sediments which look like they are derived from wackes. The volcaniclastic rocks may have been sedimentary in origin as well; the intense alteration destroys almost all original textures. The interval is cut by 2% white carbonate stringer stockwork. Some stringers are offset by fractures. Bedding in the interval is oriented at approx 70-80 degrees to CA.</p> <p>There has been some movement along fracture/shear planes oriented at 20-45 degrees to CA.</p> <p>‡96.7-97.1‡ «Flt Bx»</p> <p>Sharp contact at</p>	70	The volcaniclastic rocks are sericitized and/or chloritized and are weakly calcareous. The wackes are weakly calcareous and locally weakly sericitized.	Minor dissem Py.	<p>Core Recovery:</p> <p>90.2-93.3m: 55%</p> <p>Core loss must have occurred at 93.3m.</p>
97.50 TO 114.60	«ARG FLT BX »	<p>Protolith is massively bedded argillite. The argillite is finely stockworked by fine, tight fractures where the core is competent. Much of the interval consists of well rubbled and fault brecciated core. There is <1% white carb stringers present which locally bx the core.</p> <p>99.16-99.36m: fault brecciated core</p> <p>101.05-101.35m: rubbled core</p> <p>‡103.8-107.5‡ major «Flt Bx Zone»</p> <p>‡110.7-111.6‡ «Flt Bx Zone»</p>		<p>The argillite is weakly graphitic.</p> <p>97.7m: 3cm band of grey intensely sil argillite.</p> <p>102.05-102.35m: Argillite is bleached and weakly silicified.</p> <p>102.5-105m: Patchy weak bleaching of argillite and very weak silicification.</p> <p>‡111.6-114.6‡ «Wk to mod sil» Core is bleached to a greyish colour. The interval may be slightly coarser grained.</p>	Up to 2% fine grained Py which occurs as blebs but primarily occurs as fracture coatings.	<p>Core Recovery:</p> <p>101.35-103m: 85%</p> <p>103-105m: 90%</p> <p>105-106.7m: 41%</p> <p>106.7-107.7m: 90%</p> <p>107.7-108.5m: 100%</p> <p>110.95-111.56m: 30%</p> <p>111.56-113.69m: 49%</p> <p>113.69-115.21m: 85%</p>
114.60 TO 123.75	«SIL WACKE FLT BX»	The interval consists of a wacke to lithic wacke wherein the clasts are argillite and feldspathic and cherty grains. The interval is generally strongly rubbled and affected by fault brecciation but where the core is more competent there are numerous fractures.		The interval is weakly to moderately silicified throughout altering the matrix of the rock.	1-2% fine grained Py occurs in dissem and stringers-frequently along fractures.	<p>Core Recovery:</p> <p>117.2-120.1m: 62%</p> <p>121.92-123.75m: 55%</p>

Sample	From (m)	To (m)	Length (m)	ASSAYS		GEOCHEMICAL								Au g/t	Au oz/t		COMMENTS
				Ag ppm	As ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb					
BCD25056	7.60	13.70	6.10	0.7	186	158	693	8	20	8	282	99					
BCD25057	13.70	15.85	2.15	0.4	49	230	207	2	18	1	44	36					
BCD25058	15.85	18.20	2.35	0.2	31	350	210	3	14	1	34	7					
BCD25059	18.20	20.50	2.30	0.2	24	296	256	1	18	1	50	16					
BCD25060	20.50	23.10	2.60	0.3	8	700	139	2	14	1	40	4					
BCD25061	23.10	36.80	13.70	0.5	17	954	67	2	17	1	39	6					
BCD25062	36.80	39.80	3.00	0.5	26	732	69	2	13	1	41	8					
BCD25063	39.80	42.80	3.00	0.7	29	1325	86	5	15	1	226	2					
BCD25064	42.80	44.80	2.00	0.1	60	340	113	2	17	1	133	19					
BCD25065	44.80	45.90	1.10	0.4	43	1444	79	1	20	1	94	5					
BCD25066	45.90	48.90	3.00	0.7	17	858	62	2	12	1	42	3					
BCD25067	48.90	50.80	1.90	0.6	65	612	100	17	17	1	481	21					
BCD25068	50.80	51.80	1.00	0.1	72	1256	65	2	15	1	61	5					
BCD25069	51.80	54.10	2.30	0.4	104	523	72	4	18	1	185	37					
BCD25070	54.10	56.50	2.40	0.5	43	454	63	2	15	1	161	18					
BCD25071	56.50	59.20	2.70	0.6	28	597	53	2	19	1	47	4					
BCD25072	59.20	62.60	3.40	0.7	36	976	77	8	23	1	96	15					
BCD25073	62.60	69.50	6.90	0.7	57	580	84	6	28	1	137	19					
BCD25074	69.50	72.40	2.90	0.6	65	568	88	9	19	1	130	20					
BCD25075	72.40	75.40	3.00	0.6	10	753	61	4	15	1	40	2					
BCD25076	75.40	78.40	3.00	0.7	25	567	65	5	12	1	47	1					
BCD25077	78.40	81.40	3.00	0.6	46	427	93	7	17	1	112	7					
BCD25078	81.40	85.00	3.60	0.5	32	279	74	5	13	1	61	2					
BCD25079	85.00	90.20	5.20	0.8	48	385	86	11	23	1	112	13					
BCD25080	90.20	93.90	3.70	0.9	49	587	79	3	24	1	67	3					
BCD25081	93.90	95.70	1.80	0.4	9	1059	53	1	11	1	59	1					
BCD25082	95.70	97.50	1.80	0.4	17	373	25	1	15	1	57	1					
BCD25083	97.50	100.50	3.00	0.7	65	544	205	8	32	1	123	2					
BCD25084	100.50	103.50	3.00	0.5	36	556	151	7	19	1	89	2					
BCD25085	103.50	108.50	5.00	0.6	31	412	77	4	27	1	109	1					
BCD25086	108.50	111.60	3.10	0.5	51	764	89	5	29	1	107	5					
BCD25087	111.60	114.60	3.00	0.7	44	495	72	5	14	1	65	1					
BCD25088	114.60	117.60	3.00	0.7	49	434	63	3	14	1	56	2					
BCD25089	117.60	123.75	6.15	0.7	37	545	48	4	13	1	46	1					

IMPERIAL UNITS: METRIC UNITS: X

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 152.70m
START DEPTH: 0.00m
FINAL DEPTH: 152.70m

COLLAR ASTRONOMIC AZIMUTH: 90° 0' 0"

CONTRACTOR: ATLAS DRILLING
CASING: 10' LEFT IN HOLE
CORE STORAGE: GREENWOOD

PURPOSE: TO TEST DIORITE INTRUDING PERMIAN SEDIMENTS WITH CHARGEABILITY AND MAG HIGHS, AND WEAK TO STRONG AU

DIRECTIONAL DATA: SOIL GEOCHEM FOR STOCKWORK AND/OR SEDIMENT HOSTED DISSEMINATED MINERALISATION.

[illegible]

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 9.14	«CSG»					
9.14 TO 11.60	«BROKEN COR E»					
11.60 TO 36.82	«CROWDED FS PAR PO»	The interval consists of crowded fspar porphyry, grey to green in colour. Grain size is roughly equant with average size of 2mm in length. Small (2-5mm) quartz carbonate veins occur through interval at random orientations. 19.1-19.4m: Porphyritic textures obliterated. 34.45-34.43: «H'Thermal Bx» angular clasts in Q/C vein. 36.82m: Contact oriented at	60	11.6-17.3: «Strong Argillic» Feldspars are strongly altered to clays. 17.3-19.1: «Chl» 19.1-19.4: «Wk Sil» 19.4-36.82: «Chl» Chlorite alteration is fairly constant to end of interval at approx 20%; occurs as patchy blebs in areas up to 5mm in dimension but more commonly as fracture filling veins and veinlets. 21.0-36.82m: Possibly leucoxene to 10%	11.6-36.82: «Trace Diss Py» 24.13-24.24: «Sulphide Vein» Small sheeted veins of pyrite and possibly sphalerite at 54 degrees to CA. Occasional Py veinlets approx 2mm in width occur through interval.	Feldspars form rosettes in areas.
36.82 TO 40.05	«TRACHYTE D YKE»	This is a purplish brown trachytic dyke with 10-15 % pyroxenes on a mm scale set in fine grained groundmass of feldspars. 40.05m: Contact oriented at	64	Occasional Q/C stringers occur in interval.		This is a Tertiary feeder dyke to overlying Marron Fm.
40.05 TO 40.78	«CROWDED FE LDSPAR PO»	The interval is a light grey colour with subhedral feldspars comprising approx 90% of groundmass. Occasional Q/C veins. 40.78m: Contact oriented at approximately	90	Weak carbonate alteration.		
40.78 TO 43.27	«TRACHYTE D YKE»	The interval contains approx 50% euhedral to subhedral feldspars as well as euhedral fine grained biotite (10%); 30% pyx.		Moderate carbonate alteration (20%). Moderate chlorite alteration.		The interval looks like a sediment in places, but the presence of euhedral biotite suggests this is not the case.
43.27 TO 45.90	«CROWDED FE LDSPAR PO»	The interval consists of a light grey to greenish grey crowded feldspar porphyry. Feldspars are roughly equant, euhedral. 44.6-44.7: «H'Thermal Bx» This small zone shows stockwork fracturing and brecciation and subsequent rehealing by Q/C.	35	Chlorite alteration of matrix comprises roughly 10%. Carbonate altn of matrix to 20%.		Occasional small Q/C veins occur throughout.

HOLE NUMBER: TM 91-15

MINNOVA INC.
DRILL HOLE RECORD

DATE: 4-February-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
45.90 TO 48.36	«TRACHYTE D YKE»	The interval contains approximately 50% euhedral to subhedral feldspars with approximately 10-20% euhedral biotite grains and minor pyroxenes.		‡47.7-48.36‡ «Silicification» Silicification has obliterated textures		Again, looks like sediment in areas but presence of biotite suggests it is an intrusive.
48.36 TO 49.68	«FLT»	The interval is a clay rich fault zone ranging from fault gouge to brecciated and Q/C healing.			Not possible to get orientation to CA.	
49.68 TO 54.00	«LITHIC WAC KE»	This interval is a lithic wacke moderately sorted with grain sizes of approx 1mm but contains fragments up to 1cm in dimension. ‡51.7‡ «Flt Gouge»		Approx 2% of the fragments show chlorite altn. Occasional Q/C stringers occur throughout the interval.		
54.00 TO 56.90	«FLT ZONE»	This interval oharacterized by several faults cutting it at high angles to the CA.		Occasional small Q/C veins.	Host rock is lithic wacke of above description.	
56.90 TO 58.10	«TRACHYTIC DYKE»	This is similar to trachytic dyke described previously. Resembles a volcanic fragmental but euhedral feldspars and biotite suggest intrusive.		Occasional Q/C veins at 70 degrees to CA.		Bottom contact is rubbly and unclear.
58.10 TO 66.52	«CHERTY ARG ILLITE»	The interval is a dark grey to black fine grained to vfg cherty argillite. Stockwork fractures occur throughout as high as 50%. ‡63.0-66.15‡ «Flt» Highly fractured fault zone but appears to have been rehealed with carbonate. 66.52m: Contact oriented at	90	‡58.1-62.8‡ «Stkwk Carbonate» Approx 5% and up to 20 % locally. ‡63.0-66.15‡ «Chl+Carb»	‡58.1-62.0‡ «1% Py» Trace to 1% Py occurring as fine euhedral dissem and as stockwork stringers.	Very graphitic.
66.52 TO 68.88	«CONGL»	The core consists of coarse grained conglomerate (1-2cm) eith subrounded to rounded, elongated chert pebbles displaying occasional embayment of grains. This is a clast supported cgl with little to no matrix. ‡67.15-68.0‡ «Arg» Interbedded black argillite and dark grey siltstone; silty bands are up to 1cm wide and contorted inn places. ‡68.8‡ «Bedding»	20			Grading in conglomerate indicates tops are up hole.
68.88 TO 71.32	«FLT GOUGE»	Clay rich, well comminuted, fault gouge.			Very graphitic.	

HOLE NUMBER: TM 91-15

DRILL HOLE RECORD

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
71.32 TO 75.00	«ARG»	Interbedded black argillite and grey siltstone. Bedding oriented Siltstone beds are approx 5mm thick. ‡72.13-72.7‡ «Lithic Wacke» Matrix supported light grey with cherty clasts that are subangular. ‡72.7-73.4‡ «Flt» Graphitic ‡74.1-74.8‡ «Flt» Graphitic	30			Very graphitic.
75.00 TO 77.00	«CONGL»	The interval consists of medium to coarse grained subrounded chert pebbles with slight preferential elongation. Generally pebbles are 1cm in dimension. The conglomerate is clast supported. 76.38-77.0m: Conglomerate becomes finer grained (0.5cm). Occasional argillite clasts are present.			‡75.0-77.0‡ «Tr diss Py» Pyrite occurs as fine grained disseminations in trace amounts, and along fractures. May be as high as 1% along fractures.	Core near end of interval is rubbly and broken.
77.00 TO 84.79	«ARG»	The interval consists of black graphitic argillite ‡78.1-78.16‡ «H'Thermal Bx» ‡78.16-79.32‡ «Flt Zone» ‡81.85‡ «H'Thermal Bx» 82.3-84.79m: The argillite becomes increasingly interbedded with sandstone units up to 3.5cm thick 82.3m: Bedding oriented Micro faulting occurs to bottom of interval. 83.7-83.84m: Microfaulting oriented Bedding oriented This interval shows late pyrite introduced along microfault and precipitation in permeable sandstone unit (3cm thick) between impermeable argillite beds.	45 13 90	‡78.1-78.16‡ «Qtz-Carb» ‡81.85‡ «Silica Healing» Q/C veinlet assoc with microfault	‡83.7-83.84‡ «Tr to 1%Py»	The whole interval is very graphitic.
84.79 TO 88.70	«Trachyte Dyke»	The interval is dark greyish green to light greyish green and varies in mineralogy from top to bottom. 84.79-85.52m: This portion contains abundant feldspar (euhedral equant grains) approx 2mm in length and randomly oriented. 85.52-87.75m: This interval contains 10-15% euhedral biotite grains. ‡88.1-88.45‡ «Flt» oriented	75	Occasional Q/C veinlets (2mm) occur through interval. ‡84.79-88.7‡ «20% carbonate» Carbonate alteration of matrix occurs to 20%. Primarily replaces feldspar grains. ‡87.75-87.85‡ «K'spar» Possible Kspar flooding. ‡87.85-88.7‡ «10% sericite» Minor chlorite alteration.		

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
88.70 TO 114.00	«ARG/SST»	This interval consists of black graphitic argillite with interbeds of sandstone units up to 2cm thick. Bedding varies throughout : 89.5m: 99.0m: 104.5m: 109.5m: 112.47m: 111.0-111.2m: Coarse grained sst. 111.4-112.2m: Coarse grained sst. 113-113.2m: Coarse grained sst. 114.0m: Stratigraphic contact.	30 60 90 70 40 50	Q/C veins occur randomly throughout.	110.5-110.62: «Pyrite Vein» Massive granular Py veins with true thickness of 3cm oriented 60 degrees to CA. Pyrite cubes are approx 0.5mm square. 110.62-110.72m: Trace Py in veins. Microfaults occur throughout.	
114.00 TO 123.65	«SST/CONGL»	The interval is comprised of grey coarse grained moderately sorted sandstone containing subangular to subrounded white chert fragments approx 2-3mm in dimension. Conglomerate is poorly sorted with sst matrix. Clasts are subrounded chert fragments. Within this interval are occasional argillite/fg sst beds. 117.65-119.79m: Sequence of interbedded fg sst and black graphitic argillite. Bedding oriented	40	Very weak carbonate alteration throughout. Small Q/C veinlets occur occasionally through interval. 123.6-123.65m: White Q/C vein, barren at 70 degrees to CA.	Trace pyrite. 119.79-121.77m: <1% Py occurring as dissem and small veinlets.	Possibly overturned beds.
123.65 TO 129.24	«ARG/SST»	As for previous Arg/sst units, very graphitic. Sst beds are fine grained and argillaceous. Argillite is very fine grained and graphitic. Bedding oriented 126.47-126.57m: Q/C vein oriented 129.24m: Stratigraphic contact oriented	45 60 60	126.47-126.57m: Q/C vein.	126.47-126.57m: 5mm wide Py vein between two Q/C veins.	
129.24 TO 130.45	«SST»	Grey medium grained sandstone, moderately sorted with subangular to subrounded grains. Occasional argillite clasts.		Occasional Q/C veins.		Rubbly broken core.
130.45 TO 135.23	«ARG/SST»	As for previous Arg/sst units; very graphitic sst units up to several cm's thick. 135.23m: Stratigraphic contact oriented	65	Occasional small Q/C veins.		

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
135.23 TO 138.07	«SST/CONGL»	The interval is a coarse grained sst (2mm clasts) unit. 135.9m: Small hydrothermal bx. 136.1-136.8m: Interbed of argillite/sst oriented	40	Occasional Q/C veins.	Unit is slightly graphitic throughout.	
138.07 TO 151.40	«ARG/SST»	The interval consists of fine grained interbedded argillite and sandstone with occasional coarse grained sandstone units. Microfaulting is common throughout showing movement of sandy beds. Bedding is generally oriented to CA; however bedding is contorted locally. 141.4-141.9m: Small hydrothermal bx with silica healing. 141.8-142.6m: Coarse grained sst bed. 145.82-146.57m: Coarse grained sst interbed. Lower contact oriented	60 90 50	Occasional Q/C veins throughout.		
151.40 TO 152.70	«SST»	Grey moderately well sorted medium to coarse grained sandstone unit. Clasts are 1-2mm and sub-angular.		Occasional Q/C veins.		

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ASSAY SHEET

DATE: 4-February-1992

Sample	From (m)	To (m)	Length (m)	ASSAYS		GEOCHEMICAL								Au g/t	Au oz/t		COMMENTS
				Ag ppm	As ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb					
BCD25213	14.30	17.30	3.00	1	36	336	166	1	405	1	923	6					
BCD25214	17.30	20.00	2.70	0.9	1	140	76	1	24	1	115	1					
BCD25215	20.00	23.00	3.00	0.1	1	513	83	1	15	1	110	4					
BCD25219	23.00	24.13	1.13	0.8	1	196	97	1	13	1	90	5					
BCD25218	24.13	24.24	0.11	0.1	825	146	60	1	29	1	76	412					
BCD25220	24.24	24.60	0.36	0.2	1	216	76	1	16	1	160	2					
BCD25216	26.60	29.60	3.00	0.5	1	142	82	1	18	1	176	1					
BCD25221	29.60	32.00	2.40	0.1	1	213	78	1	20	1	118	32					
BCD25217	32.00	35.00	3.00	0.9	1	103	43	1	14	1	120	2					
BCD25222	35.00	36.80	1.80	0.4	2	68	91	1	18	1	123	1					
BCD25223	40.78	43.00	2.22	1	3	683	26	2	20	1	65	1					
BCD25224	45.90	48.36	2.46	1.1	1	492	23	1	20	1	62	2					
BCD25225	48.36	49.68	1.32	0.3	7	515	29	1	20	1	62	1					
BCD25126	49.68	52.68	3.00	0.8	9	854	20	1	24	1	59	1					
BCD25128	54.00	57.00	3.00	0.7	1	1539	23	1	26	1	64	1					
BCD25127	57.80	60.80	3.00	0.1	30	142	100	1	22	1	103	2					
BCD25129	63.00	66.15	3.15	0.3	8	87	56	1	22	1	87	2					
BCD25130	75.59	77.00	1.41	0.6	15	58	29	2	16	1	52	3					
BCD25131	82.30	84.79	2.49	0.2	10	622	78	1	30	1	117	1					
BCD25132	109.50	110.50	1.00	0.1	11	63	53	1	21	1	96	4					
BCD25133	110.50	110.62	0.12	0.1	603	50	51	1	31	8	92	121					
BCD25134	110.62	111.60	0.98	0.3	60	744	44	1	25	1	91	10					
BCD25135	119.79	121.77	1.98	0.8	29	218	29	6	17	1	35	2					
BCD25136	126.47	126.57	0.10	1.2	60	1089	30	1	103	1	470	1					

HOLE NUMBER: TM 91-15

ASSAY SHEET

MINNOVA INC.
DRILL HOLE RECORD

METRIC UNITS: X

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PLOTING COORDS  GRID: Tam 91 Grid
                  NORTH: 865.00S
                  EAST: 2075.00E
                  ELEV:

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ALTERNATE COORDS  GRID:
                   NORTH:  0+ 0
                   EAST:   0+ 0
                   ELEV:    0.00

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COLLAR DIP: -60° 0' 0"
LENGTH OF THE HOLE: 148.44m
START DEPTH: 0.00m
FINAL DEPTH: 148.44m

COLLAR ASTRONOMIC AZIMUTH: 30° 0' 0"

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: NO

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: Atlas
CASING: 10' LIH
CORE STORAGE: Greenwood

PURPOSE: To test gossan zone exposed in road cut on property containing chalcopyrite vein running 27% Cu.

DIRECTIONAL DATA: Hole drilled perpendicular to strike and dip of vein to intersect possible stockwork mineralisation

[illegible]

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 6.10	«CASING»					
6.10 TO 10.68	«CHERT BX»	<p>Colour: white/grey white Grain Size: variable This interval consists of angular to sub-angular rounded fragments (up to 2 cm) of fine grained massive crystalline chert fragments in a matrix of buff white quartz 9.2-10.0 -the core is still hydrothermally brecciated but the rock type is strongly silicified and sericitally altered The brecciation is confined to a 3 cm vein parallel to c.a. 10.0-10.68 -the interval is a dark grey cherty unit again fractured and brecciated</p>		<p>‡6.1-9.2‡ «sil» -silicification in areas appears banded ‡9.2-10.0‡ «ser, sil»</p>	Sulphides (pyrite) occur in trace amounts through the interval generally as veinlets along fractures	
10.68 TO 22.66	«ANDESITE FLOW»	<p>Colour: green Grain Size: f.gr. This is a fine grained to aphanitic altered andesite flow. Within the very fine grained matrix are seen what appear to be gas vesicles filled by quartz. These are of the order of < 1 mm in dimension. Occasional hydrothermal breccias crosscut the interval</p> <p>Another curious fine grained mineral is also seen. This a black semi-hard mineral of tabular habit with a cross section that appears hexagonal in areas and trigonal elsewhere. This may be tourmaline</p> <p>11.57 -h'thermal bx 14.2 -flow breccias 15.5-17.4 -sil, chl. bx</p>	48	<p>Alteration through the interval consists of alternating areas of silification/chloritization and silicification sericitization</p> <p>10.68-12.9 -chl, sil 12.9-13.2 -sil, ser, tourmaline? 13.2-14.02 -sil, chl.</p> <p>14.02-15.00 -chl, ser 15.00-17.21 -sil, chl.</p>		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		‡17.75-17.8‡ «FLT gouge» -chloritically alt. ‡19.21‡ «shear fabric»	32	17.2-18.46 -chlorite 18.46-18.94 -silicification 18.94-19.3 -chl, sil 19.3-20.0 -chl, ser 20.0-20.3 -silicification 20.3-27.66 -sericite, chlorite ‡10.68-22.66‡ «alternat. chl, ser, sil»	‡18.46-18.94‡ «10-155 diss py» -associated with silicification ‡20.0-20.3‡ «10-15% diss. py»	
22.66 TO 23.40	«DIORITE DYKE»	Colour: grey white Grain Size: m.gr. This is a medium grained grey white eucocratic diorite dike. Feldspars are subhedral comprising 80% of matrix. Biotite is common		‡22.66-23.4‡ «argillic» -feldspars are altered to clays	Trace pyrite occurs through the interval	
23.40 TO 25.90	«ANDESITE FLOW»	Colour; grey green to green Grain Size: v.f.gr to m.gr. This is similar to the interval described from 10.68-22.66 23.4-24.8 -the unit is very fine grained again with what appear to be fine grained gas vesicles filled by silica. The interval greades into a more chloritically altered medium grained andesite		‡23.4-24.8‡ «str. ser, chl» ‡24.8-25.9‡ «str. chl»	Sulphides are not common through interval ‡24.7‡ «10% py»	
25.90 TO 27.20	«SER ALT»	Colour: yellow green Grain Size: variable This interval is of indeterminate origin. The protolith may have been a dyke, based on the sharpness of contacts. The interval appears to be strongly sheared		‡25.9-27.2‡ «str. ser» -occasional quartz carbonate veins cross cut the interval		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
27.20 TO 39.64	«CHERT»	<p>Colour: grey white to yellow white Grain Size: f.gr. This is a fine grained grey white to yellow white cherty interval. It is strongly fractured in areas with varying alteration types associated with these fractures from chlorite to sericite to silicification</p> <p>‡29.2-29.65‡ «h'thermal bx»</p> <p>‡33.40-34.70‡ «Bx» -this is an indistinctly brecciated interval overprinted by sericite and silica</p> <p>‡34.9-36.14‡ «h'thermal bx» -some fractures contain chalcedonic veining</p> <p>Some of these veins are vuggy indicating dissolution of minerals/</p>	28	<p>Alteration is associated with varying degrees of fracturing. Some areas of silica introduction are banded and chalcedonic in appearance</p> <p>‡29.2-29.6‡ «sil, ser»</p> <p>‡33.4-36.0‡ «sil, ser»</p>	Trace amounts of pyrite are seen generally as fracture coatings or as very fine disseminations	
39.64 TO 46.80	«ANDESITE»	<p>Colour: green Grain Size: m.gr. This is a dark green medium to fine grained andesite volcanic flow. The unit is cut by small quartz veinlets and vein breccias. The quartz veinlets are chalcedonic in areas. 42.0-46.8 -the intensity of fracturing and brecciation increases and is accompanied by increasing silicification and veining</p>		<p>‡39.64-46.8‡ «str. chl»</p> <p>‡40.5-40.7‡ «qtz vein»</p> <p>‡42.0-46.8‡ «str. silic»</p>	<p>Sulphide content tends to increase with degree of silicification</p> <p>‡42.00-46.8‡ «2% diss py»</p>	
46.80 TO 51.40	«ARGILLIC AND»	<p>Colour: buff grey Grain Size: v.f.gr. There is a buff grey coloured, strongly argillically altered very fine grained andesite. The black fine grained mineral described in the interval 10.68-22.66 is also seen in this interval to roughly 2%</p> <p>Occasional zones of silicification and quartz vein and brecciation cut the interval</p>		<p>‡46.8-57.4‡ «v. str. arg» the interval has been strongly alt. to clays</p> <p>‡50.4‡ «banded quartz» this is a cavity filled by quartz that is shows alternating light and dark</p>		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
				bands		
51.40 TO 56.39	«AND»	<p>Colour: green Grain Size: m.gr. This is a dark green medium grained andesitic flow. Some coarser feldspar crystals are seen in the interval. Some small quartz/chalcedonic cross the interval</p> <p>‡51.82‡ «Fault gouge»</p>		<p>‡51.4-52.6‡ «str. sil»</p> <p>‡54.14-55.4‡ «ser»</p> <p>‡55.4-56.39‡ «str. sil» This is strongly fractured with silica veinlets through it.</p>		
56.39 TO 60.90	«SHEAR BX»	<p>Colour: buff grey Grain Size: variable This is a broad strongly argillically and clay altered brecciated and faulted shear zone. 56.39-58.5 -the interval consist of gouge and quartz frags up to 1 cm</p> <p>58.5-60.90 -the fragments comprising the fault matrix are larger, up to 5 cm shear fabric is oriented at roughly a</p>	58	‡56.39-60.90‡ «str. clay»		
60.90 TO 93.51	«ALT. F'SPA R PORPH»	<p>Colour: grey green Grain Size: v.f.gr. This interval consists of a strongly altered feldspar porphyry. Altered feldspar grains are up to 5 mm in dimension comprising roughly only 5-10% of the unit and are contained within a very fine grained to aphanitic groundmass. The interval is only weakly fractured with quartz carbonate and talc veinlets. Some of the feldspars have a glomeroporphyritic texture</p> <p>‡76.1-76.32‡ «h'thermal bx» This interval contains brecciated fragments of argillically altered porphyry in a green talc matrix</p>	38	<p>‡60.90-72.40‡ «talc, clay» feldspars within this interval are altered to green talc, the matrix is altered to clay</p> <p>‡72.4-75.6‡ «chl»</p> <p>‡75.6-80.8‡ «clay, talc» -matrix is strongly altered to clay, feldspar phenocrysts are talc altered and small talc veinlets cross cut the interval</p> <p>‡80.6-80.8‡ «chl, clay»</p>		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		‡78.5‡ «FLT gouge» ‡78.82-78.96‡ «FLT gouge» ‡80.4-80.54‡ «FLT gouge» ‡86.77‡ «FLT gouge» ‡89.87‡ «FLT gouge» ‡90.54-91.33‡ «FLT gouge» ‡91.9-92.3‡ «shear zone» -strong clay altered ‡93.51‡ «FLT gouge»	38 46 30	‡84.4-93.5‡ «str. clay, talc»		
93.51 TO 94.19	«SHEAR/BX ZONE»	Colour: green grey Grain Size: variable There is a chloritically and sericitically altered and silicified shear/breccia zone , silicified fragments are subangular and up to 6 cm -shear fabric	28	‡93.5-93.85‡ «chlorite alt» ‡93.85-94.19‡ «ser alt»	Trace amounts of pyrite are associated with silicified frags	
94.19 TO 148.44	«AND»	Colour: green grey Grain Size: m.gr. and f.gr. This is a green grey medium to fine grained andesitic flow that appears brecciated locally throughout and sericitically chloritically altered and locally silicified. In some localized areas small feldspar phenocrysts are visible but these are generally obliterated by alteration overprinting ‡118.1-120.0‡ «FLT Bx, gouge» This zone contains local silicified breccias containing angular fragments and areas of chloritic fault gouge ‡122.58-123.5‡ «Bx» ‡125.4-126.7‡ «Bx And FLT gouge» ‡129.9-130.2‡ «shear»	30	A number of banded quartz veins cut the interval, generally at high angles to the c.a. (70 deg) Other stockwork veinlets occur at random orientations ‡94.9-95.4‡ «hem. alt.» This is a matrix alteration ‡94.19‡ «5% stkwrk Q'vns» ‡99.6‡ «Q'vn» sericite chloritic and silica alt'n vary rapidly and it is not possible to distinguish separate zones ‡112.0-120.1‡ «str. chl, sil»	‡99.6‡ «1% py, tr cp» this occurs within quartz veins oriented 20 deg to c.a. ‡104.25‡ «tr py, tr cp, vn» this is in a small quartz veinlet at 16 deg to c.a.	

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MINNOVA INC.
DRILL HOLE RECORD

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-this shear zone is sericitized	38	¶120.1-122.0¶ «ser, clay»	¶112.0-120.1¶ «tr to 1% py»	
		¶131.0-131.88¶ «sil, ser, bx»	28	¶122.0-131.88¶ «chl, sil»	This mineralization is always associated with silica introduction	
		¶132.76-133.73¶ «FLT gouge + Bx»		¶134.2-135.3¶ «str. ser» -matrix alteration	¶122.0-131.88¶ «tr to 1% py»	
		¶142.54-143.11¶ «Bx FLT gouge»	20	¶135.3-146.2¶ «chl, ser, clay, sil»	Again this is associated with silica introduction	
		-the breccia matrix consists of silicification	42	¶142.54-142.84¶ «sil»		
		¶144.2¶ «Bx, shear»	30	¶144.0-144.1¶ «sil, Q vn»		
		¶145.4-146.2¶ «Bx»		¶146.2-148.25¶ «Qtz vn» -this is a bull white massive quartz vein	¶146.2-148.25¶ «tr py»	
	E.O.H.	¶148.25-148.44¶ «Bx»				

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ASSAY SHEET

DATE: 4-February-1992

Sample	From (m)	To (m)	Length (m)	ASSAYS		GEOCHEMICAL								Au g/t Au oz/t			COMMENTS
				Ag ppm	As ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb					
BCD21286	6.10	8.39	2.29	0.7	28	542	112	16	14	1	25	38					
BCD21287	8.39	10.68	2.29	0.6	17	826	280	9	14	1	19	2					
BCD21288	10.68	13.68	3.00	0.2	6	1196	193	5	16	1	30	1					
BCD21289	13.68	16.68	3.00	0.6	6	71	211	3	15	1	23	1					
BCD21290	16.68	19.68	3.00	0.8	6	148	412	7	16	1	21	3					
BCD21291	19.68	22.66	2.98	0.9	7	284	382	11	27	1	20	5					
BCD21292	22.66	23.40	0.74	1.2	5	313	751	20	19	1	26	6					
BCD21293	23.40	25.90	2.50	0.7	3	390	386	6	45	1	46	3					
BCD21294	25.90	27.40	1.50	0.2	1	528	443	1	15	1	44	71					
BCD21295	27.40	30.20	2.80	1	11	236	218	5	10	1	8	15					
BCD21296	30.20	33.20	3.00	0.9	10	34	157	9	10	1	15	6					
BCD21297	33.20	36.20	3.00	0.8	7	24	118	3	10	1	11	12					
BCD21298	36.20	39.64	3.44	1.1	13	26	163	11	9	1	6	3					
BCD21299	39.64	42.64	3.00	0.2	1	113	348	2	13	1	39	4					
BCD21300	42.64	46.80	4.16	0.9	9	34	534	26	13	1	13	40					
BCD21301	46.80	49.80	3.00	0.8	2	116	313	2	17	1	77	5					
BCD21302	49.80	51.40	1.60	0.4	4	44	200	3	18	1	26	2					
BCD21303	51.40	54.40	3.00	0.3	2	21	438	2	6	1	35	4					
BCD21304	54.40	56.39	1.99	0.4	1	272	271	7	9	1	35	7					
BCD21305	56.39	60.90	4.51	0.7	8	365	153	6	18	1	33	4					
BCD21306	60.90	63.90	3.00	0.7	4	1298	29	2	30	1	58	2					
BCD21307	63.90	66.90	3.00	0.7	1	635	24	2	32	1	50	2					
BCD21308	66.90	69.90	3.00	0.8	4	1822	23	2	36	1	58	1					
BCD21309	69.90	72.30	2.40	1	18	374	23	3	62	1	75	1					
BCD21310	72.30	75.30	3.00	0.8	1	478	21	2	29	1	55	3					
BCD21311	75.30	78.30	3.00	0.8	8	413	20	2	33	1	50	2					
BCD21312	78.30	81.30	3.00	0.7	13	1940	18	2	36	1	55	3					
BCD21313	81.30	84.30	3.00	0.5	1	248	18	1	28	1	74	5					
BCD21314	84.30	87.30	3.00	0.7	4	1270	18	1	36	1	68	2					
BCD21315	87.30	90.30	3.00	0.7	2	318	23	2	29	1	56	2					
BCD21316	90.30	93.51	3.21	1	14	525	37	5	28	1	54	8					
BCD21317	93.51	94.19	0.68	0.5	16	581	189	7	18	1	63	5					
BCD21318	94.19	97.19	3.00	0.3	1	35	250	1	13	1	61	4					
BCD21319	97.19	100.19	3.00	0.6	1	68	802	5	14	1	41	11					
BCD21320	100.19	103.19	3.00	0.8	1	71	172	2	13	1	36	2					
BCD21321	103.19	106.19	3.00	0.4	1	25	717	3	6	1	42	3					
BCD21322	106.19	109.20	3.01	0.5	1	19	347	5	14	1	37	2					
BCD21323	109.20	112.20	3.00	0.3	1	28	147	1	9	1	47	1					

HOLE NUMBER: TM 91-23

ASSAY SHEET

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HOLE NUMBER: TM 91-23

ASSAY SHEET

DATE: 4-February-1992

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Au g/t	Au oz/t		
BCD21324	112.20	115.20	3.00	1.1	6	53	343	10	16	1	28	2				
BCD21325	115.20	118.20	3.00	0.6	6	178	113	5	15	1	19	1				
BCD44401	118.20	121.20	3.00	0.7	6	143	329	9	14	1	24	3				
BCD44402	121.20	124.20	3.00	0.7	1	60	338	30	18	1	45	13				
BCD44403	124.20	127.20	3.00	0.5	1	117	380	4	20	1	57	39				
BCD44404	127.20	130.20	3.00	0.9	1	73	461	7	18	1	37	2				
BCD44405	130.20	133.20	3.00	0.8	3	93	363	7	13	1	33	1				
BCD44406	133.20	136.20	3.00	0.3	1	38	222	1	13	1	51	5				
BCD44407	136.20	139.20	3.00	0.6	1	26	225	19	5	1	54	2				
BCD44408	139.20	142.20	3.00	0.4	1	29	108	1	7	1	49	1				
BCD44409	142.20	145.20	3.00	0.8	1	40	150	1	10	1	34	2				
BCD44410	145.20	148.44	3.24	0.9	9	43	151	6	15	1	14	3				

IMPERIAL UNITS: METRIC UNITS: X

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 125.27m
START DEPTH: 0.00m
FINAL DEPTH: 125.27m

COLLAR ASTRONOMIC AZIMUTH: 120° 0' 0"

CONTRACTOR: Atlas
CASING: 10' LIH
CORE STORAGE: Greenwood

PURPOSE: To test broad chargeability and weak mag anomaly possibly associated with dissemin. mineralization

DIRECTIONAL DATA: near contact of diorite with Permian seds. A weak to strong Au anomaly is seen in the area.

[illegible]

HOLE NUMBER: TM 91-22

MINNOVA INC.
DRILL HOLE RECORD

DATE: 4-February-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 6.10	«CASING»					
6.10 TO 8.60	«CROWDED FSP PORPH»	Colour: green Grain Size: f.gr. to m.gr. This is a strongly chloritically altered crowded feldspar porphyry dyke. Feldspars are approx. 1 mm in length and are euhedral to subhedral, very minor quartz carbonate veinlets crosscut the interval 8.60: fault gouge		‡6.1-8.60‡ «chl»	‡6.1-8.60‡ «tr to 2% py»	
8.60 TO 48.10	«INT.BED SANDY TUFF, ST, ASH TUFF»	Colour: green grey Grain Size: v.f.gr. to m.gr. This unit is the same as described in hole TM 91-21 for the majority of the hole. It consists of interbedded very fine grained to aphanitic tuff to medium grained xtal tuffs and qtz rich sandstone. The entire interval is rather non-descript with few highlights. ‡8.60-8.80‡ «Bx» Angular fragments of volcanoclastics in a chloritic matrix ‡14.90-18.14‡ «CHRT Pebble congl.» -this is a chloritic ash matrix supported sequence with rounded chert/quartz fragments 18.4-18.71 -quartz rich sandstone, bedding @ 29.64-30.10 -quartz rich sandstone 32.8-35.33 -quartz rich sandstone 36.0-37.35 -qtz pebble/chert pebble conglomerate this is clast supported 37.4-38.3 A small interval of interbedded fine grained ash	70	‡8.60-18.86‡ «mod chl» ‡25.14-25.54‡ «albite vein» «18.71-29.64‡ «str. chl» ‡30.10-32.8‡ «str. chl» ‡35.33-36.0‡ «str. chl» ‡37.35-38.30‡ «wk chl»	The interval is virtually devoid of mineralization. Again, the sandy more permeable units may carry some sulphide as some are weakly oxidized ‡25.14-25.54‡ «tr cp»	

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DRILL HOLE RECORD

LOGGED BY: Cam Clayton

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HOLE NUMBER: TM 91-22

MINNOVA INC.
DRILL HOLE RECORD

DATE: 4-February-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		<p>and crystal or sandy tuff units with 1 to 2 cm thick beds @</p> <p>39.53-42.1 -quartered sandstone bedding</p> <p>42.37-44.5 -rubbly broken core, possibly small fault</p> <p>42.37-48.1 Generally this interval is white quartz rich grain supported sandstone/conglomerate etc. small tuffaceous beds and fragments are seen in matrix and these are chloritic. Toward the bottom of the interval the core becomes broken and rubbly slightly brecciated in areas indicating a lower fault contact</p>	<p>50</p> <p>42</p>	<p>‡42.1-44.5‡ «wk chl»</p>		
48.10 TO 66.40	«ARG SEDS»	<p>Colour: grey to black Grain Size; v.f.gr. to f.gr. This interval consistso f grey to black, very fine grained argillaceous sediments. Within the interval, fragments of chloritic sandy tuffaceous sediments are observed.</p> <p>‡53.6‡ «graph. flt. gouge»</p> <p>The interval is non-descript bedding:</p> <p>The bottom contact is clay gouge and fault breccia ‡66.4‡ «flt gouge, Bx»</p>	<p>54</p> <p>54</p>	<p>‡48.10-66.4‡ «wkly graph.»</p>	<p>Although occasional fractures are weakly oxidized, mineralization is not seen</p>	
66.40 TO 76.77	«TERT. DYKE»	<p>Colour: grey Grain Size: f.gr. This is a fine grained grey feldspar and hornblende phyric unstrained Tertiary dyke. Feldspars are subhedral to euhedral comprising 60.70% Horneblende is generally subhedral only comprising 5-10%</p> <p>‡69.49‡ «FLT gouge»</p>		<p>‡66.4-76.77‡ «str. carb»</p> <p>The matrix has undergone str. carb</p>		

HOLE NUMBER: TM 91-22

MINNOVA INC.
DRILL HOLE RECORD

DATE: 4-February-1992

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		<p>#71.2# «FLt gouge»</p> <p>#74.47-75.58# «FLT zone» This fault is silicified and brecciated at its upper contact and chloritically altered at its bottom contact From the bottom of this fault zone to the end of the interval the dyke becomes more chloritically altered and silicified. The final 20 cm are finer grained and appear to be a chill margin. A small fault may be associated wiht the bottom contact</p>		<p>alteration (15-20%)</p> <p>#68.2-68.4# «wk. mt»</p> <p>#66.4-76.77# «arg. alt» -feldspars strongly altered to clays</p> <p>-small quartz carbonate veinlets cross-cut the interval</p> <p>#74.47-74.98# «sil» #74.98-75.58# «chl» #75.58-76.77# «chl, sil»</p>		
76.77 TO 125.27	«INT. BED CHT/QTZ PEBBLE CGL & QTZ-RICH SST»	<p>Colour: grey Grain Size: c.gr. and f.gr. This is a rather non-descript sequence of inter-bedded quartz and chert pebble conglomerate with quartz rich sandstones. Generally these are clast supported units with very little matrix. The conglomerate units have quartz chert pebbles up to 1 cm in dimension but more commonly 0.5 mm. The clasts are subrounded to subangular and are unstrained</p> <p>The finer grained sandstone units have clasts up to 1 mm but generally fine grained bedding orientation varies between 38-42 deg.</p> <p>#94.00-94.22# «Qtz vn Bx»</p> <p>This is a hydrothermal breccia crosscutting the interval and filled by silica</p> <p>#14.65-115.05# «h'thermal Bx» This hydrothermal breccia contains angular fragments of quartz pebble conglomerate in siliceous matrix</p>	60 38	<p>Aside from teh occasional quartz carbonate vein cross-cutting the interval, alteration is relatively absent. Some graphitic fractures occur</p> <p>#87.88-88.00# «Q/C vnlts»</p> <p>#94.00-94.22# «sil vn» #110.5-111.0# «graph. fr»</p> <p>#122.0-122.77# «grph fr»</p>	<p>#94.0-94.22# «tr to 1% py» #110.5-111.0# «tr py with graphite»</p> <p>#119.45-120.09# «tr py» -occurs as small veinlets</p> <p>#122.0-122.77# «tr py» -as veinlets assoc. with graphite</p>	
	E.O.H.					

HOLE NUMBER: TM 91-22

ASSAY SHEET

DATE: 4-February-1992

Sample	From (m)	To (m)	Length (m)	ASSAYS		GEOCHEMICAL								Au g/t	Au oz/t		COMMENTS
				Ag ppm	As ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb					
BCD35122	6.10	8.60	2.50	0.1	36	51	72	1	76	1	233	20					
BCD35123	8.60	11.60	3.00	0.1	48	99	42	1	54	1	262	28					
BCD35124	11.60	14.60	3.00	0.1	82	54	199	1	29	1	257	38					
BCD35125	14.60	17.60	3.00	0.5	46	53	93	1	80	1	275	10					
BCD35126	17.60	20.60	3.00	0.1	48	50	95	1	27	1	117	22					
BCD35127	20.60	23.60	3.00	0.1	53	55	56	1	21	1	123	17					
BCD35128	23.60	26.60	3.00	0.1	52	98	44	1	22	1	114	16					
BCD35129	26.60	29.60	3.00	0.3	82	65	85	1	27	1	111	29					
BCD35130	29.60	32.60	3.00	0.1	48	210	60	1	20	1	118	10					
BCD35131	32.60	35.60	3.00	0.3	44	154	45	1	23	1	82	6					
BCD35132	35.60	38.60	3.00	0.3	34	97	32	1	21	1	70	4					
BCD35133	38.60	41.60	3.00	0.5	46	141	38	1	20	1	68	8					
BCD35134	41.60	44.60	3.00	0.7	44	72	40	2	105	1	181	4					
BCD35135	44.60	48.10	3.50	0.8	57	56	45	1	134	1	357	21					
BCD35136	48.10	51.10	3.00	0.7	45	56	56	1	427	1	1101	2					
BCD35137	51.10	54.10	3.00	1.5	51	130	46	2	734	2	1950	6					
BCD35138	54.10	57.10	3.00	0.8	38	57	105	1	361	1	1584	32					
BCD35139	57.10	60.10	3.00	0.2	49	55	44	1	264	1	700	6					
BCD35140	60.10	63.10	3.00	0.1	32	66	72	1	61	1	313	4					
BCD35141	63.10	66.40	3.30	0.1	32	140	74	1	76	1	383	7					
BCD35142	66.40	69.40	3.00	0.8	2	208	19	1	26	1	72	2					
BCD35143	69.40	72.40	3.00	0.8	8	247	17	1	23	1	63	4					
BCD35144	72.40	76.77	4.37	0.7	8	444	20	1	28	1	70	4					
BCD35145	76.77	79.77	3.00	0.5	21	115	37	6	30	1	97	3					
BCD35146	79.77	82.77	3.00	0.7	32	41	19	4	33	1	137	2					
BCD35147	82.77	85.77	3.00	0.6	28	70	28	3	123	1	377	4					
BCD35148	85.77	88.77	3.00	0.5	24	64	30	2	45	1	215	2					
BCD35149	88.77	91.77	3.00	0.8	36	69	45	3	225	1	782	28					
BCD35150	91.77	94.77	3.00	0.9	25	70	20	4	57	1	151	3					
BCD21276	94.77	97.77	3.00	0.5	32	45	25	3	22	1	111	10					
BCD21277	97.77	100.77	3.00	0.4	198	39	44	4	80	1	382	68					
BCD21278	100.77	103.77	3.00	0.5	27	115	24	5	121	1	383	17					
BCD21279	103.77	106.77	3.00	0.5	130	197	30	3	202	1	632	42					
BCD21280	106.77	109.77	3.00	0.5	13	142	23	2	19	1	131	21					
BCD21281	109.77	112.77	3.00	0.4	20	133	41	4	150	1	458	6					
BCD21282	112.77	115.77	3.00	0.8	11	100	20	4	33	1	293	2					
BCD21283	115.77	118.77	3.00	0.2	10	83	25	3	12	1	96	5					
BCD21284	118.77	121.77	3.00	0.5	56	116	25	3	34	1	206	46					

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ASSAY SHEET

DATE: 4-February-1992

Sample	From (m)	To (m)	Length (m)	Ag ppm	As ppm	Ba ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm	Au ppb	Au g/t	Au oz/t		
BCD21285	121.77	125.27	3.50	0.6	38	53	31	5	28	1	337	22				
BCD21286	125.27	128.77	3.50													
BCD21287	128.77	132.27	3.50													
BCD21288	132.27	135.77	3.50													
BCD21289	135.77	139.27	3.50													
BCD21290	139.27	142.77	3.50													
BCD21291	142.77	146.27	3.50													
BCD21292	146.27	149.77	3.50													
BCD21293	149.77	153.27	3.50													
BCD21294	153.27	156.77	3.50													
BCD21295	156.77	160.27	3.50													
BCD21296	160.27	163.77	3.50													