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UTEM SURVEY

ON

THE NOBLE CLAIMS

FOR

PLACER DOME INC.

BY

S.J.V. CONSULTANTS LTD. AND LAMONTAGNE GEOPHYSICS LTD.

Kamloops M.D.

N.T.S. 82M/12W

JULY 1988

Report By
Syd J. Visser
S.J.V. Consultants LTD.

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INTRODUCTION

A UTEM survey was performed on the Noble claims, located approx. 6Km north west of Birch island, B.C. (fig 1) by S.J.V.Consultants Ltd. and Lamontagne Geophysics Ltd. for Placer Dome INC., during the period of May 28 to June 15, 1988.

Access to the property is approx. 3Km east from Birch Island via highway #5 (yellowhead south) then approx. 15Km north along logging road number 190.

The purpose of the UTEM survey was to search for massive sulfides at depth.

DESCRIPTION OF UTEM SYSTEM

UTEM is an acronym for "University of Toronto ElectroMagnetometer". The system was developed by Dr. Y. Lamontagne (1975) while he was a graduate student of that University.

The field procedure consist of first laying out a large loop of single strand insulated wire and energizing it with current from a transmitter which is powered by a 2.2 kW motor generator. Survey lines are generally oriented perpendicular to one side of the loop and surveying can be performed both inside and outside the loop.

The transmitter loop is energized with a precise triangular current waveform at a carefully controlled frequency (30.974 Hz for this survey). The raceiver system includes a seasor coil and backpack portable receiver module which has a digital recording facility on cassette magnetic tape. The time synchronization between transmitter and receiver is achieved through quartz crystal clocks in both units which must be accurate to about one second in 50 years.

The receiver sensor coil measures the vertical or horizontal magnetic component of the electromagnetic field and responds to its time derivative. Since the transmitter current waveform is triangular, the receiver coil will sense a perfect square wave in the absence of geologic eonductors. Deviations from a perfect square wave are caused by electrical conductors which may be geologic or cultural in origin. The receiver stacks any pre-set number of cycles in order to increase the signal to noise ratio.

The UTEM receiver gathers and records 10 channels of data at each station. The higher number channels (7-8-9-10) correspond to short time or high frequency while the lower number channels (1-2-3) correspond to long time or low frequency. Therefore, poor or weak conductors will respond on channels 10, 9, 8, 7 and 6. Progressively better conductors will give responses on progressively lower number channels as well. For example, massive, highly conducting sulfides or graphite will produce a response on all ten channels.

It was mentioned above that the UTEM receiver records data digitally on a cassette. This tape is played back into a computer at the base camp. The computer processes the data and controls the plotting on an 11" x 15" graphics plotter. Data are portrayed on data sections as profiles of each of the first nine channels, one section for each survey line.

FIELD WORK

The equipment and part of the field crew (Syd Visser, John Ashenhurst and Rolf Krawinkel) were mobilized from Vancouver, and a helper, Jim Carr, was hired locally.

Approx. 55Km, using a station spacing of 40M (20M for some detail work), were surveyed from 9 separate loops (loop 2 & 2a and 7a &7b are the same loops except the data from 2a and 7b were read from inside the loops) as shown on the GRID and UTEM compilation map (Fig 2). The vertical Hz component of the electromagnetic field was measured at every station on the survey grid, with the exception of line 8900E, where the horizontal component Hx was also measured.

Data from loop 1 indicated a highly conductive half space or thin layer underlying the survey area therefore the remainder of the loops were placed in the center of the grid to make shorter survey lines possible. The coupling of the electromagnetic field with possible conductors dipping away from the front edge of the loop as suggested by the known geology would also be improved by placing the loops inside the grid.

Loops 7a and 8 were used to detail the anomalies on the northern part of this grid. The cut lines were extended in this region by the UTEM operators using compass and hip chain.

Because the exact location of the stations were not known, the grid coordinates and a elevation of zero was used for all the data reduction. It would be very unlikely to find a conductor strong enough, in this area, to have the same response on all channels and therefore it is appropriate to subtract channel 1 (late time) data from the higher channels so that the effects from topography is only seen on channel 1.

A daily production log and the grid coordinates of the loops are shown in Appendix 1.

DATA PRESENTATION

The results of the survey are presented on one compilation map (Fig 2) and 110 data sections (Appendix V).

Legend for the UTEM data sections is shown in Appendix IV.

In order to reduce the field data, the theoretical primary field of the loop must be computed at each station. The normalization of the data is a follows:

a) For Channel 1:

$$\% \text{ Ch.1 anomaly} = \frac{\text{Ch.1} - \text{PC}}{/\text{PT}/} \times 100$$

Where:

PC	is the calculated primary field, in the direction of the component, from the loop at the occupied station
Ch.1	is the observed amplitude ofChannel 1
PT	is the calculated total field

b) For remaining channels (n = 2 to 9)

$$\% \text{ Ch.n anomaly} = \frac{(\text{Ch.n} - \text{Ch.1})}{\text{Ni}} \times 100$$

where Ch.n is the observed amplitude of Channel n (2 to 9)

N	= Ch.1 for Chl normalized
N	= PT for primary field normalized
i	is the data station for continuous normalized (each reading normalized by different primary field)
i	is the station below the arrow on the data sections for point normalized (each reading normalized by the same primary field)

Subtracting channel 1 from the remaining channels eliminates the topographic errors from all the data except ch.1.

If there is a response in channel 1 from a conductor then this value must be added to do a proper conductivity determination from the decay curves. Therefore channel 1 should not be subtracted indiscriminately.

INTERPRETATION

The grid area is crossed with numerous weak near surface conductors and contact anomalies. A listing of the conductors and contact locations, along with the latest time the EM response is noticed in the data (which is related to the conductors conductivity and size), the approx. depth to the conductor and a short explanation of the type of anomalies, are listed in Appendix II. The conductor and contact anomalies were also plotted on the GRID and UTEM compilation map (Fig 2).

Because of the wide station spacing and shallow dip to the geology it is very often difficult to distinguish between a conductor and a contact (a contact is usually distinguished by a sharp break in slope). The high background conductivity also promotes current channeling along these weak conductors making conductivity estimates almost impossible. The conductivity of the conductors noticed in the grid are probable well below 10mhos (some of the short strike length, with no depth extent, conductions may have higher conductivity). A discussion of each group of anomalies as shown on the grid and UTEM compilation map follows.

ANOMALY A1

Anomaly A1 is mainly a contact type anomaly with increased conductivity to the south, although on line 8900E and 7900E they appear as weak crossovers which is probably due to an edge effect.

ANOMALY A2

This conductor appears to be a discrete near vertical conductor especially on lines 8300E and 8100E. On the remaining lines it is difficult to tell if this is due to a slightly deeper conductor or the edge effect of a conductive layer. The conductor on line 8300E does have some current channeling effect and the decay resembles a finite thin layer. The eonductivity of this conductor is probably <10mhos although the determination of the conductivity is difficult because of difficulty in judging the size, effects from nearby conductor and effects from current channeling. The conductor is definitely shallow.

ANOMALY A3

Anomaly A3 could be a continuation of anomaly A1. This conductor is very weak between line 6300E and 6100E and is probably a contact. The anomaly from line 6100E to 5500E show a week shallow conductor with no depth extent. It also appears to mark the edge of a change in conductivity with the more conductive rock to the south, although there is some indication (line 5900E to 5100E) that this may be due to a deeper(approx. 100M) weak conductor approx 20M to the south of the indicated conductor.

The conductor on line 5700E at 4680N appears more like a anomaly expected from a well grounded telephone line or fence. Although a old telegraph wire was seen on the property (near the south end of line 8700E and on top of the ridge) no culture was noticed at this location.

ANOMALY A4

Anomaly A4 may be an extension of anomaly A2. This weak conductor (<5mhos) appears to be somewhat deeper from line 6700E to 6300E and getting very shallow west of line 6300E to line 5500E. It is difficult to estimate the depth extend of this conductor, although it appears to be small, because of the conductor to the south.

There may be a N-S striking fault, as indicated by the offset in the conductor axis, between lines 5900E and 5700E.

ANOMALY A5

This anomaly is a similar to anomaly A2 but less conductive and continuous and possibly slightly deeper.

ANOMALY A6

Anomaly A6 appears to be a contact.

ANOMALY A7

Anomaly A7 is a shallow weak long strike length conductor.

ANOMALY A8

Anomaly A8 appears to be a one line anomaly. There is some indication of the crossovers migrating to the north with time, suggesting a dip to the north. There is also some indication that there is a change in conductivity on the surrounding lines in this region suggesting a possible conductor thin layer extending to the north at depth.

ANOMALY A9

Anomaly A9 closely follows the southern edge of the ridge top and is probably the southern edge of a conductive layer (graphitic argillite?) in the limestone. The anomaly appears as a contact anomaly from 8900E to 7500E. West of line 7500E the anomaly starts appearing like a crossover, which may be due to increasing dip of the conductive layer.

ANOMALY A10

The anomalies north of A9 are grouped into one anomaly. These conductors appear to be more conductive than the other anomalies on the grid which may be because they are more extensive (depth extent appears large). It is difficult to get a proper conductivity, depth, dip or depth extent from these conductors because of the proximity on one conducts to the other. They appear to be a series of parallel conductors dipping to the north. Although this is the results that could be expected from a layered series of graphite argillite and limestone (or something similar), but one of the operators found massive sulfide sample in this area (the exact loeation was not noted) and therefore these conductors should be examined closely.

DISCUSSION AND RECOMMENDATIONS

The interesting areas that should be examined closely by geological field work or compared to the known geological information are as follows:

1. Anomaly A2 between lines 8500E and 7900E especially on line 8300E.
2. Anomaly A3 between 6100E and 5100E (should show on surface on line 5700E).
3. Anomaly A4 between lines 6500E and 5900E.
4. Anomaly A8 located at 5700N on line 5700E
5. The anomalies north of approx. 6000N and west of line 6900E
6. The remaining weak anomalies should not be ignored but the results from the above areas would give a good indication of what the remaining conductors would be.

Although the contacts and conductors are marked as single point anomalies they may be conductive zones with some width. It is difficult to judge whether a sharp change in slope of the profile indicates a short wavelength crossover type anomaly or whether it is in fact the edge of a conductive or resistive layer.

The survey was designed to search for deep large conductors, using large station and line spacing with large loops, therefore making it difficult to properly interpret small weak near surface conductors. It is felt that any detail work on any of the interesting near surface conductors and structure could be better(more cost affective) detailed using a Max-Min 1 EM system (the high frequencies capability of the Max-Min 1 could be useful for the weak structures) therefore limited detail work was done with the UTEM system.

CONCLUSION

Numerous weak conductors and geological contacts were outlined by the UTEM survey in the grid area. A number of conductors, south of the base line on lines 8500E to 9700E lines and 6100E to 5100E and at 5800N on line 5700E, warrant further examination although there appears to be little depth extent to these conductors.

The conductors and contacts in the area north of approx. 6000N and west of line 6900E should also be examined closely.

No large massive sulfides (good conductors) were located with this UTEM survey at depth.

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Geophysicist

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APPENDIX I

PLACER DOME INC

UTEM SURVEY NOBLE CLAIMS

survey by: S.J.V. CONSULTANTS LTD. & LAMONTAGNE GEOPHYSICS LTD.

personnel:

SJV	Syd Visser	geophysicist
JA	John Ashenhurst	operator (technologist)
RK	Rolf Krawinkel	operator (geophysicist)
JC	Jim Carr	looper

DATE 1988	LOOP	LINE	STATION START	STATION END	KM	TOT KM	PROD DAY	FILE	COMMENT
28/5							M		JA,RK mob from Van to Clearwater
29/5	1						S		JA,RK,JC found grid talked to line cutters laying loop 1
30/5	1						.5S	may30e0	laying loop , JC lo
		8900E	4140N	5600N	1.46	1.46	.5P	8a	JA Rc RK coil (Hx)
31/5	1	8700E	4120N	5840N	1.72		.5S	may31r0	loop broken JC lo
		8900E	5840N	5600N	.24	3.42	.5P	8a	JA Rc RK coil
									SJV mob and obser
1/6	1	8500E	4140N	5940N	1.8		P	jun1r08a	JA Rc RK coil
		8300E	4140N	5920N	1.78	7.0			SJV rd check and com
									JC loop 2
2/6	2	7100E	5000N	6040N	1.04		P	jun2b5	JA Rc RK coil
		7300E	5000N	5920N	.92				JC loop3 and clear rd
		7500E	5000N	5920N	.92				SJV com
		7700E	5000N	5900N	.9	10.78			
3/6	2a	7500E	5080N	4260N	.82		P	jun3b6	RK Rc JA coil
		7700E	5080N	4170N	.91				SJV com
	2	7900E	5000N	5960N	.96				JC loop 3
		8100E	5000N	5960N	.96	14.43			
4/6	3	6900E	5070N	6120N	1.05		P	jun4b7	RK Rc SV coil
		6700E	5108N	6160N	1.05				JA com
		6500E	5140N	6400N	1.26				JC loop 2, 4
		6300E	5156N	6560N	1.4	19.19			
5/6	4	6100E	5157N	6680N	1.52		P	jun5b8	JA Rc RK coil
		5900E	5180N	6820N	1.64				label error at 5260
		5700E	5168N	6520N	1.35	23.7			SJV JC loop5

6/6	5	8100E	4200N	5120N	.92		P	jun6b9	JA Rc RK coil
		7900E	4240N	5120N	.88				SJV com, w/ geophy
		7700E	4200N	5240N	1.04				from PDI
		7500E	4280N	5120N	.84				JC day off
		7300E	4800N	5120N	.32	27.7			
7/6	5	7300E	4280N	4800N	.52		P	jun7b10	JA & RK - Rc & coil
		7100E	4200N	5120N	.92				JC 13 & 5 up
		8300E	4200N	5120N	.92	30.06			JVC demob Van
8/6	4	5100E	5220N	7040N	1.82		P	jun8b11	JA Rc, RK coil
		5300E	5200N	6940N	1.74	33.62			JC 15 up, 16 down
9/6	4	5500E	5171N	6920N	1.75		P	jun9b12	RK Rc, JC coil
		5700E	5168N	6840N	1.67				JA com
	6	6900E	4240N	5240N	1.			jun9b13	
		6700E	4280N	5260N	.98	39.02			
10/6	6	6500E	4240N	5306N	1.07		.5P	jun10b14	tndrstrm in AM
		6300E	4242N	5320N	1.08	41.17	.5S		JA Rc, RK coil
									JC RK JA 14,6 up,7 dwn
11/6	7	5100E	4200N	5360N	1.36		P	jun11b15	JA Rc, RK coil
		5300E	4200N	5314N	1.11				JC 16 up
		5500N	5000N	5300N	.3				SJV mob, com
		5700N	5000N	5300N	.3	44.24			
12/6	7	5500E	4160N	5000N	.84		P	jun12b16	RK Rc, JC coil
		5700E	4160N	5000N	.84				SJV, JA com
		5900E	4200N	5300N	.9				
		6100E	4280N	5280N	1.	47.82			
13/6	7a	5900E	6335N	7200N	.87		P	jun13b17	JA Rc, RK coil
		5700E	6403N	7200N	.8				JC 17a dwn,
		5500E	6460N	7200N	.74				SJV com
	7b	5700E	5320N	6403N	1.08	51.31			
14/6	8	6100E	6165N	7000N	.84		P	jun14b18	JA Rc, RK coil
		6300E	6080N	6920N	.84				JC 17,7a,7b up
		6500E	5853N	7000N	1.15				SJV com
		6700E	5757N	6720N	.96	55.1			
15/6							0.25S		RK, JC 18 up
							0.75D		SJV, JA, RK demob to Van

LOOP COORDINATES

(x and y taken from station labels z not known therefore assumed zero)

loop 1

	x	y	z
1	3140	8900	0
2	3140	8200	0
3	3220	7850	0
4	3220	7900	0
5	4220	7900	0
6	4155	8300	0
7	4130	8300	0
8	4137	8500	0
9	4090	8700	0
10	4120	8700	0
11	4140	8900	0

loop 2

	x	y	z
1	5000	7100	0
2	5000	8100	0
3	4250	8100	0
4	4250	7100	0

loop 2a

	x	y	z
1	5000	7100	0
2	5000	8100	0
3	4250	8100	0
4	4170	7700	0
5	4260	7500	0
6	4250	7100	0

loop 3

	x	y	z
1	5080	7100	0
2	4200	7100	0
3	4210	6900	0
4	4160	6700	0
5	4100	6700	0
6	4155	6500	0
7	4175	6300	0
8	4200	6100	0
9	5100	6100	0
10	5156	6300	0
11	5140	6500	0
12	5108	6700	0
13	5070	6900	0

loop 4

	x	y	z
1	4200	6100	0
2	4300	5700	0
3	4160	5700	0
4	4200	5100	0
5	5240	5100	0
6	5200	5300	0
7	5171	5500	0
8	5168	5700	0
9	5180	5900	0
10	5157	6100	0

loop5

	x	y	z
1	5120	7100	0
2	6040	7100	0
3	5920	7300	0
4	5920	7500	0
5	5860	7700	0
6	5960	7900	0
7	5960	8100	0
8	5120	8100	0
9	5140	7900	0
10	5120	7700	0
11	5120	7500	0
12	5130	7500	0
13	5120	7300	0

loop 6

	x	y	z
1	5380	6100	0
2	5360	6300	0
3	5300	6500	0
4	5260	6700	0
5	5240	6900	0
6	5200	7100	0
7	6040	7100	0
8	6020	6900	0
9	6080	6700	0
10	6120	6500	0
11	6160	6300	0
12	6140	6100	0

loop 7

	x	y	z
1	5360	5100	0
2	6240	5100	0
3	6170	5300	0
4	6120	5500	0
5	6100	5700	0
6	6080	5900	0
7	6048	6100	0
8	6160	6100	0
9	6160	6101	0
10	5280	6101	0
11	5300	5900	0
12	5300	5700	0
13	5290	5500	0
14	5314	5300	0

loop 7a,7b

	x	y	z
1	5360	5100	0
2	6520	5100	0
3	6480	5300	0
4	6460	5500	0
5	6403	5700	0
6	6335	5900	0
7	6160	6100	0
8	5280	6100	0
9	5300	5900	0
10	5300	5700	0
11	5290	5900	0
12	5314	5300	0

loop 8

	x	y	z
1	6165	6100	0
2	6080	6300	0
3	5853	6500	0
4	5757	6700	0
5	5655	6900	0
6	5630	7100	0
7	5000	7100	0
8	5000	6100	0

APPENDIX II

UTEM SURVEY ON NOBLE CLAIMS
LOCATION OF CROSSOVERS AND GEOLOGICAL CONTACT

line - east
stations- north
channel = the latest time channel the response of the anomaly is noticed
depth s < 40 m
m < 100 m, > 40 M
d > 100 m

line	station	channel	depth	comment
loop # 1				
8900	4420	5	s	contact
	4600	4	s	contact
	4930	3	s	crossover no depth extent
	5320	3	s	contact conductive to N
8700	4400	5	s	contact
	4520	4	s	contact
	4800	4	s	contact
	4980	4	s	contact possible weak conductor no depth extent
	5320	3	s	contact conductive to N
8500	4240	6	s	crossover possible contact at 4280
	4590	5	s	crossover no depth extent possible contact
	4960	3	s	crossover no depth extent also a contact
	5040	?	m?	crossover or part of contact ??
	5440	3	s	weak crossover oontact possibly at 5400 contact
8300	4320			conductive to S
	4600	2	s	depth extend medium < 5 mhos (poor estimate on size and current channeling prevent proper interpretation)
	5040	3	s	contact possible crossover at 5080 medium depth
	5440	3	s	contact conductive to N
loop # 2				
8100	5280	6	s	contact conductive to S
	5460	4	s	contact conductive to N
7900	5240	6	s	crossover or contact at 5320
	5400	4	s	contact conductive to N
	5520	6	s	contact conductive to N possible dip to N
7700	5300	5	s	weak crossover possibly

				change in conductivity at 5360
	5500	3	s	contact conductive to N possibly crossover at 5520
7500	5380	4	m	crossover
	5600	3	s	contact conductive to N may be crossover at 5620 with shallow dip to N
7300	5380	5	s	crossover no depth extent may be contact at 5360
	5600	3	s	contact conductor to N may be crossover at 5680
7100	5320	?	s	possible contact
	5440	5	m	crossover weak could be due to contact at 5420
	5780	4	s	crossover sallow dip to N
	6020	3	s	?? end of line

loop # 2a (inside loop)

7700	4820	6	s	crossover and contact conductive to S
	4560	?	?	crossover ?? or some small conductor
7500	4720	7	s	contact conductive to S possibly small weak top conductor

loop # 3

6900	5240	6	S	crossover may be contact at 5240 conductor to S
	5620	5	s	crossover no depth extent
	5820	5	m	crossover possible shallow dip to N
	6040	3	s	crossover distorted by conductive at 5820
6700	5760	?	s	?? very weak no depth extent
	5920	3	s	minor migration to N distorted by 6140
	6140	2	s	?? end of line
6500	5600	7	s	weak crossover
	5800	6	s	weak crossover both this and 5600 may be contacts
	6140	4	S	crossover interference from 6320 dip to N ??
	6320	3	s	crossover ?? end of line
6300	5720	6	s	weak crossover
	6420	2	s	crossover may be // to conductor giving broad positive

loop # 4

6100	6000	4	m	?? there appears to be a contact in this area with conductive to N
	6620	3	s	?? crossover to close to end of line
5900	5520	7	s	crossover
	5820	7	s	contact
	6280	4	m	crossover possible contact
	6560	3	s	distorted by conductive at 6720
	6720	2	s	crossover
5700	5380	6	s	crossover appears deeper at late time
	5780	5	s	crossover minor migration to N
	6270	4	m	?? crossover may be contact conductive N
	6780	2	s	
5500	5460	7	s	weak crossover or contact
	6380			?? contact
	6540	3	m	crossover dip N ?
5300	there appears to be some change in conductivity along the line or something at depth ????			
	5600	6	s	contact
	6540	?	?	?? medium depth crossover or contact
5100	5380	6	s	weak crossover or contact
	6640	3	s	crossover or contact

loop # 5

8300	4840	5	s	crossover
	4610	4	s	crossover
	4300	3	s	contact conductive. to S
8100	4880	6	s	contact
	4620	4	s	crossover very shallow
	4300	3	s	crossover possible contact at 4320 conductor to S
7900	4920	7	s	contact
	4720	4	s	crossover
	4520	4	s	crossover
	4360	4	s	crossover dip shallow S
7700	4820	5	s	crossover very shallow
	4600	5	s	contact may be crossover to north at medium depth but distorted by conductor at 4820
	4320	5	s	contact conductive. to S
7500	4920	7	s	crossover
	4720	5	s	contact very similar to 4820 and 4600N on line 7700
	4440	5	s	contact conductive. to S
7300	4850	6	s	crossover

	4720	?	?	crossover very weak there appears to be a contact possibly at the above crossovers
	4440	?	?	contact conductive to S (may be m depth conductive.)
7100	5080	?	?	crossover jest inside loop or on loop edge

fault suspected between line 7300 and 6900

loop # 6

6900				no clear conductor or contact possibly at 5020 and between 4420 and 4560
6700	4960	7	s	contact conductive to N
	4720	5	s	crossover and contact or shallow dip to S
	4480	5	s	contact
6500	4780	4	s	crossover
	4560	?	?	weak crossover no depth extent
	4450	?	?	weak crossover at medium depth or contact
6300	4850	5	s	crossover
	4560	?	?	weak crossover possible contact

loop # 7

6100	4930	5	s	crossover
	4700	7	s	crossover
	4620	5	s	crossover both conductive under sampled maybe combined with a contact conductive to S
5900	4950	6	s	crossover
	4690	5	s	crossover little depth extent possible on top of a deeper conductor or a contact conductor to S
5700	4840	6	s	crossover
	4680	3	s	very high amplitude crossover middle station removed because of extreme amplitude very similar to a well grounded telephone line or fence. mineralization nearby. it appears to be on a contact more conductive to S
5500	5080	?	?	contact conductive to N
	4860	7	s	weak crossover

	4710	3	s	crossover little depth extent may be on contact
	4260	?	?	weak crossover or contact
5300				background very similar to 5500 may have weak crossover (m deep) at 4680 or possible a contact at approx 4800
5100	5020	7	s	weak crossover
	4800	5	s	crossover
	4750	5	s	crossover interference from conductive at 4800

loop # 7a

5900	6410	7	s	crossover
	6530	5	s	crossover possible contact at 6540
	6700	4	s	crossover
	6810	5	s	crossover no depth extent possible contact all these crossovers or close to each other therefore distorting them and making interpretation difficult
5700	6600	7	s	
	6780	5	s	crossover
	6860	5	s	crossover possible contact at 6700
	7120	?	s	crossover, multiple conductors and contacts complicate
5500	6700	6	s	may be contact at 6680
	6950	2	s	
	7100	2	S	crossover shallow dip to N

loop # 7b (inside loop)

5700	5800	7	s	weak top conductor

loop # 8 (note loop front not at right angles to lines)

6700	6020	5	m	crossover ?? a noticeable migration from loop 3 and deeper suggestion shallow dip to N
	6150	4	m	crossover dip to N
	6580	5	m	??
6500	6120	6	s	migration to N (dip N)
	6350	4	s	?? possible N contact (topography)
	6640	5	s	?? possible N contact at 6680
6300	6340	8	s	

	6450	4	s	crossover dip to N
	6740	3	s	contact conductive. to N possible crossover at 6780
6100	6620	5	s	
	6700	4	s	numerous shallow conductors on this line makes any interpretation difficult it is more conductive N of 6600

APPENDIX III

STATEMENT OF QUALIFICATIONS

I, Syd J. Visser, of 8081 - 112th Street, Delta, British Columbia, hereby certify that,

1) I am a graduate from the University of British Columbia, 1981, where I obtained a B.Sc. (Hon.) Degree in Geology and Geophysics.

2) I am a graduate from Haileybury School of Mines, 1971.

3) I have been engaged in mining exploration since 1968.

4) I am a Fellow of the Geological Association of Canada.

fts3.5

GEOLOGICAL ASSOCIATION OF CANADA
SYD J. VISSER
FELLOW

Syd J. Visser, B.Sc.,
F.G.A.C.
Geophysicist

APPENDIX IV

LEGEND

Channel	Mean delay time	Plotting symbol
1	12.8 ms	∣
2	6.4	/
3	3.2	\
4	1.6	□
5	0.8	Ƨ
6	0.4	∡
7	0.2	7
8	0.1	⧖
9	0.05	△
10	0.025	◇

APPENDIX V

LEGEND

depth —X— channel Crossover axis	Depth - S = < 50 M. M = < 100 M. > 50 M. D = > 100 M.
	Channel - Latest time channel of conductor axis
	Contact arrow in the direction of increasing conductivity
	Outline of transmitter loop and loop number
	Cut grid line
	Compass line (uncut)

CONTOUR INTERVAL = 20m

0 125 250 375 500
meters

UTEM compilation by S.J.V. Consultants Ltd.

Topography taken from Craigmont Mines Ltd. Assessment Report 6931

PLACER DOME INC.		
NOBLE CLAIMS		
DRAWN:- H.R.G.	GRID and U.T.E.M. COMPILATION MAP	
DATE:- JULY 88		
SCALE:- 1 : 5000		
REVISED:- S.J.V.	FILE No. Figure 2	82M/12W