Interpretation of Surface EM Survey at

White Spur Prospect

Definition of YWS1 ,WSP6 DHEM target

for

PASMINCO LIMITED
ROSEBERY MINE

By

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SUMMARY

On close examination, surface EM data was shown to be inconsistent with " normal" EM effects. Limited amount of testing in the field did not identify the source of possible and suspected instrumental effect to explain the observed data.

It is recommended that more thorough investigations be carried out into the functioning of the survey equipment before the collected data is accepted as representing true EM effects of the ground. No confident interpretation of the current data set can however be attempted before either more data is collected or the issues surrounding possible equipment malfunction are resolved.

INTRODUCTION

The three holes DHEM White Spur data sets collected in December 2002, defined a number of conductors (Silic 2003). In particular it was interpreted that a conductor to the west of drillhole holes YWA1 and WSP6 was affecting the measured response (Figure 1). On the basis of the YWS1 and WSP6 DHEM data sets, the precise location of the interpreted conductor could not be determined, because neither YWS1 nor WSP6 drillholes traverse across the interpreted target location. As a result a surface EM data was collected over the conductor's location in December 2003/ January 2004 in order to confirm the existence of and more accurately determine the interpreted targets location. The purpose of this report is to discuss the results of this follow up surface TDEM Survey and to recommend future exploration strategies at the White Spur prospect.

SURVEY PARAMETERS

The surface TDEM EM data sets were collected using the Zonge GDP16 EM system, operated by Zonge Exploration Services from Adelaide , South Australia .

Surface data measurements were restricted to obtaining vertical component data and two loops were used to energize the conductors within the survey area (Fig 1a) .

All data was collected with the Zonge GDP16 system operating at a 16Hz . As such the channel times or time sampling scheme in milliseconds was as follows.

Channel No	Time (ms)	Channel No	Time (ms)
1	0.047	16	1.566
2	0.077	17	1.958
3	0.108	18	2.473
4	0.138	19	3.111
5	0.169	20	3.890
6	0.199	21	4.890
7	0.245	22	6.140
8	0.306	24	9.700
9	0.367	25	12.19
10	0.442		
11	0.534		
12	0.654		
13	0.821		
14	1.02		
15	1.262		

DATA QUALITY

Data quality in any TDEM Survey is largely dependent on the electromagnetic noise levels within the survey area. This supposedly random background noise is invariably alleviated or "stacked out" within a single reading by averaging data over many numbers of the transmitting cycles. As such, during the survey the data quality was invariably monitored and stacking times (number of transmitter cycles within the reading) adjusted so that the data uncertainty in the "late" time channels rarely exceeded ±0.05 uV/A at least in the latter part of the survey (Loop2 , Fig 1a) .To achieve these noise levels however required careful data monitoring and stacking the data to about 4096 transmitter cycles per individual reading .

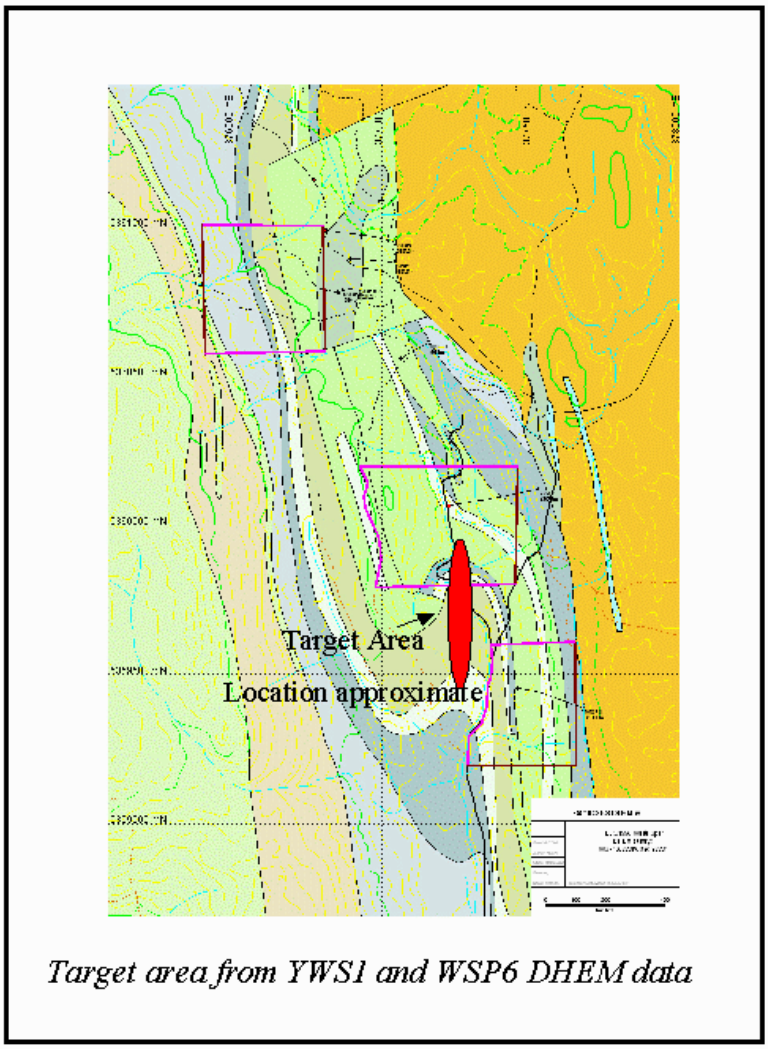

Figure 1. Target area from YWS1 and WSP6 DHEM data (From Silic 2003) .

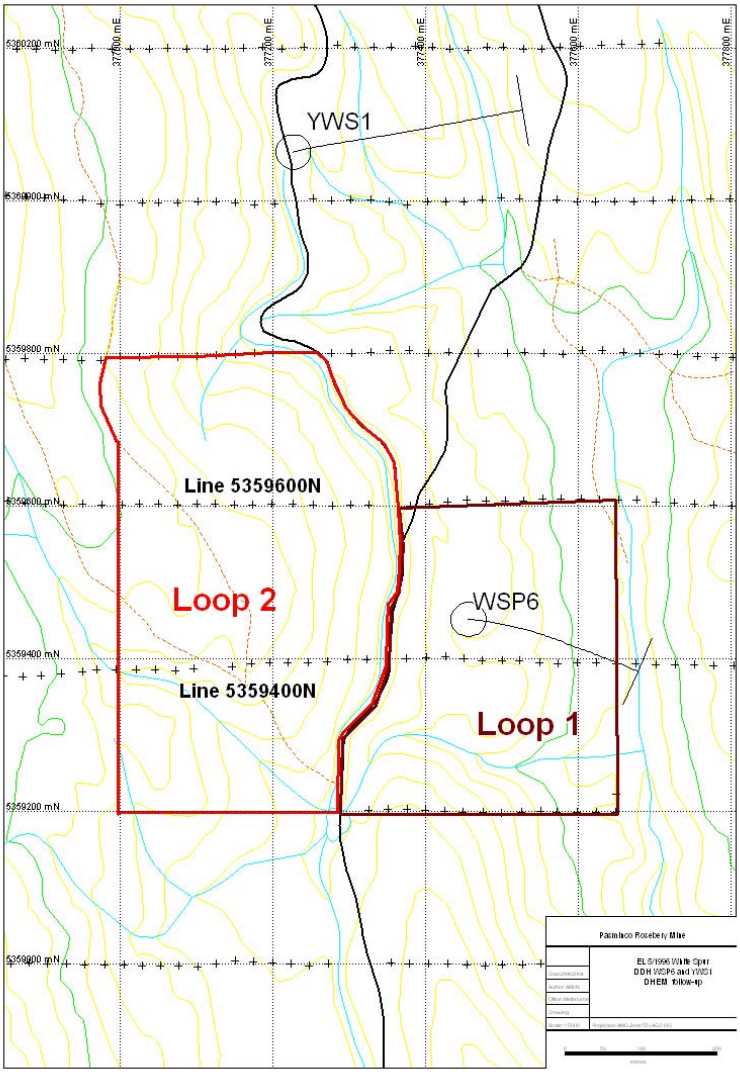

Figure 1a. Loop Location Map

INTERPRETATION OF DATA

Initially Loop 1 data from lines 9400 and 9600 N (Figure 2 and 3) seemed to be confirming the existence of deep conductive conductor target to the west of drillholes YWS1 and WSP6 (Figure 1). In particular the data sets could be reconciled with a two conductor response and reasonable agreement between the observed and calculated was obtained by using computer simulated inversion (data fitting) techniques (Figure 4 and 5) . At the same time however it was recognized that the "early time" data was largely controlled by the system self response, with negative data values inside the loop and no apparent cross-over (data points at which data changes sign) movement away from the loop edge up to about 0.85 milliseconds (Figure 2). Although this "self response" was considered to be extreme, it was by no means unusual , as it is common to many other impulse type TDEM system and very noticeable in areas characterized by high background resistivities.

Nevertheless because it was considered that Loop 1 data may not be of sufficiently good enough quality to define the postulated deeper target additional Loop 2 (Figure 1c) data set was collected.

It was then recognized, with the both "early" and "late" time cross-over closely associated with the location of the loop edges (Figures 6 and 7), that an effect highly unlikely related to EM effects within the ground was "distorting " the measured response.

Limited amount of testing done in the field and which included checking the polarity of and veracity of the response by changing coils and cables, testing the linearity of the system response by varying the transmitter current, did not conclusively identify the source of the observed data as an obvious instrumental or survey procedure effect.

As such if was concluded that on the basis of the current data set, and until perceived instrumental problem are understood or resolved no confident interpretation can be made .

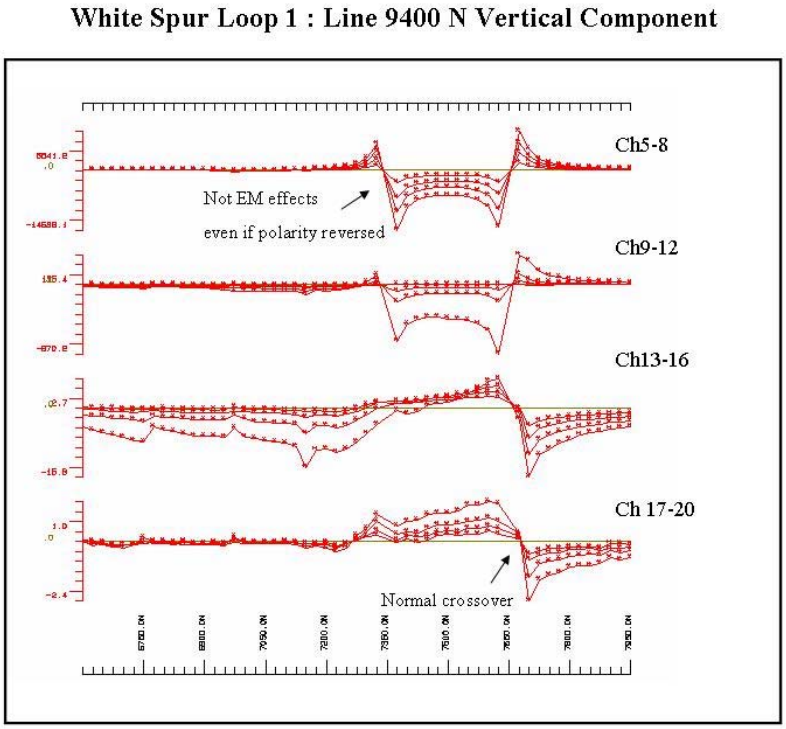

Figure 2. White Spur Loop 1: Line 9400N Vertical Component

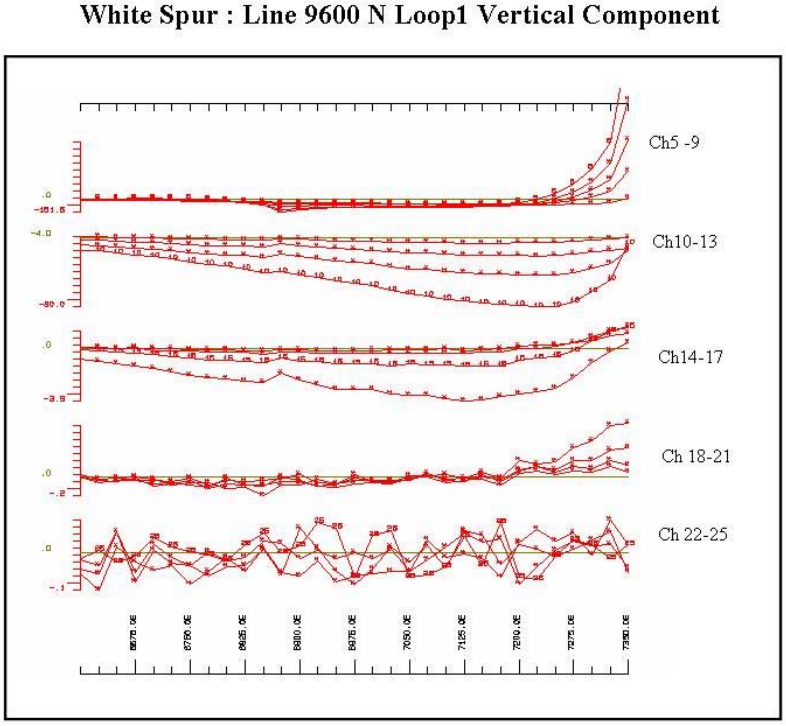

Figure 3. White Spur: Line 9600N Loop1 Vertical Component

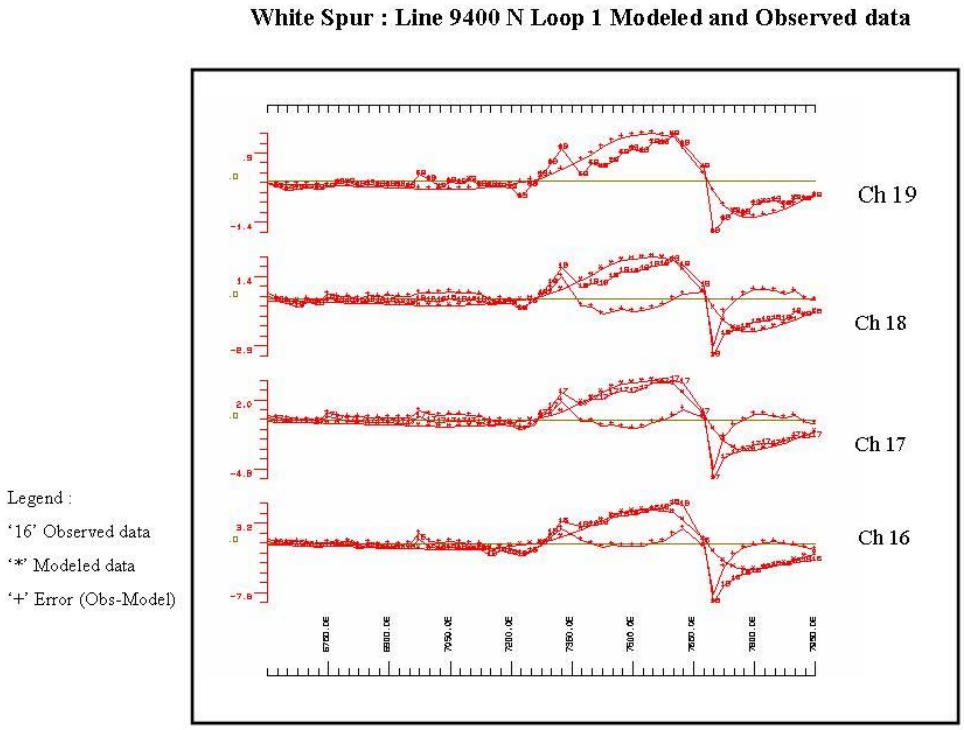

Figure 4. White Spur: Line 9400 N Loop 1 Modeled and Observed data

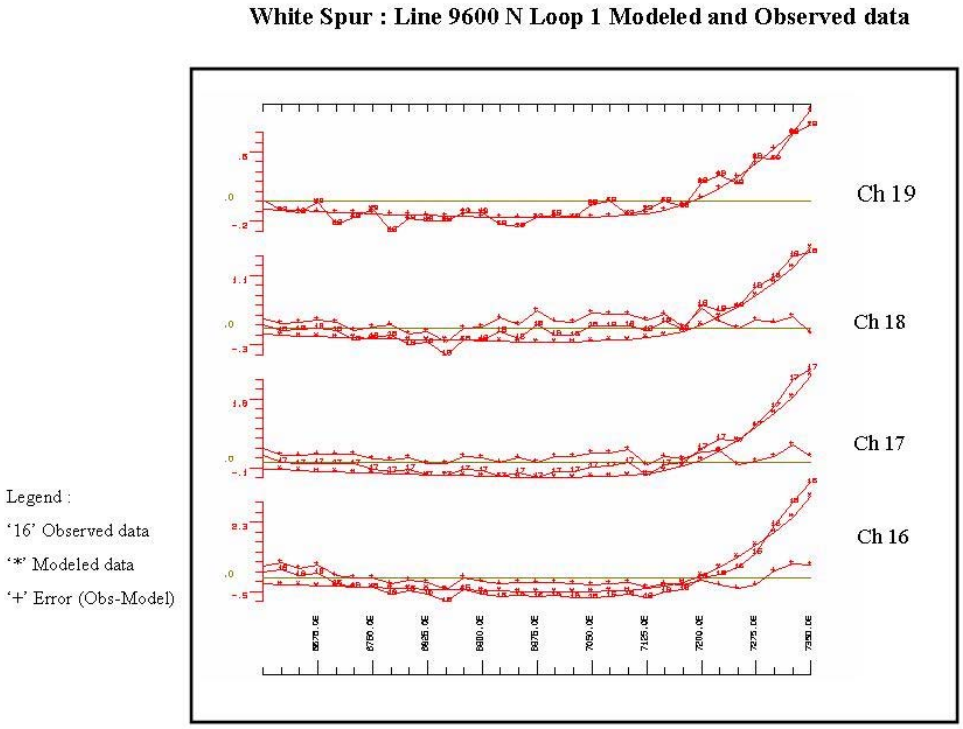

Figure 5. White Spur: Line 9600N Loop 1 Modeled and Observed data

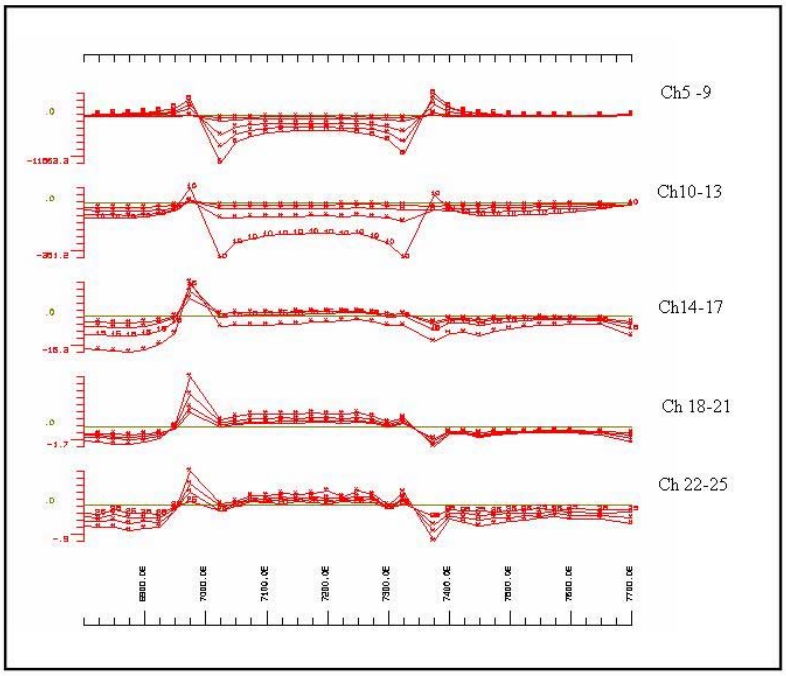

Figure 6. White Spur: Line 9400 N Loop 2 Vertical Component

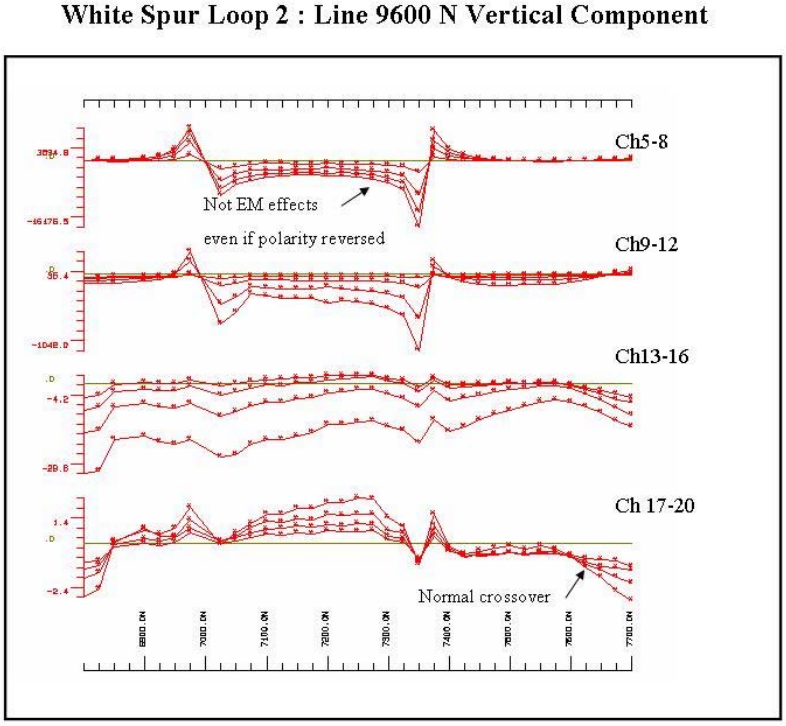

Figure 7. White Spur Loop 2 : Line 9600N Vertical Component

CONCLUSION

On close examination, surface EM data was shown to be inconsistent with " normal" EM effects. Limited amount of testing in the field did not identify the source of possible and suspected instrumental effect to explain the observed data.

It is recommended that more thorough investigations be carried out into the functioning of the survey equipment before the collected data is accepted as representing true EM effects of the ground. No confident interpretation of the current data set can however be attempted before either more data is collected or the issues surrounding possible equipment malfunction are resolved.