

**Interpretation of HED 14 and 15 DHEM
Data**

For

Bass Metals Ltd

By

Jovan Silic Ph. D.

Flagstaff GeoConsultants

(JSA Pty Ltd)

May 2008

DISCLAIMER

Confidentiality

This document and its contents are confidential and may not be disclosed or published in any manner (except in its entirety to a government department as part of the statutory reporting requirements and as may otherwise be required by law) unless Flagstaff GeoConsultants Pty Ltd ["Flagstaff"] has given its prior written consent to the form and context of the disclosure or publication.

Disclaimer

Flagstaff has prepared this report based upon information believed to be accurate at the time of completion, but which is not guaranteed. Flagstaff makes no representation or warranty as to the accuracy, reliability or completeness of the information contained in this report and will not accept liability to any person for any errors or omissions or for losses or damages claimed as a result, directly or indirectly, or items discussed, opinions rendered or recommendations made in this report, except for statutory liability which may not be excluded.

LIST OF CONTENTS

<i>Disclaimer</i>	<i>1</i>
<i>List of Contents</i>	<i>2</i>
<i>List of figures</i>	<i>3</i>
<i>Summary</i>	<i>4</i>
<i>1. Introduction</i>	<i>5</i>
<i>2. Application of DHEM surveys to detect off hole hellyer style VMS deposits</i>	<i>5</i>
<i>3. Survey Parameters</i>	<i>8</i>
<i>4. Discussion of HED 14 – 15 DHEM Data Set</i>	<i>8</i>
(a) HED 14.....	<i>8</i>
(b) HED 15.....	<i>10</i>
<i>Conclusion</i>	<i>15</i>
<i>References:</i>	<i>16</i>

LIST OF FIGURES

Figure 1.	Drill hole and Loop Location for HED 14 and 15	5
Figure 2.	DHEM Model: Drill hole trace and conductor section	6
Figure 2a.	DHEM Model Along Hole Component: Drill hole over the conductor's center	7
Figure 2b.	DHEM Model Along Hole Component: Drill hole over conductor's northern extremity ..	7
Figure 2c.	DHEM Model Along Hole Component: Drill hole 100 meters north from conductor.....	8
Figure 3.	HED14 : Geological Section	9
Figure 4.	HED 6 DHEM Loop 6: Along hole Component	9
Figure 5.	HED 15 : Geological Section	10
Figure 6.	DHEM HED15 Loop 1 :Along hole Component	11
Figure 6a.	DHEM HED 15 Loop 1 : Cross Hole (X) Component	11
Figure 6b .	DHEM HED 15 Loop 1 : Cross Hole (Y) Component	12
Figure 7.	HED 15 DHEM Loops : Primary Field in Hole	12
Figure 8.	HED 15 DHEM Loop 2 : Along hole Component	13
Figure 8a.	HED 15 DHEM Loop 2 : Cross Hole (X) Component	13
Figure 8b.	HED 15 DHEM Loop 2 : Cross Hole (Y) Component	14
Figure 9 .	HED 15Loop 2 : Primary Field in Hole	14

SUMMARY

DHEM data collected in drill holes HED 14 and 15 did not identify any EM effects which could be attributed to 3D conductive targets not intersected by the drill holes. These results essentially preclude the existence of a moderated size target to within 150 – 200 meters above and / or below the drill hole, for conductors on sections (along strike) over and up to 100 meters from the drill hole section.

1. INTRODUCTION

Two drillholes HED 14 and 15 were drilled in 2008 , to the south and west of the location of the Hellyer ore body (Figure 1) . The drill holes were testing favourable geological and structural locations for emplacement of VMS targets close to the Hellyer ore body. These drill holes did not intersected significant mineralisation and were subsequently used as down hole EM (DHEM) platforms to ascertain the presence of a nearby VMS systems that may not have been intersected by the drill holes. The purpose of this report is to present the DHEM and discuss DHEM data collected in drill holes HED 14 and 15 .

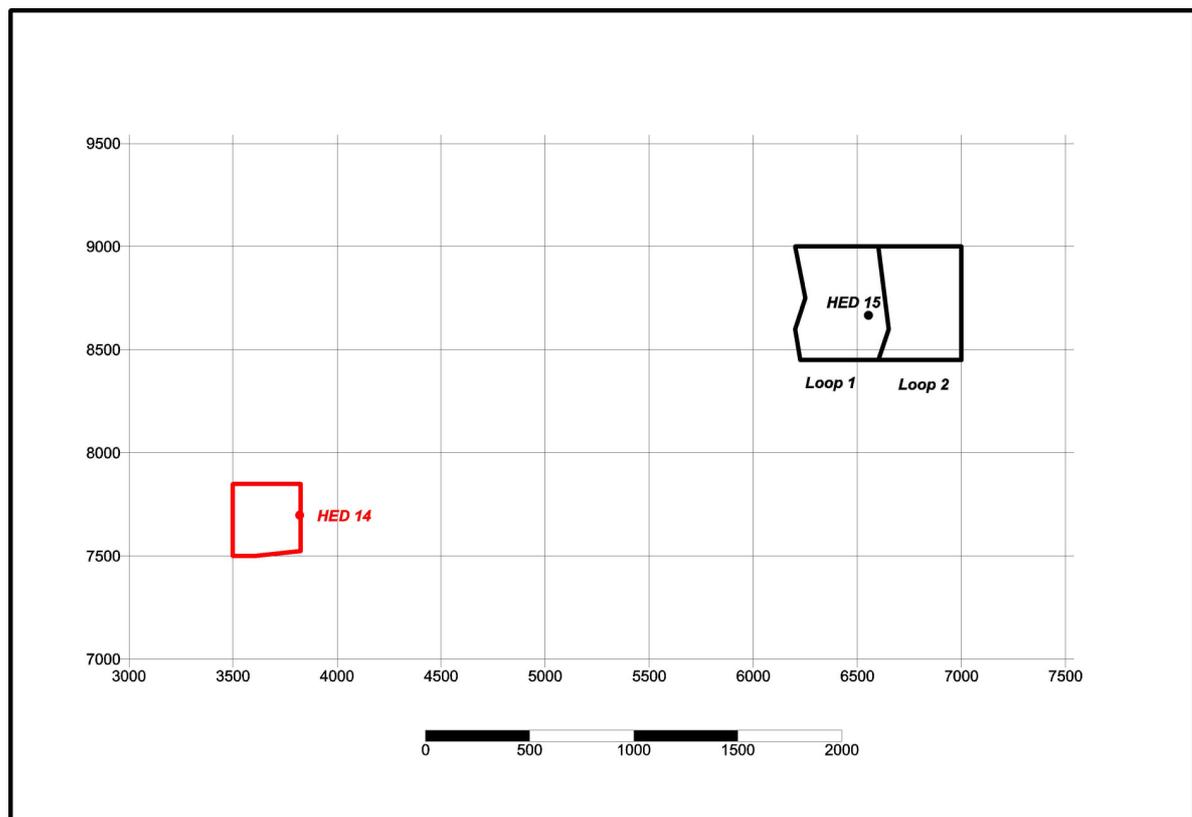


Figure 1. Drill hole and Loop Location for HED 14 and 15

2. APPLICATION OF DHEM SURVEYS TO DETECT OFF HOLE HELLYER STYLE VMS DEPOSITS

One of the important contributing factors in the discovery of the Hellyer VMS deposit was the application of time domain electromagnetic (TDEM) surveys over the Que River/Hellyer exploration licence (Silic, 1985). Subsequent to the discovery, it was also recognised that collecting Down Hole EM (DHEM) data not only resulted in the possibility of detecting VMS targets that may have been missed by drill holes and /or were too deep to have been detected by surface EM Surveys, but could also be utilised to sterilize the area in the vicinity of the drill hole. Effective use of DHEM data to sterilize ground or to exclude the

possibility of locating a conductive VMS targets within a certain area, however **usually requires data from adjoining drill holes or drill holes drilled on a predetermined separation the latter related to the strike length of the postulated target (Silic 1985, Silic and Eadie 1989, Silic, 1989).**

To illustrate the validity of preceding statements, modelled response from an off hole target some 200 meters away from the drill hole is presented (Figure 2). The conductor has a 350 meter strike length and a 150 meters depth extent. The response of three models is presented, the drill hole over the centre, over the northern extremities and 100 meters to the north of the conductor (Figure 2a-2c).

As the data shown in Figure 2a -2c, illustrates, there is a dramatic decrease in the targets EM response as the drill hole is positioned to the north of the target. In fact using accepted EM system noise levels, this target would be barely detectable if the drill hole in 100 meters to the north of it (Figure 2c). This detection limitation is largely controlled by the target's depth extent in relation to distance from drill hole. Data collected in the vicinity of the Hellyer ore body has demonstrated this effect, **with the ore body not detected by the DHEM data collected within a drill hole 100 meters to the south of the ore bodies southernmost extremity (Silic, 1985).**

As a result effective use of DHEM data to sterilize large areas of prospective geology usually requires collecting the data in more than one drill hole separated by about the strike length (+ 100 – 200 meters) of the anticipated target .

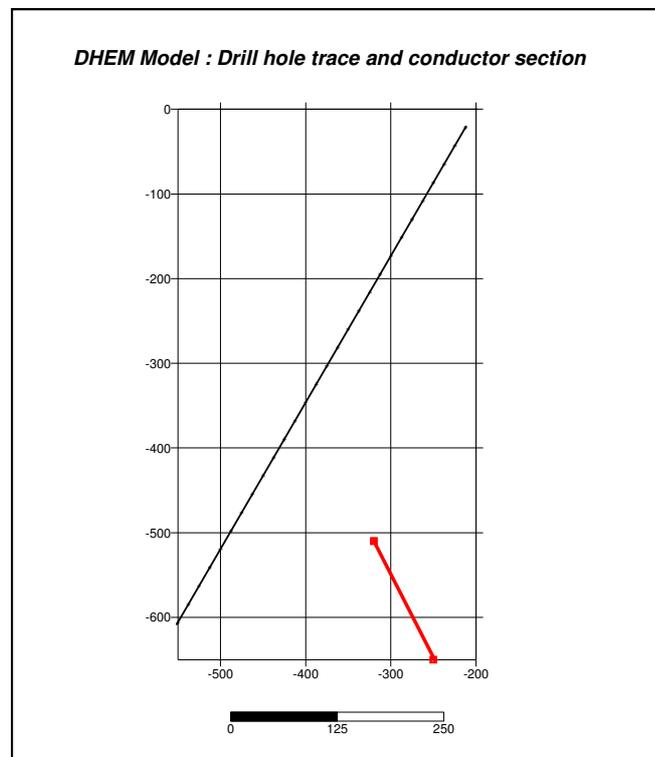


Figure 2. DHEM Model: Drill hole trace and conductor section

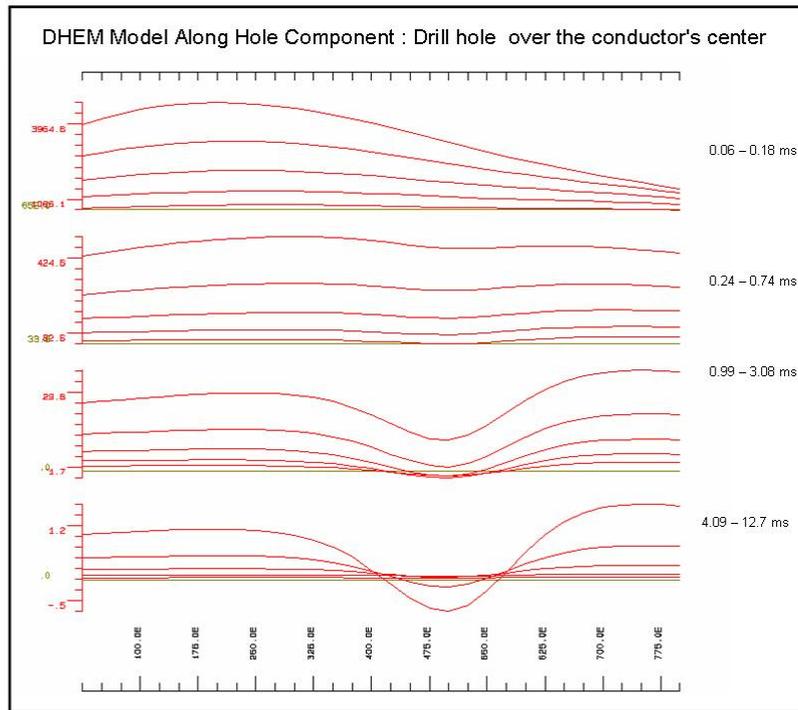


Figure 2a. *DHEM Model Along Hole Component: Drill hole over the conductor's center*

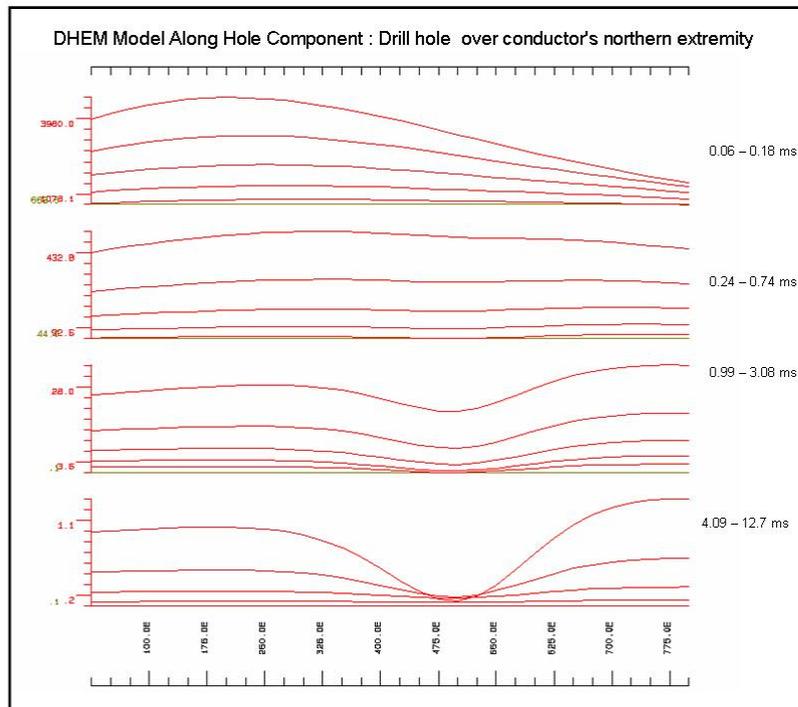


Figure 2b. *DHEM Model Along Hole Component: Drill hole over conductor's northern extremity*

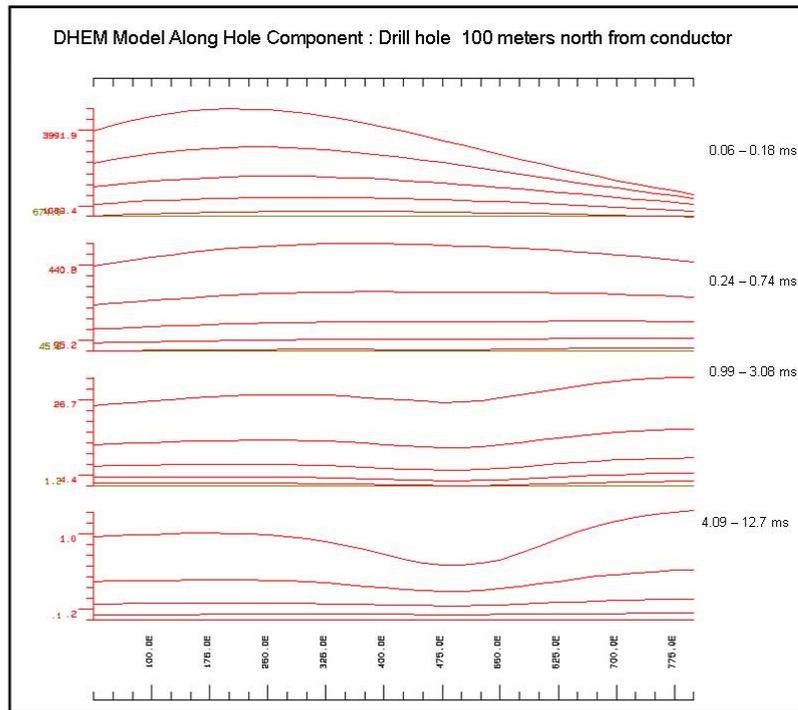


Figure 2c. *DHEM Model Along Hole Component: Drill hole 100 meters north from conductor*

3. SURVEY PARAMETERS

DHEM data was collected by Outer-Rim Exploration using the Crone DHEM system operating at a 20 millisecond time base facilitating sampling of the decay curve till 16.05 milliseconds after the transmitter current turn off. Ten loops were used to energize the area around the drill holes (Figure 1) and were designed so that the magnetic field generated by these loops would couple (cut across) a number of possible targets of varying dips and geometries. To ensure that the “smallest” possible targets and/or far away from the drill hole were detected. DHEM data was collected with an ambient late time noise envelope of 0.1 pico Teslas/ second (pT/s). If no target response was evident in the along hole component data, cross hole component data was not collected.

4. DISCUSSION OF HED 14 – 15 DHEM DATA SET

(a) HED 14

Drill hole HED 14 was targeted at a postulated alteration zone to the west of a NE striking fault (Figure 3). No EM effect which could be attributed to a 3D conductive target away from the drill hole is evident in this data set. Only “flat” background responses can be interpreted (Figure 4).

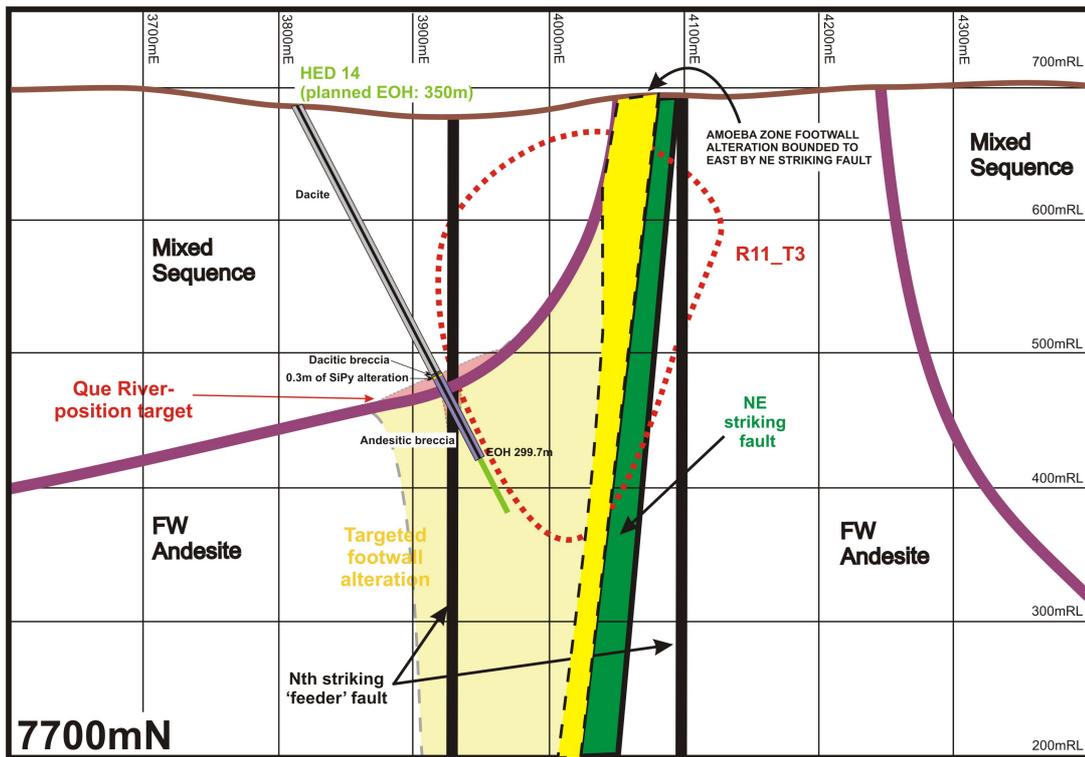


Figure 3. HED14 : Geological Section

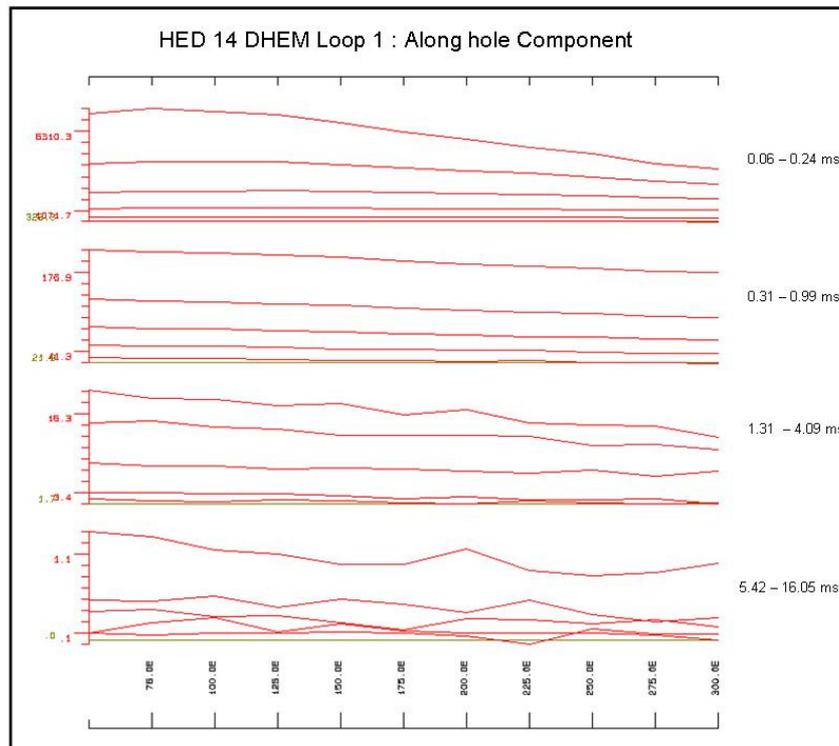


Figure 4. HED 6 DHEM Loop 6: Along hole Component

(b) HED 15

Drill hole HED 15 was targeted at a postulated deep Hellyer ore horizon nearby to an interpreted NW striking fault (Figure 5). The EM response measured in HED 15 appears to be outlining a near surface conductive source (Figures 6 and 8). When these responses however are compared to the loop's primary field at the stations within the drill holes (Figure 7 and 9), it is apparent that the measured secondary field closely follows the primary field from the loop .As such it is inferred that the “anomalous “response is entirely due to the probe's self response related to the loop's magnetic field within the probe before the current is turned off . No EM effects which could be attributed to a nearby 3D conductive targets are evident.

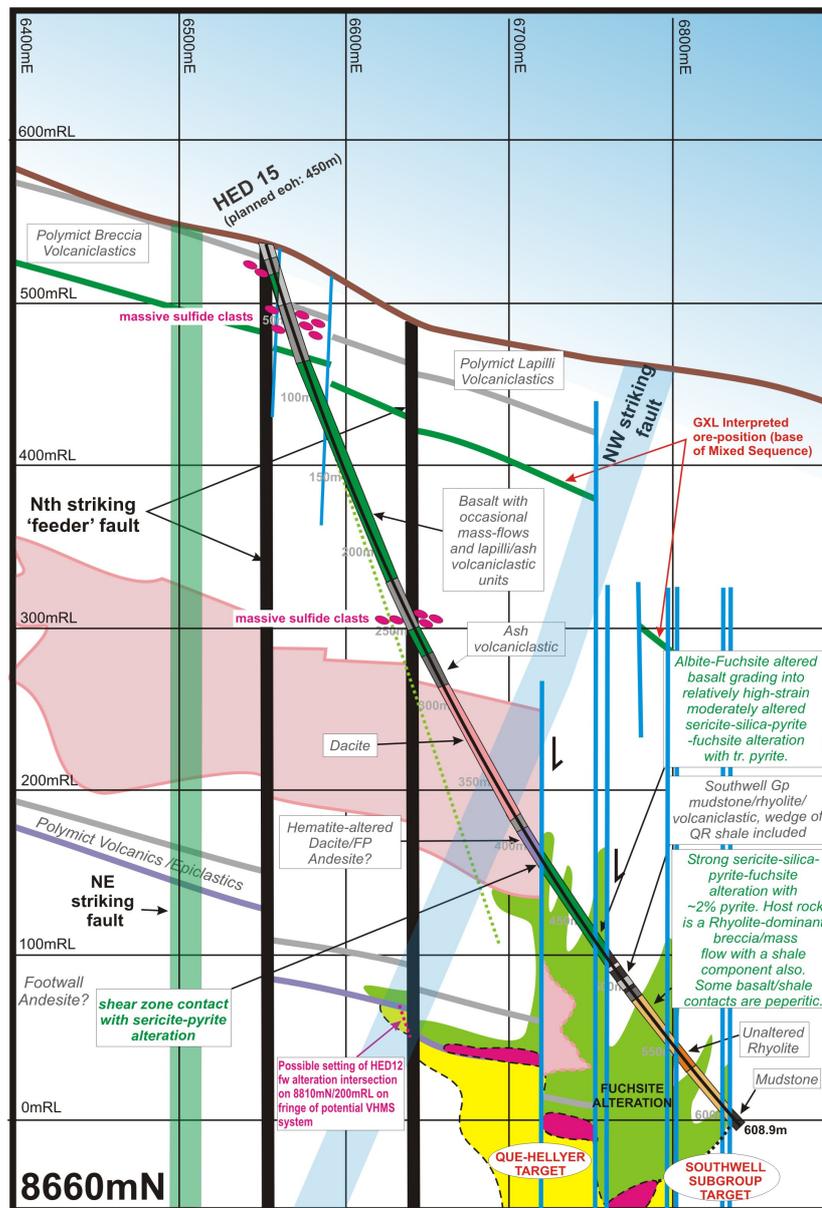


Figure 5. HED 15 : Geological Section

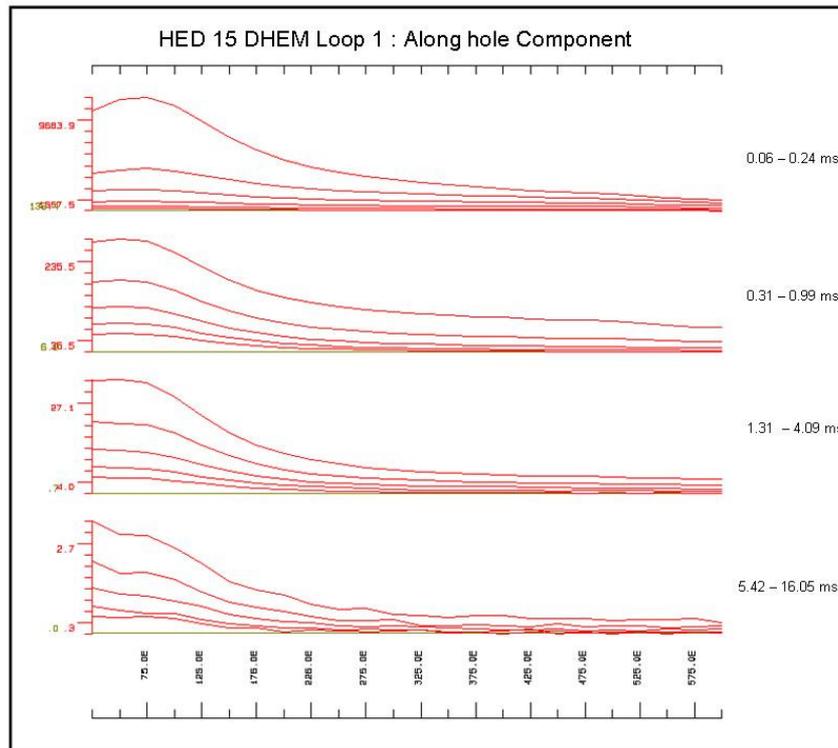


Figure 6. DHEM HED15 Loop 1 :Along hole Component

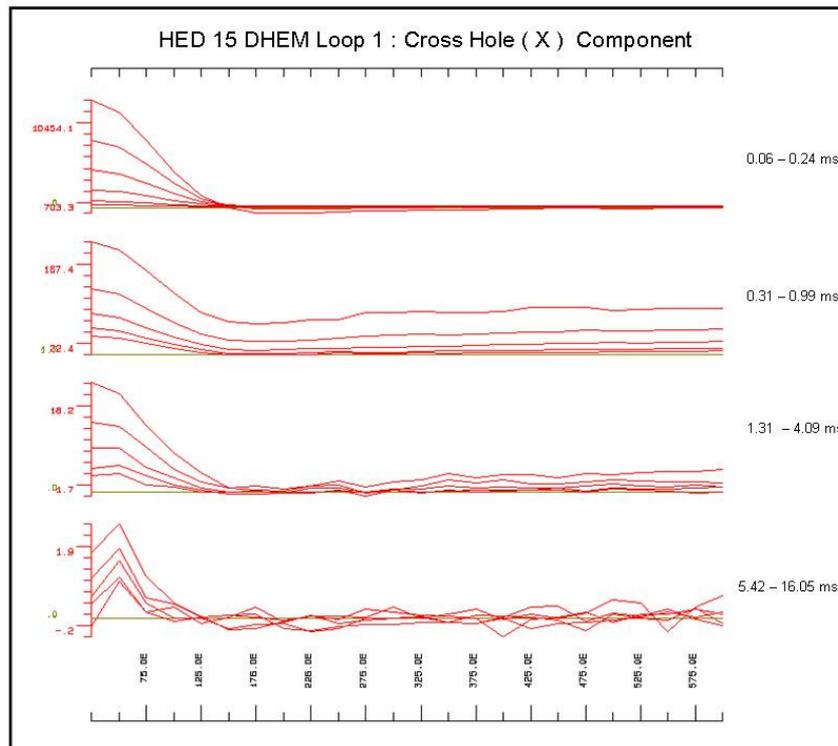


Figure 6a. DHEM HED 15 Loop 1 : Cross Hole (X) Component

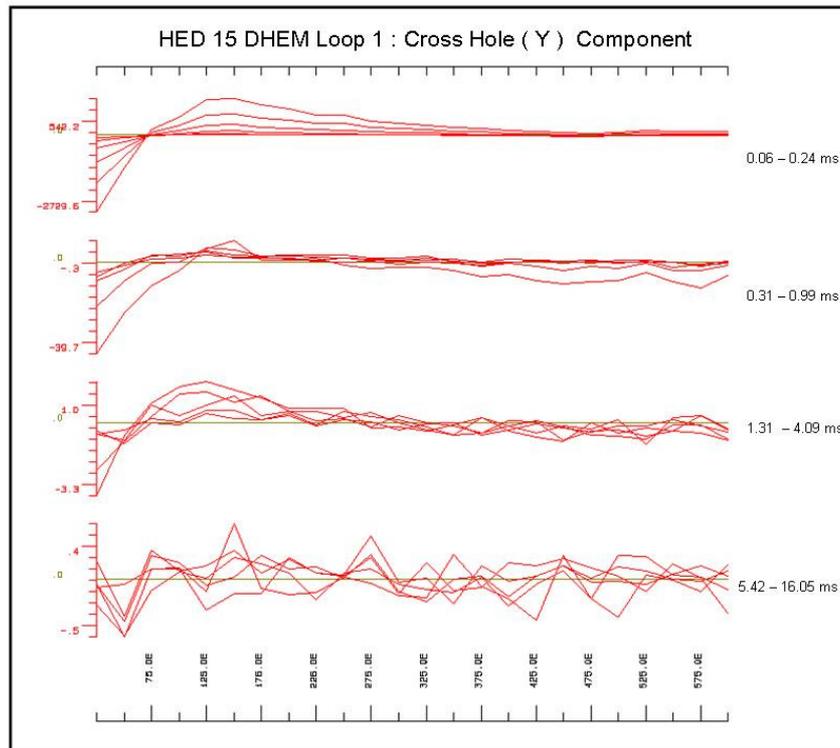


Figure 6b. *DHEM HED 15 Loop 1 : Cross Hole (Y) Component*

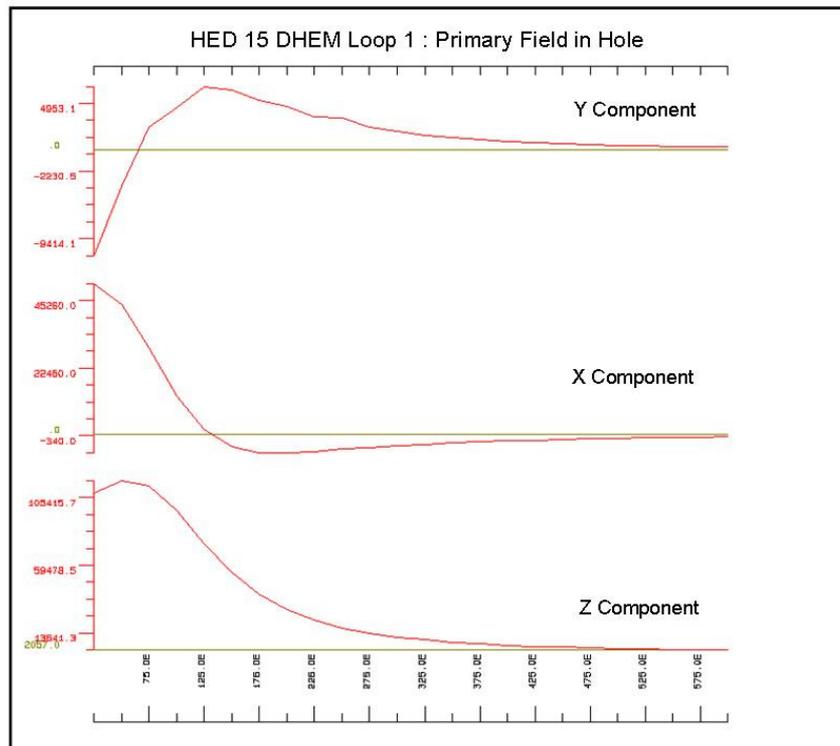


Figure 7. *HED 15 DHEM Loops : Primary Field in Hole*

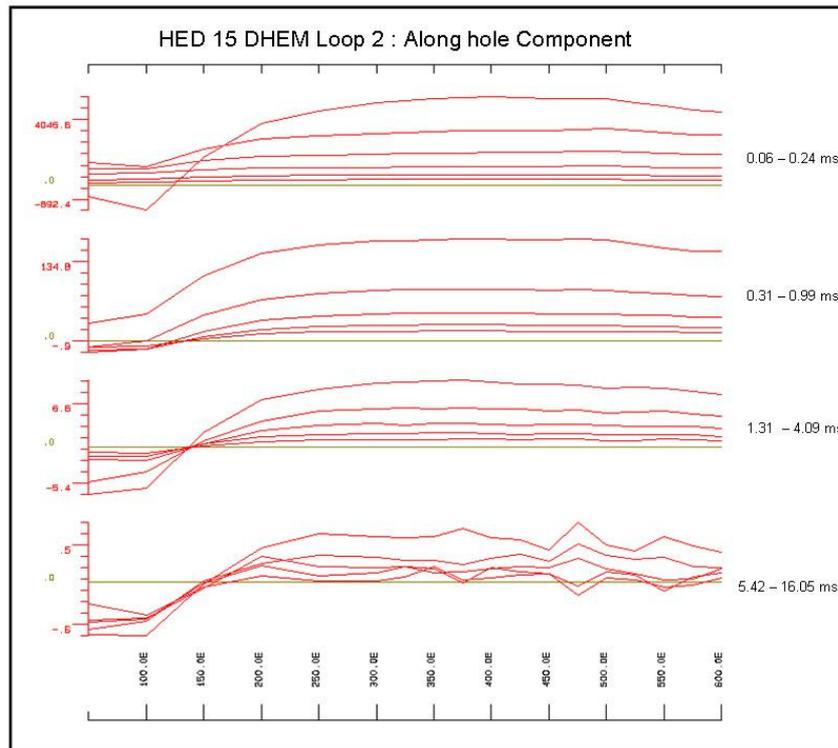


Figure 8. HED 15 DHEM Loop 2 : Along hole Component

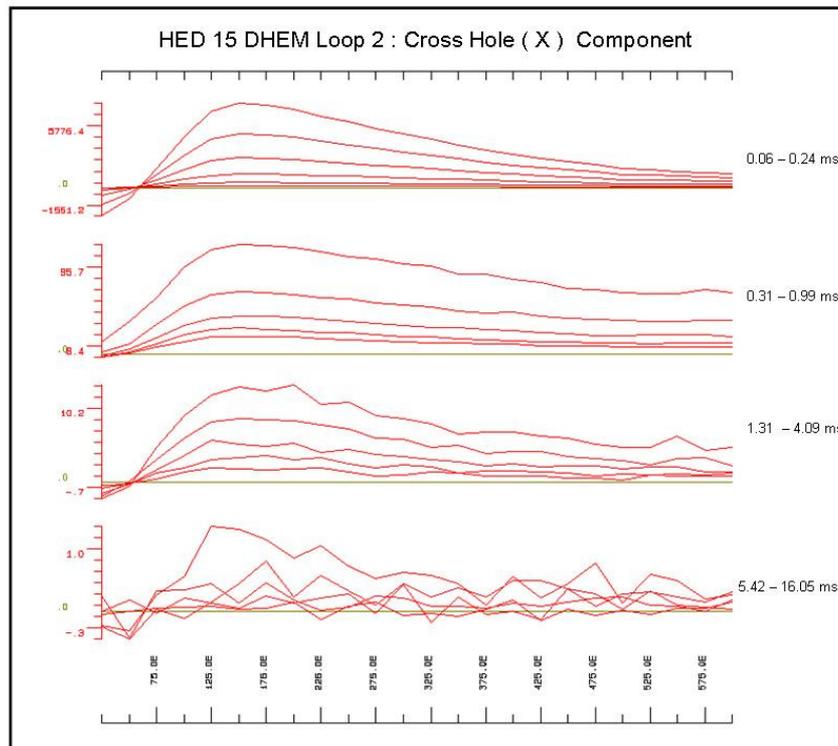


Figure 8a. HED 15 DHEM Loop 2 : Cross Hole (X) Component

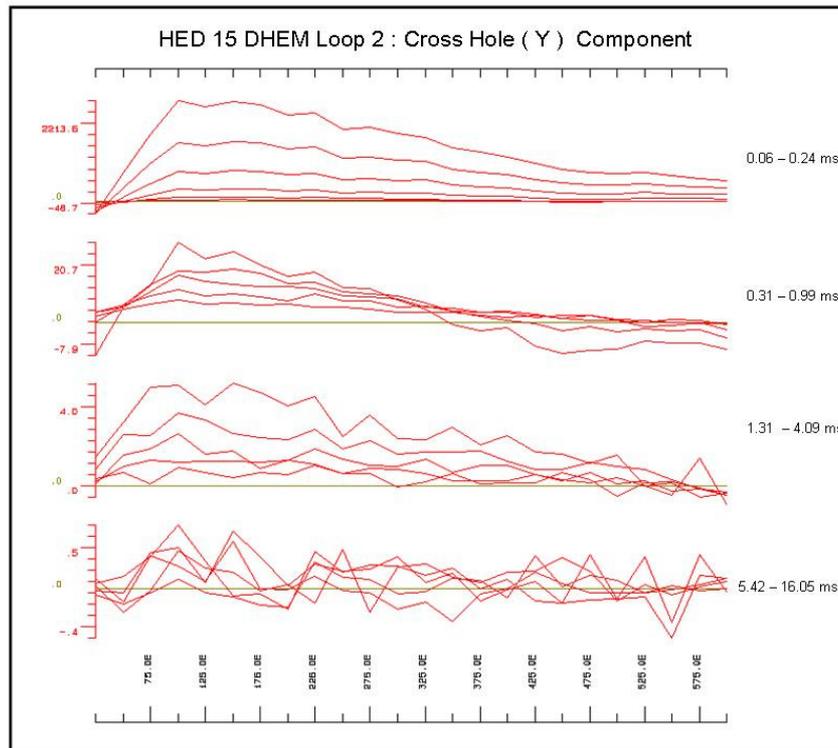


Figure 8b. *HED 15 DHEM Loop 2 : Cross Hole (Y) Component*

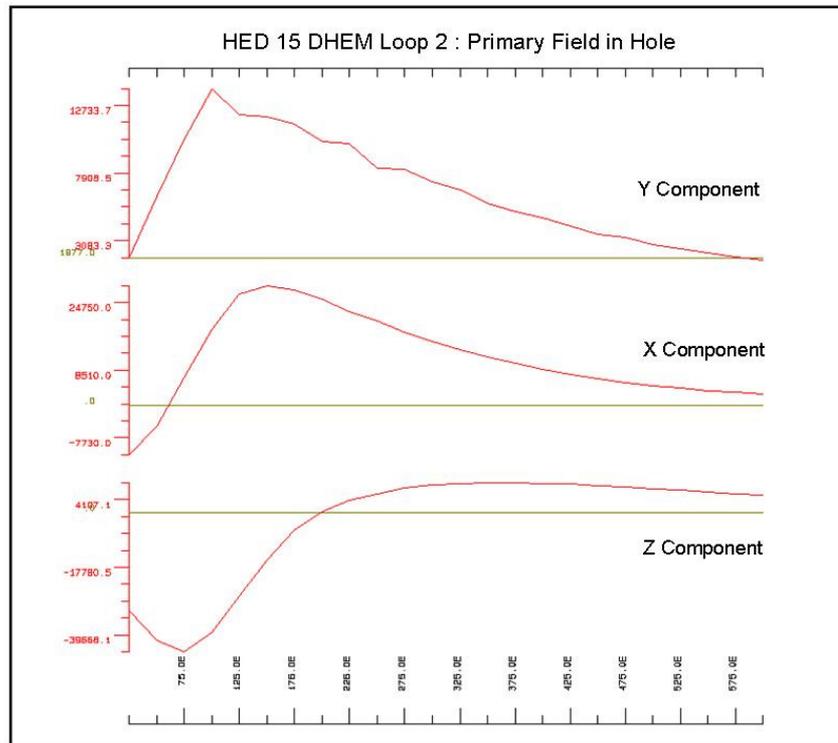


Figure 9. *HED 15 Loop 2 : Primary Field in Hole*

CONCLUSION

DHEM data collected in drill holes HED 14 and 15 did not identify any EM effects which could be attributed to 3D conductive targets not intersected by the drill holes. These results essentially preclude the existence of a moderated size target to within 150 – 200 meters above and / or below the drill hole, for conductors on sections (along strike) over and up to 100 meters from the drill hole section.

REFERENCES:

Silic, J., 1985; Application of TDEM methods in the discovery of the Hellyer ore deposit, Tasmania, Australia, Expanded Abstracts, SEG, 55th Annual Meeting and Exposition, Washington DC, 2 41-43.

Silic, J. and Eadie, E.T., 1983, DHEM; The Que –Hellyer Volcanics experience, Exploration Geophysics, 20, 60 – 69.

Silic, J., 1989; Effectiveness of DHEM in Que Hellyer Volcanics; Internal Report for Aberfoyle Resources.