

More on
ELK E.M.

861222

22 May 75

Comments from Mauro Beretta:

With ~~conductive~~ overburden horiz. loop / low freq. or vert. loop / med freq. may be o.k.

However, best to pretest by running 1 line with med. freq. first on horiz & then on vert. In areas of conductive overburden will get more response on the horiz. loop configuration. Negative readings of -5° to -20° on both coils are indicative of conductive overburden.

Mauro emphasizes the importance of noting creeks, topography etc & all factors which could produce noise.

He is willing to do an interpretation for us.

D.

MED VERT.
IF STRATA HORIZ
USE
LOW HORIZ.

3 T 2 T
3 R 2 R

$$\text{Amplitude} = \frac{2\pi}{c} \sqrt{\frac{\text{freq.}}{\text{resistivity}}}$$

This affects penetration. e.g. (general, not sure which EM system)

resistivity Ωm	depth m.	frequency cps
10^4	100	100
10^4	300	10
10^6	1000	100

Also, higher frequencies give a broader response from the same body. Lower frequencies are more selective

390 Hz	Better for narrow (Kuroko)	Better for stock works	Better for conductive overburden	Need closer coil separation.
1830 Hz				
5010 Hz				

Recommendations (EIk)

Basic coverage: 200' coil separation
A vertical loop method
1830 Hz } readings every

Switch, where flat dip suspected to:
200' coil separation
Horizontal Loop
390 Hz

Resulting anomalies: Depth profile by altering coil spacing
Lateral profile by adding stations
Out of phase measurement at same time may not be bad idea

EM NOTES

Penetration: Crone brochure suggests coil spacings of 100 to 600', (consistent with penetrations of 50 to 300'), but the upper limit is undoubtedly optimistic except perhaps under ideal conditions. Suggest for Elk using a 200' to 300' basic separation*, with expansion to 400' and/or reduction → to 100' for depth detailing on any possible anomalies.

Coil Orientation: If we expect, on average, 40° dips, response should be more or less equal from horizontal or vertical configurations. However, the vertical would suppress conductive overburden effects.

Line Perpendicularity to strike: Is not claimed to be critical, up to 45°.

Frequency: If horizontal coils had to be used, 390 Hz would be obvious choice. However, with vertical coils, 1830 Hz probably ok. (Might be able to test conductive overburden edge effects at outcroppy area towards eastern end of baseline)

The 5010 Hz frequency might give too great a fracture-filling effect (for Kuroko, that is) One general rule is that attenuation (power loss) in ground increases with frequency

OVER ↓

Reduction can help discriminate 2 parallel conductors

Beretta

Conditions

8' of conductive o/b.

pyritic / magnetic host (acid-intem Bonanza)

dip average 40°

Suggest 200' sep.

V
1830 Hz

or.

200'
H
390 Hz

} 100' stars wide?

} for flatter dips

~~Rel of spacing to Ab conductivity~~

Vi

Berettas home phone

112-463-3787

Elk costs \$23,375 ✓

BCIT 434-5722
-316 ✓

Rates for G.L. ? 1240.

R.K. 800

M.M. 900

Cook 900 170

Drilling driller + mach. ~~170~~ st by 100

SAMPLE
SPECTRO.

Has I in high V.

275m / 05
27505
275025
135750
51.

Can expect penetration not exceeding 50-100'-150'
 Expected dip 40°, either Hor or Vert probably
 equally good, but probably best to use
 "co-axial shootback," unless local geology or
 anomaly suggest use of both.

Because of probably
 conductive overburden.

Coil separation. A 200' coil separation
 would be consistent with expected depth
 of penetration. Could be varied locally
 to detail an anomaly in depth sense.

One problem will be separation of desirable
 conductors (narrow) from broader anomalies
 that could result in this terrain from pyrite
 "stockworks".

390
 1830
 5010

- better if cond o/b

7 | 415
 35
 65

Bid @ 100
 unit
 car

3000
 550
 4150

Question:
 Conductive

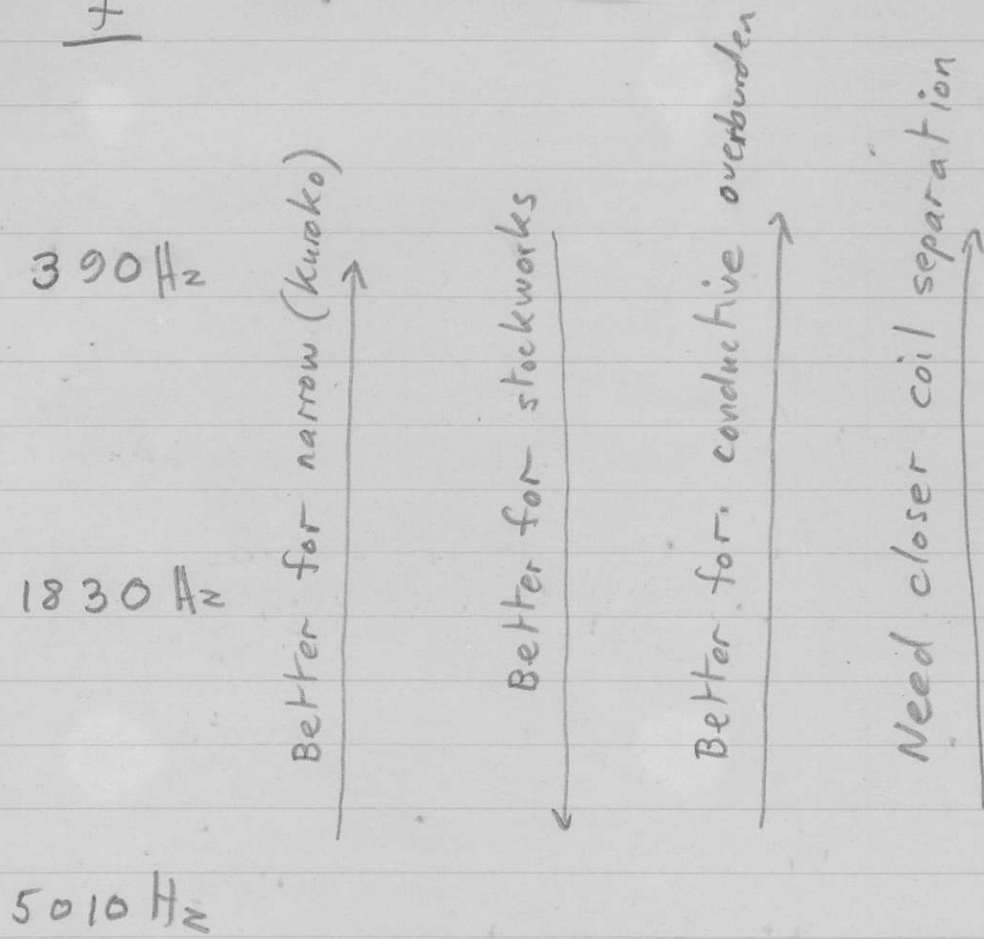
radio
 camp
 CEM

200
 200
 400
 800
 30
 27

Broad
 Try

7 | 3135
 45
 200
 65
 50

f



Conclusions

Recommend basic coverage of:
200' coil separation
vertical loop method
1830 Hz
} 100' stas.

Switch to:
200' coil separation
horizontal loop
390 Hz
} If flat dip indicated locally