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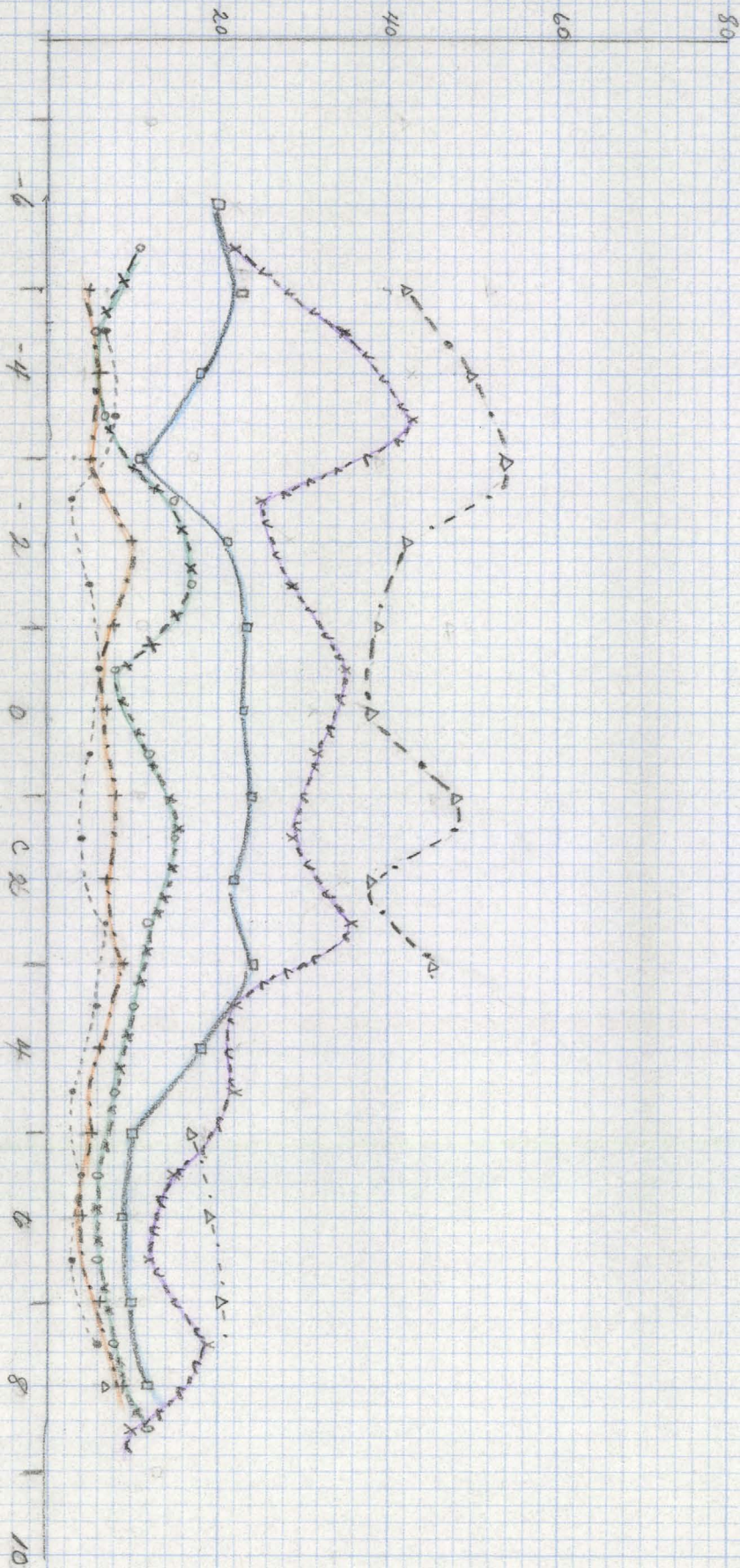
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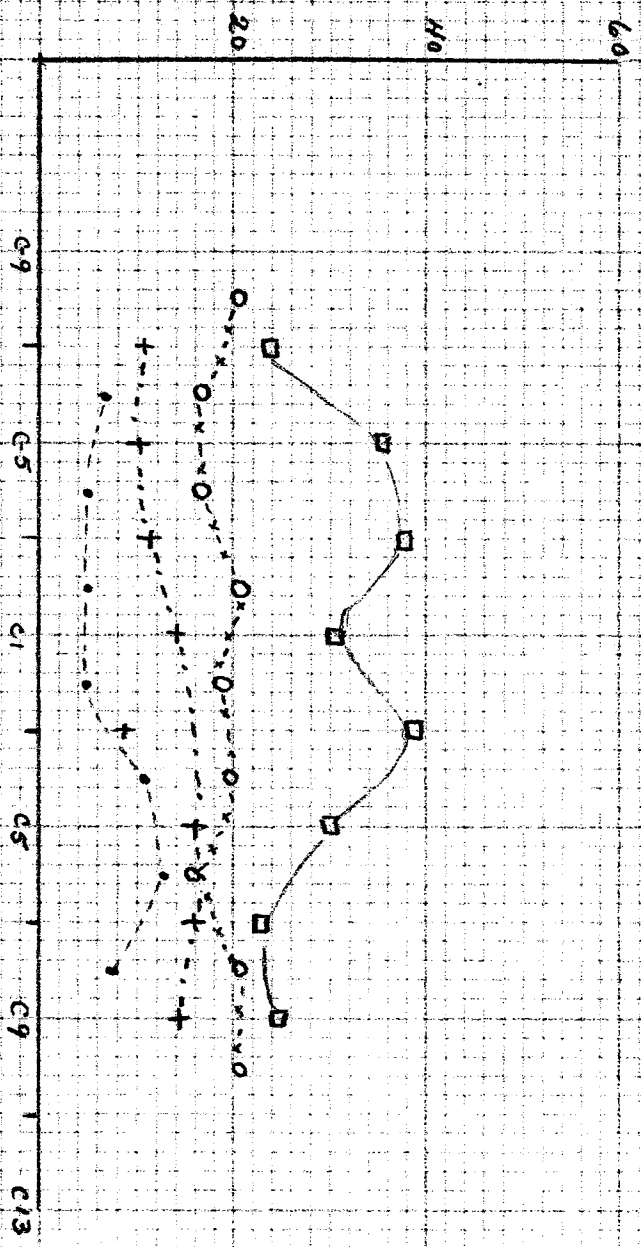
• n = 1 - - - -
 + n = 2 - ● -
 o n = 3 - x -
 □ n = 4 - - -
 x n = 5 - v -
 Δ n = 6 - - -



Scale $2a = 1'' \approx 2000'$

Line 6
 $a = 1000'$
 Time Domain
 IP Profile
 Chargeability
 Safford Area
 Newmont System

• n=1 ---
 + n=2 - - -
 o n=3 - x -
 □ n=4 —



Line #

Scale a=2,000'

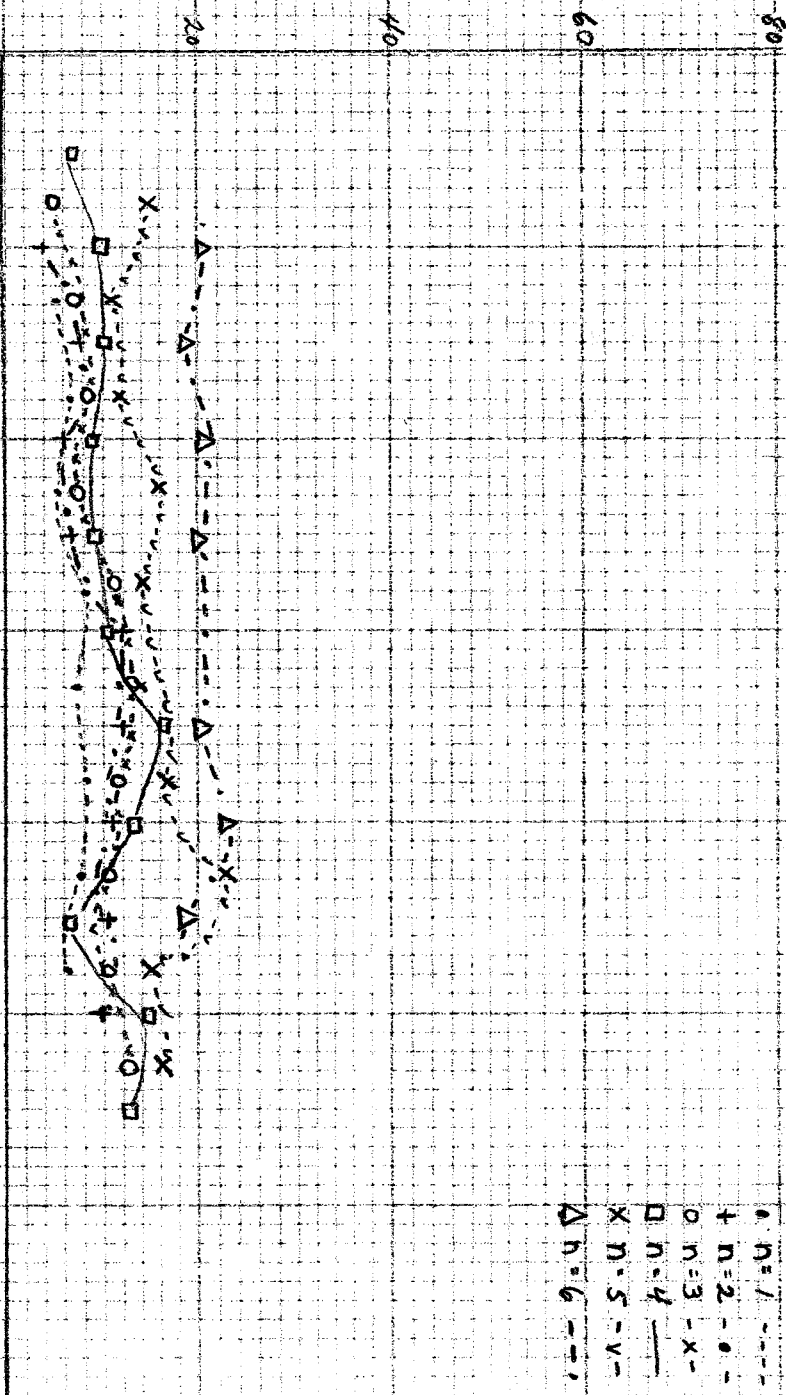
Profile

Chargeability

Saford Area

Newmont System

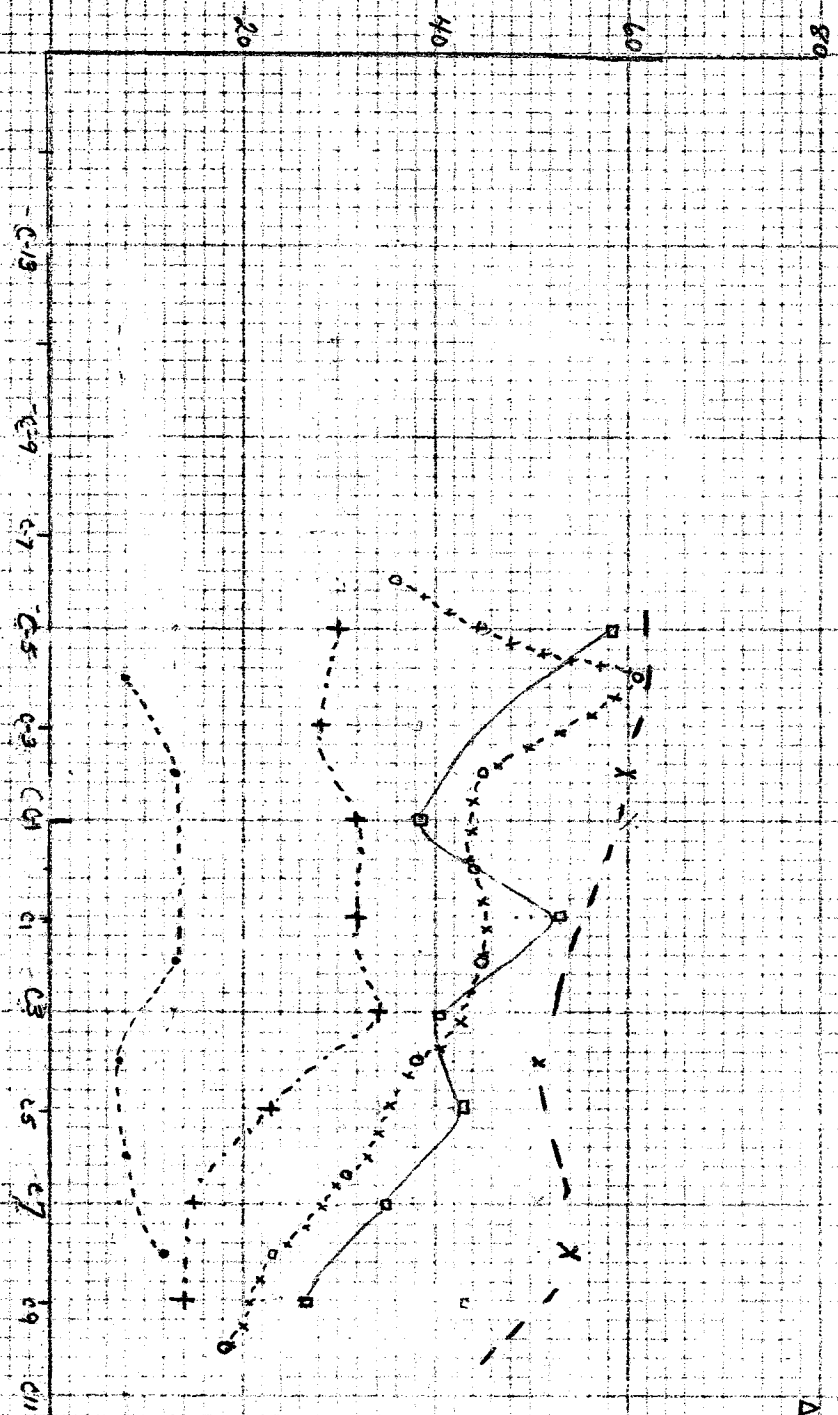
Δ n = 1 - - - -
 + n = 2 - 0 - -
 o n = 3 - x -
 □ n = 4 - - -
 x n = 5 - v -
 Δ n = 6 - - -



Line 4
 Scale - 20' / "

IP Profile
 Chargeability
 Safford Area
 Newmont System

• n = 1 -
 + n = 2 - • •
 o n = 3 - x -
 □ n = 4 -
 x n = 5
 Δ n = 6



Chargeability
 Safety Area
 Newmont System
 Time Domain
 IP Profile
 Line 6
 a = 2000
 10000 : Ka

EGH /

H. David Mac Lean

Professional Geophysicist

SXM

SEP 13 1972

September 8 1972

RECEIVED

Mr. J. K. Jones,
Essex International,
1704 W. Grant Road,
Tucson, Arizona, 85705

Subject: San Juan area Geophysical Surveys

Dear Ken,

Enclosed find a rough copy of the contours of filtered magnetic values taken in the vicinity of the San Juan mine near Safford. You will also find copies of the IP profiles for lines 6 & 4, - the only two lines for which I have information. The sulfide zone as indicated by the IP lines has also been sketched on the preliminary magnetic map. I'm sorry that I've been late getting this map to you, but it seemed that every time I started working on it, there was some change, or slightly different idea which was necessary to incorporate.

If you have draughting facilities available, you may care to have the pertinent data recopied. If so I would appreciate receiving a copy of the revised map. You may also want to change some of the interpreted features. I hope to telephone you on the weekend to discuss some of the points of ambiguity.

Speaking of ambiguity, it would be a good idea to take the base maps for the area and clearly indicate the line numbers used for your (Essex's) grid and that for the Wilkner Faulkner. There is I'm afraid, some ambiguity in usage of the line numbers, and to obviate any possible errors I'd appreciate it if you would show the correct numbering system.

Magnetic features of interest are the gradient which runs parallel to line 6. Is this some expression of the Butte fault? Also the intrusive rocks or lone star granite appears as a high in the south west of the survey area. The magnetic high to the north east could then also represent an intrusive. Due north of this feature, at the north west end of line 5, you might look for a southwest plunging intrusive at considerable depth. Finally the magnetic linear which trends north west-south east parallel to WF line 5 indicates a possible fault zone. Newmont's interpretation was that the area between this fault and the Butte fault represented a graben. I would not care to comment on that interpretation other than to say that it is consistent with the magnetic trends.

The IP interpretation is interesting, in that it conflicts somewhat with your ideas as developed from the drill holes. Perhaps the extended coverage to the north west will clear up any discrepancies. From the data we now have fairly shallow IP response (less than 1000 feet) is noted to about 2500 NW on Line 6. At that point the response indicates a deepening of the source. A similar situation is indicated on Line 4, but unfortunately the electrode positions are not shown relative to your grid. We note a response at about 2000 -2500 feet between C4 & C8. The depth then increases

to about 3500 feet northwest of C4. You might find it helpful to plot the electrode positions on the map so that this information can be compiled with the other data.

On line 4, An effective edge of mineralization occurs at about C8. I expect that this corresponds with the edge at 4900 SW. on line ES6. The co-incidence of this edge with the edge of the magnetic feature shown on the map suggests that there is a rock type change, probably to intrusive, in which the intensity of mineralization is somewhat reduced. Again, not knowing the electrode positions on line ES 4 we can't be precise, but I gather a similar interpretation will be evident when this is done.

By all means continue the survey on line 5 using 1000 & 2000 foot dipoles. Line 5 should be extended to about 7000 feet N.W. I realize that there are proper property considerations, but it is very important that this coverage be obtained. In addition, the survey should be extended southward to Line ES 3 or ES 2. These lines could be surveyed using 2000 foot dipoles only. Of course the comment made above about the importance of extending ES 6 to about 7000 ft NW (Essex grid) is still valid.

Depending upon whether you agree that the magnetic features indicated to date have geological significance, you might want to fill in some of the gaps in the magnetic coverage as indicated on the map.

I hope that these comments and the enclosed sketch map will be of assistance to your interpretation. I have not transferred the contours on the sketch map onto my base, so I would appreciate its return when any additions have been completed, and it has served its purpose for your requirements. For instance Bill Brown may care to reduce all of the adjusted W-F magnetic values by 100 gammas before posting them to any final map.

In general the magnetic and IP data is of very good quality. You will certainly have no trouble in using this data in future, and it should serve as a useful data base from which more and more refined geological interpretations can be developed in the future.

Best personal regards,



H. David Mac Lean

H. David Mac Lean

Professional Geophysicist

SXM

SEP 11 1972

RECEIVED

2280 Latham Street,
Mountain View, Calif. 94040
August 31, 1972

Mr. P. I. Eimon,
Essex International,
1704 W. Grant Road,
Tucson, Arizona, 85705

Dear Paul,

Thank you very much for providing the opportunity of visiting your "Safford Project", and for allowing me to review the current geophysical program there. It is certainly a privilege to be associated in any small way with that project.

The magnetic and IP surveys both appear to be well underway, and that portion completed up to the time of my visit, - Aug 20, 1972, - had certainly been carried out in a professional and competent manner. The IP work is being done exceptionally well, considering the limitations imposed by electrical noise, and from the preliminary data examined, appears to be well worth the rather high cost of acquisition. The magnetic survey was substantially completed. The data is now being filtered and will be available for interpretation shortly.

The IP work, contracted to Mining Geophysical Surveys of Tucson, is being carried out by Messrs. R. Whitman, Party chief, and R. Sadowski, - asst. geophysicist. These two men work very well together, and it would be useful to keep them on the project for as long as it should last. Both gentlemen appear to understand the rather subtle interpretation which we are attempting to extract from the data, and appear to be making every effort to provide the high quality data which will make these interpretation efforts practicable.

The current practice of reading 1000 and 2000 foot separations for the double dipole array is relatively slow and expensive. However, it does provide extremely reliable data, and for the time being this is certainly the most important consideration. Later in the project, the 1000 foot separation can be dropped, thus speeding up the coverage, but for the present, both separations should be read.

The reason for this is twofold. Firstly the higher resolution, reduced coupling, and reduced noise susceptibility of the shorter spread provide a very good standard against which other results can be compared. Secondly, the depth measurements, - a parameter which I gather is of some importance in this area, - will be much less subject to error if made from two spreads, than would be the case if they were made from one alone. As the depth of mineralization increases to the point where it is barely detectable by the 1000 foot spread, this procedure could be dropped, thus effecting a saving in the cost of coverage.

The first line surveyed, line 2, required seven working days for its completion. W. Brown advises that subsequent lines took about

five days for completion. This production rate is consistent with what I would expect from an standard crew.

Results from the first line surveyed, - line 2, - are in hand. The IP survey here has outlined a substantial zone of sulfides, Gordon Wieduwilt will no doubt be available for a few days to outline the location of delimits and depth and volume information. I will hope to review this data, but the information supplied by Gordon should be adequate for initial evaluation purposes.

We note with interest that relatively shallow sulfides, (less than 1000 feet is the only depth guess that I will make just now, - persist to about 2300 east on your grid. It is essential for interpretation purposes that this coverage be extended so that it will envelop hole E.S. 1. There is clearly a substantial structural feature between the end of the IP coverage on line 2 and hole ES 1. The differences in observed and calculated elevation of the sulfides suggest a feature on some importance.

Clearly the IP method is mapping the sulfide zone which extends from the San Juan and Phelps Dodge properties onto the Essex ground. Provided that this information is usefull for geologic evaluation purposes, it is recommended that course coverage as would be obtained by your originally conveyed program be continued untill the sulfide zone is lost due to a pinch out of mineralization, or depths which are beyond the capability of the method. Further, lines should be continued, particularly to the northwest, untill the limits of mineralization have been realized. The anomaly cited above, - between the depth of sulfides in at least one drill hole, and their projected elevation from a nearby IP line might be of some assistance in spotting future drill holes.

In the event that depth of occurrence does increase, I would not at this time recommend any increase in the dipole length. Any work of that nature should be delayed till a later phase of exploration. However, the mineralized body should be defined as best it can with the existing electrode array.

The magnetometer survey was essentially completed by the time of my visit. Unfortunately, the magnetic data cannot be used as it is obtained directly, but must be smoothed before an interpretation is possible. On the assumption that magnetic features of interest will be at approximately the depth of mineralization a filter operator was employed which would smooth out short wavelength anomalies, and emphasize the deeper features starting at about 4-500 feet depth. The following scheme was utilized:

Nyquist frequency smoothing of all points 250 feet

Decimation

Nyquist smoothing of resultant points (500 foot spacing

decimation

Nyquist smoothing of resultant

decimation

Nyquist smoothing in two dimensions of points spaced 1500 feet in the four right angle directions from a central point.

I will not bore you with the technical details, but will merely point out that after the first decimation, the profiles start to show up deep seated features. The contour map is dominated by features more than 1000 feet deep. Despite the smoothing, standard interpretation techniques for vertical component data may still be employed. This data is now being processed, by W. Brown, and will be contoured and interpreted by myself within a few days.

There are several interesting features on this map, but I would like to discuss the results with Ken Jones before making any final interpretation. As I expect that the discussion of the magnetic data will be rather lengthy, I would rather postpone these comments to a later date.

All of the geophysical data appears to be of good quality. The survey is progressing normally and I'm sure that the type of data collected will be suitable to your requirements. I very much hope that the interpretation thereof will be of assistance to the geological understanding of the area.

During my trip I incurred a few out of pocket expenses. If you can see your way clear to re-imburse me for these identifiable items, I would be much obliged.

I will look forward to discussing the results of the above mentioned geophysical surveys at your convenience.

Sincerely,

H. David Mac Lean, P. Geoph.

A handwritten signature in cursive script, appearing to read "H. David Mac Lean". The signature is written in dark ink and is positioned below the typed name.

JOHN S. SUMNER

EGH ✓
JUL 20 1972



TO Grover
FROM
PAUL EIMON
7/20/72
DATE

RECEIVED

728 North Sawtelle
Tucson, Arizona 85716
July 18, 1972

Mr. Paul I. Eimon, Manager
Essex International, Inc.
1704 West Grant Road
Tucson, Arizona 85705

Dear Paul:

This letter is a brief review of discussions at the meeting held with you and your staff on the afternoon of July 17, 1972 concerning exploration of the Essex Safford, Arizona property. The primary topic was geophysical exploration of the area. Both preliminary reconnaissance and detailed follow up were considered.

I do not feel that airborne aeromagnetic surveying would be of much help at this stage of the exploration, inasmuch as the area of interest is relatively small (on the scale of economic airborne surveys) and reconnaissance data already are available from the Geophysics Laboratory at the University of Arizona and from the U.S. Geological Survey.

Gravity surveying is definitely worth consideration for the purpose of delineating valley fault structures underlying the areas of interest. Two or three profiles could be run along the roads which traverse the area. The cost of such a program, assuming \$10.00 per station and an interval of 200 feet, would be about \$4,000.00.

Induced polarization surveying is almost a necessity on the main Essex holdings. The block of ground is roughly 3 miles long and 1.5 miles wide, trending northwesterly. Considering the probable depth to a sulfide target and the known resistivities in the area, I suggest that two lines about 3,000 feet apart be run over the length of the property, using the dipole-dipole array with 2,000-foot electrode spacings and time domain equipment with a delay of 1,000 milliseconds. If such a delay is not available in existing time domain equipment, then I feel that the frequency method should be employed, using frequencies of 0.05 and 1.0 Hertz.

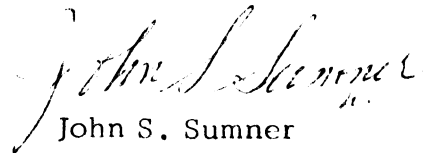
This IP survey should be carried out as soon as possible, before any additional diamond drilling. The cost of this work may be in the neighborhood of \$11,000.

I suggest that downhole IP drill hole surveying be planned, and that a deep, bottom-hole electrode be emplaced in each drill hole as it is finished, and that holes be surveyed using the radial downhole method as described by A. M. Hauck III in a McPhar report. Additionally, I suggest that the diamond drilling program be preplanned to include the drill hole IP method, thus holes can be spaced farther apart than without such surveying. The cost of downhole IP surveying may be as high as \$5,000 per drill hole.

If there are any questions concerning these suggestions or details of the geophysical survey program, please call me.

With best wishes for a successful exploration program,

Sincerely,



John S. Sumner

JSS:h

signed by direction