



August 14, 1991

Mr. Dave Tenney
Chief Geologist
Curragh Resources
P. O. Box 1000
Faro, Yukon
Y0B 1K0

Re: Inferential Statistics on In-Situ Bulk Densities

Dear Dave,

I have completed the regression analysis of your Vangorda drill data with respect to whole rock specific gravities. The report and a disk with the results is enclosed. I hope you will forgive the pedantic nature of the report. It seems that this is the only way I can keep myself on track.

The conclusions drawn from the regression statistics are, as you know, only applicable to the material measured; that is dry, whole rock diamond drill core. I would suggest that extrapolation to bulk mined material should include at least an additional 5% porosity.

In the wider problem of grade reconciliation and general production control, I think that the so-called "nugget effect" of your assay numbers should be quantified.

In my experience most of the variance between closely spaced samples is generated by the sample preparation process. The "nugget effect" is not wholly an uncontrollable natural effect, but much of it can be measured and controlled by particular attention to the sample preparation and assay process.

The major tool for this measurement is a statistical method called nested analysis of variance. The basic technique is one of retention of all splits in the sample preparation process and duplicate assaying. The results are estimates of the variance components attributable to each step in the process. Knowing, quantitatively, the variance contribution, to "the nugget effect" of each sample preparation and assay step, you can make intelligent decisions with respect to improvement. Until you know, with some degree of certitude, the standard error of your assay numbers, the analysis and reconciliation of differences between them is extremely uncertain.

I've enclosed a small extract from a statistical text on nested ANOV. With information on your sample preparation and assay process, details of an explicit experimental design can be supplied.

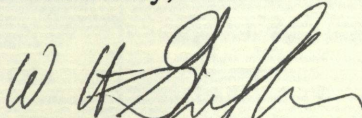
Outside of your costs of supervision and assaying in the order of 100 samples, I would estimate that total costs to Curragh Resources would be less than \$2000.

I have also enclosed an operative SLAM student disk and manual for Joe Vandebroek. His previous copy didn't have the SLAMIN.BAT file that is required to set the environment for running the system. Joe can run SLAM network coded problems with this publicly-available software. Running with FORTRAN user inserts may fail as his compiler version probably will not match this SLAM library. Perhaps if I get an opportunity to visit site again I could update to a windows-based SLAM student system.

Mr. Dave Tenney
August 14, 1991
Page 2

In closing I would like to thank you, Joe and all the others of Curragh Resources who made my short visit so enjoyable and productive. I hope I have been of value to you and Curragh Resources.

Yours truly,

A handwritten signature in black ink, appearing to read "Wayne H. Griffin". The signature is fluid and cursive, with a large initial "W" and "H".

Wayne H. Griffin
Professor of Mining Engineering

Enclosures

WHG/kw