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THE GRUM SURVEY GRID SYSTEM

The original survey in the Grum area was an extension of the Vangorda grid covering the Vangorda and Swim Lake orebodies. The grid was originally laid out in the early 1950's to provide control for magnetometer and gravity surveys. In 1966 an accurate meridian was surveyed on the grid by Sutcliffe and Co. Ltd. The grid consisted of a base line running at approximately $N 45^{\circ} W$ with cross lines at 400 foot intervals (68W, 72W, 76W etc.) and tie lines parallel to the base line at 1000 foot intervals (10S, 20S, 10N etc.). As exploration work on the Grum area progressed, cross-lines at 200 foot intervals were also cut in areas of interest. All the drilling done in 1973, 74 and most of 1975 was laid out with reference to the grid.

The Grum decline was started early in the spring of 1975. Due to snow conditions the survey control for the decline had to be based on a set of inaccurate survey stations that were not part of the Vangorda grid. As soon as the snow was gone an accurate control survey of the whole area was begun by Hosford Impey and Welter Ltd. of Whitehorse. They found that the meridian established by Sutcliffe was accurate but that the elevations were in error by

drill holes show the collars 42 feet low relative to later plots. The new Hosford, Ingey and Welter (HIW) survey was based on the same North-South, East-West grid which comprised the original Vangorda survey. In this system the base line origin was at 300+00 feet north, 300+00 feet east. Later in the summer all previous surveys were revised to correspond with the HIW grid. All the drill holes in the Grum area were re-surveyed with reference to HIW stations.

In July 1975 all surveys were converted to metric using a factor of $0.304800 \times \text{feet} = \text{meters}$.

The metric co-ordinates of the base line origin at 300+00 N, 300+00 E thus became 9144.00 N and 9144.00 E.

Following the surveying of the diamond drill holes it was found that the different sections of the base line were not all on quite the same bearing and there appeared to be a systematic chaining error in the distances along the base line. This error amounted to 47.37 feet between the origin and an HIW station at 108+00 West.

As the underground workings approached the ore zone it became necessary to define the Vangorda grid with respect to the HIW based underground survey because the underground work was planned with respect

to the diamond drilling and the drilling in turn had been laid out with respect to the Vangorda grid. It had to be defined in such a way, that the lines of drill holes corresponded with the section lines as closely as possible. To accomplish this the following steps were taken.

First, the base line was defined as a straight line running from the origin at $300+00\text{ N}$, $300+00\text{ E}$ (9144.00 N , 9144.00 E) to station $108+00\text{ W}$ having co-ordinates 37442.22 N , 22739.72 E (1412.39 N , 6778.51 E). The resulting bearing for this line was calculated to be $N 46^{\circ} 12' 02'' W$.

Second, the tie lines were defined as being parallel to the base line and at multiples of 200 feet (60.96 m) apart and would be named 2N , 4N , 6N etc.

Third, the systematic error of 47.37 feet between the origin and $108+00\text{ W}$ was distributed equally between sections. Thus the distance between sections was defined as 199.173 feet (60.693 m) and the sections retained their names, 68 W , 70 W , 72 W etc.

To sum up, we now have two grids superimposed on the Grum property. The first is the metric H.I.W. grid oriented North-South

and East-West. It is the most accurate survey in the area and links the Swim lake, Vangorda and Grum areas to Geodetic Bench Mark 72Y 247 at Faro town site. The second is the Vangorda Geophysical Grid oriented at $N 46^{\circ} 12' 32'' W$ with base lines 60.960 m apart and sections lines 60.693 m apart. This grid covers the Grum ore body and the Champ and Firth mineralized zones.

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Note. For transformed co-ordinate system the origin is at $-3784.74 N, 8873.18 E$ in the "official" co-ordinate system. The origin of the geo system thus has the same co-ordinates in the official and the computer system, $9144.00 N, 9144.00 E$.

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