

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

019607

To Mr. J. Carrington From Mr. W.M. Sirola

Subject GRUM JOINT VENTURE - PROCEDURES USED FOR Date January 10, 1977
PORTRAYING GEOLOGIC DATA ON CROSS SECTIONS
AND LONGITUDINAL SECTIONS AND FOR
DETERMINING TONNAGE AND GRADE

- (1) The surface drill holes are first plotted in their actual (deviated) positions on standardised plans, cross sections and longitudinal sections. The detailed cross sections are 60 metres apart (sections 62 W, 84 W) and the longitudinal sections are 60 metres apart (0 to 10 N). The standard map sheet has the dimensions 79.2 centimetres x 97.10 centimetres.
- (2) Primary and secondary foliations are plotted on drill holes in cross section and longitudinal section.
- (3) Rock types are shown by letter symbol on all drill holes and geologic marker horizons (such as they are) are connected from drill hole to drill hole. The markers currently in use are a graphitic unit and a bleached phyllite which tends to form a halo around massive sulphides.
- (4) Massive sulphide outlines and quartz sulphide outlines are first drawn on cross sections because there is comparatively little deviation of underground drill holes from the cross section and because the density of information is much greater on cross section than on longitudinal section.
- (5) Any sulphide intercepts shown on surface holes which fall within 15 metres (50 ft.) on either side of the cross section, are projected orthogonally onto the section. The projected position does not take into consideration the plunge of the mineralization and must be later adjusted vertically by checking the position of the same intercept on longitudinal section. By this procedure, a final sulphide outline sheet is produced.
- (6) All assay data beginning at 2% combined lead zinc and progressing in 2% stages to 12% plus lead zinc, are shown on the diamond drill holes on a separate mylar sheet. Because of the density of underground drill holes and the scale in use (1:500) it is not possible to show individual assays or to break mineralized sections down into percentages of lead and percentages of zinc, except that on the final ore reserve sheets, mineralized blocks will have lead, zinc and silver averages shown.

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- 2 -

- (7) When all of the assay data has been shown on the cross section, this assay sheet is then matched with the sulphide outline sheets on which massive sulphides and quartz sulphide outlines have been previously drawn. By combining these two sheets, the end product is an ore reserve sheet showing all of the grade categories from 2% combined lead zinc to 12% plus combined lead zinc.
- (8) Each ore reserve sheet will show outlines for 2 or 3 grade categories depending on the volume of each category. (See instruction sheet provided by Fred Chow for details). On these sheets will be shown the various blocks of reserves calculated by measuring the areas of the ~~grade polygons~~ ^{"ore segments"} on the cross section and multiplying by a thickness of 60 metres (30 metres on each side of the section). The only departure from this procedure would be where an adjustment in volume or grade appears to be justified from the results of limited intermediate drilling on odd numbered cross sections.



W.M. Sirola

NOV 1 1976

John C.
COPY (2)

D. A. Lowrie

W. M. Sirola

GRUM - WEIGHTED AVERAGE CALCULATIONS

28th October 1976

GRUM - THE VENTURE Y.T.

cc: P.S. Cross WEIGHTED AVERAGE CALCULATIONS OF DIAMOND DRILL HOLE ASSAYS

CALCULATED IN D.D. LOGS. PLOTTED ON D.D. HOLE SECTIONS

AND MINERAL RESERVE SECTIONS

During our last visit to the Grum project on 14 and 15 October 1976, the subject of diamond drill hole assay calculations was discussed and it was agreed that F. Chow would describe the procedure used in calculating grades for the ore reserve cross sections.

Fred's description is enclosed herewith, together with a coloured sketch showing the raw assay data and the grouping of this data into ore reserve blocks of various grade categories.

Should there be any confusion, which is not apparent at the moment, please let me know.

The calculations of weighted averages and the combination of grade are shown on the D.D. logs. Almost all of the calculations are plotted on the D.D. hole sections.

Starting with the highest grade possible over a minimum (maximum) width of 10 feet (or three metres), adjoining samples from drill hole intersections are combined to give a weighted average within the above mentioned categories, over a maximum combined width. This procedure is repeated for all categories. When a minimum true width of 10 feet cannot be achieved by combining given intersections, then the necessary width is gained by adding W.M. Sirola amount from the highest grade adjoining sample (see 44.6-47.3 on sketch). The main criteria is to obtain the highest grade over a maximum length.

The weighted average grades plotted on the assay and mineral reserve sections also show internal intervals of higher and lower categories. Assay wall MMS:1mp are shown to the nearest 1% Pb+Zn.

enc: All hole sections show Pb, Zn and Ag assays separately. Mineral reserve sections show the combined Pb-Zn values on the drill hole, but separate Pb, Zn and Ag grades on ore blocks.

The mineralized zones are defined by joining the multiple zone based on structural control, geological section criteria, and mineral composition. The mineral reserves are then defined by joining the segment from adjoining D.D. hole weighted averages within the zone. In excess of each segment is gained by averaging the zone width along the segment. The dip length is also a measured quantity.