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TWC: FINAL SUMMARY OF TWC OBSERVATIONS
& RECOMMENDATIONS, ROSEBUD ORE
RESERVE MODEL. 8/16/95

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Copies sent to: R.C.
D.C.
S.R.

THE WINTERS COMPANY
AN ARIZONA CORPORATION
6125 E. GRANT RD.
TUCSON, ARIZONA 85712
(602) 886.9725
FAX: (602) 885.8823

TO: Ron Clayton
Charlie Muerhoff
Hecla Mining Company

FROM: Don Earnest
The Winters Company

DATE: August 16, 1995

SUBJECT: Final Summary of TWC Observations and Recommendations,
Rosebud Ore Reserve Model

TWC has completed its examination of the Rosebud deposit geologic model and ore reserves. In two previous memoranda, TWC discussed our observations and concerns related to the model and ore reserves (memo to Ron Clayton from Don Earnest, "Status of TWC Review of Rosebud Ore Reserves", April 25, 1995, and memo to Ron Clayton from Don Earnest, Bill Oppenheimer, and Rick Sims, "Evaluation of the Hecla Rosebud Project Ore Reserve Model", May 31, 1995). TWC makes reference to these earlier memoranda in order to avoid restating all of the earlier observations and concerns. In subsequent meetings between Don Earnest, Rick Sims, and Bill Oppenheimer of TWC, Charlie Muerhoff, Brett Holmes, Ron Clayton, Kurt Allen, and Don Cameron of Hecla, and Steve Ristorcelli of MDA (in various combinations), the observations, concerns, and recommendations expressed by TWC have been discussed openly and in detail, such that almost all have

been explained, resolved or completed to TWC's satisfaction. However, one concern does remain, relative to the apparent overestimation of high grade (+ 1.00 opt) blocks, particularly within Domain 4.

During a meeting with Ron Clayton in TWC's Tucson office on August 8, TWC reviewed its concern about the apparent overestimation of high grade blocks, using 1" = 50' model block cross sections supplied by Hecla to illustrate examples. Table 1 is a summary of those examples which remain areas of concern. During the August 8 meeting TWC was told that a recalculation of block grades using more restrictive search ranges derived from indicator variography had resulted in a significant reduction in the contained gold ounces in the deposit. As reported by Hecla, the search ranges used for this recalculation are summarized in Table 2. Hecla subsequently sent a set of selected "indicator" block model cross sections to TWC for review. These sections included 350N, 750N, 800N, 850N, 900N, 950N, 1400N, 1500N, and 1600N. Based upon our review of these sections, TWC offers the following comments and observations, all of which are directed towards blocks in Domain 4, unless specifically noted:

1. As one would expect, in the areas where data spacing is approximately 70 feet or less, the block grades on the indicator cross sections are virtually identical to the block grades on the cross

sections which represent the original calculation. This is because the estimation routines for the two separate runs choose the same composites to estimate an individual block where the data spacing is 70 feet or less. These identical blocks are found in clusters adjacent to and moving outwards from the collars of the fans of underground drill holes. Towards the ends of the holes, where the spacing between hole data steadily increases beyond the 70-foot indicator search distance, disparities in block grades for the two runs become apparent. Here block grade reductions for the run using the indicator search parameters appear to fall between 10 to 25 percent across all block grade ranges. Again, the resulting decrease in block grades as data spacing widens was to be expected, given the reduced search range which was used for the indicator runs. TWC mentions this only to emphasize that in the portions of the deposit where drill hole data spacing is wider than 50 to 70 feet, the confidence in the block grade estimates is obviously less. In these areas of lower confidence where high grade (+ 1.0 opt Au) is present, the chance of overestimating high grade is greater. To avoid this, the spacing between data points must be reduced by additional drilling or by pre-production drifting and crosscutting. TWC understands that this work is scheduled to commence sometime in late September or early October.

2. In TWC's opinion, restricting the search range to 20 feet in the indicator runs for composite grades above 2.0 opt Au has done a good job of limiting the number of very high grade blocks. For example, the influence of the +7.0 opt composite located in drill hole RL-193C below the crosscut on Section 900N has been well-restricted by the reduced search range.

3. In TWC's opinion, the 10 to 25 percent grade reductions seen in the lower to medium grade areas for the indicator runs appear to be too severe. Based upon TWC's examinations of the geologic cross sections at the minesite and our numerous examinations of various iterations of the model block cross sections, it appears that the hole-to-hole continuity of the mid-range and lower grade material exceeds the indicator search ranges. The data which will be obtained from the additional drilling and/or pre-development drifting/crosscutting should confirm this continuity.

4. In general, the overprinting of lower grade composites by higher grade blocks which TWC has previously noted has been reduced by the indicator search ranges. However, the problem still exists in some areas, such as on Section 350N (+55° hole in center of fan),

Section 850N (-45° drill hole in chimney), and 900N (adjacent to drill hole RL-171 above the crosscut).

5. On Section 850N, high grade composites within the chimney appear to be influencing block grades in the overlying stratabound mineralization.

In TWC's opinion, the comments and observations noted above, as well as those previously discussed with Hecla and listed in Table 1, indicate that some systematic overestimation or "smearing" of high grade block grades took place in the original ore reserve estimate. This overestimation is particularly apparent in areas where the data spacing exceeds 50 to 70 feet. Much of the gold contained in these blocks can be termed "high risk" ounces, and these areas need additional drilling or drift sample data before confidence in the estimated grades can increase. TWC believes that somewhere between 30,000 and 50,000 ounces of gold fall into this high risk category, meaning that a shortfall of ounces of this magnitude is possible. TWC stresses that this is a qualitative estimate which is based upon the visual examinations of the block cross sections and level plan maps, not upon independent block estimation runs.

are there really 30-50K AuOz at risk? If we are smearing high grades over lower grades that are presumably still economic, we haven't lost all the ounces in those blocks.

CM

Before additional drilling and drifting commences this fall, TWC suggests that additional grade estimation passes be made. While the indicator ranges do appear to have reduced the smearing of some of the very high grades to acceptable levels, the method appears to have been too restrictive on the medium to low grade material. Also, overprinting of composites by higher grade blocks continues to be a problem in local areas. In an effort to remedy these situations, TWC recommends the following:

1. For Domain 4, increase the maximum search range for composites less than 1.0 opt Au back to the 90 feet used in the original ore reserve calculation, but restrict the range for those composites between 1.0 opt and 2.0 opt to 50 feet, while maintaining the 20-foot restriction for + 2.0 opt Au material. With the MEDSYSTEM software, the order of these runs should be as follows: 1) Estimate all blocks within Domain 4 using the 90-foot search range, after first setting all composite grades above 1.0 opt to minus one or some other default value. 2) Estimate blocks using the 50-foot search range, after reinstalling all actual composite grades between 1.0 and 2.0 opt Au, but leaving all + 2.0 opt Au composites set at the default value. 3. Estimate blocks using the 20-foot search range, after first reinstalling all + 2.0 opt Au composite assays from the default value.

TWC notes that on several of the cross sections, high grade in the 1.0 opt to 2.0 opt Au range appears to be continuous between two or more drill holes which are spaced at least 50 feet apart. While the projection distances for + 1.0 opt Au material in the chimney area appear on sections such as 800N to exceed 50 feet, it is TWC's opinion that a more conservative approach with respect to the + 1.0 opt Au material is advisable where data spacing exceeds 50 feet. TWC stresses that even though this approach should produce block grade estimates which are more in line with both the composite data and with continuity beliefs held by the Rosebud geology staff, the exercise is not intended to replace the collection of additional data through drilling, drifting, and crosscutting.

2. Due to the significant difference between the geometry of the chimney and the stratabound mineralization, TWC recommends that Hecla consider splitting these two bodies into separate areas or domains. This would enable the assignment of different search range criteria for different grade ranges in the two ore areas. It would also prevent the blocks in the stratabound zone from using composites in the high grade chimney zone for block grade estimation.

In summary, TWC emphasizes that the estimation of block grades in any deposit is an iterative process, usually requiring numerous attempts before a version which is both geologically acceptable and defensible is reached. The above suggestions should result in a distribution of block grades which more closely fits the geology as interpreted by the mine geology staff. However, additional adjustments will almost certainly be necessary, once new block sections and plans are compared to the geologic cross sections.

Table 1

Summary of TWC Observations and Concerns
Original Rosebud Ore Reserves

<u>Section</u>	<u>Observations or Concerns</u>
350N	Overprinting of lesser grade composites with higher grade blocks;
450N	+ 8.0 opt Au and 2.7 opt Au composites have influenced 16 blocks (all with + 3.0 opt Au), causing overprinting of much lower grade (.149 & .055 opt Au) composites in hole RL-35;
700N	Overprinting of lower grade composites in flat holes by higher grade blocks generated from composites of 1.009, 2.270, 0.867, and 1.261 opt Au; Possible smearing of grades in blocks ranging in grade from 0.286 to 0.363, off of .306 opt Au composite; May be affected by hole not on section;
800N	Apparent smearing of + 1.0 opt Au grades in lowermost portion of chimney zone;
850N	Overprinting of lower grade composites in -45° drill hole;
900N	Most serious smearing of high grades - 7.0 opt Au composite in hole RL-193C has influenced numerous + 2.0 opt Au blocks just below crosscut; Above crosscut, high grade blocks immediately adjacent to hole RL-171 are overprinting lower grade composites;
950N	In hole RL-289C, 4.8 opt Au composite is causing overprint of lower grade composites; Overprint also occurring in + 35° hole and + 85° hole;
1000N	High grade blocks overprinting very low grade composites in - 60° surface hole at bottom of chimney;

Table 2

Indicator Search Ranges

	<u>Indicator Range</u>	<u>Original Range</u>	
Domain 1	132 ft.	132 ft.	40 ft. for Au \geq 0.06 opt
Domain 2	60 ft.	96 ft.	30 ft. for Au \geq 0.20 opt
Domain 3	75 ft.	100 ft.	56 ft. for Au \geq 0.60 opt
Domain 4	70 ft.	90 ft.	20 ft. for Au \geq 2.00 opt
Domain 5	160 ft.	135 ft.	50 ft. for Au \geq 0.06 opt
Domain 6	80 ft.	80 ft.	50 ft. for Au \geq 0.25 opt
Domain 7	75 ft.	100 ft.	45 ft. for Au \geq 0.60 opt
Domain 8	50 ft.	90 ft.	15 ft. for Au \geq 2.00 opt

Indicator - high grade range
restrictions / domain

WINTERS' REVIEW

3.0 GEOLOGY AND MINERAL RESOURCES

As part of its prefeasibility audit of the Hecla Rosebud Project, TWC evaluated the ore reserve model which was developed by the Hecla Rosebud geology staff with assistance from Mine Design Associates (MDA) of Reno, Nevada. TWC's evaluation included a review of the methodology employed in the estimation of the mineral inventory/resources, a review of the geology model, and a comparison of model block grades and composite assays. This evaluation was conducted at various levels of intensity between March and late August 1995. During this period TWC visited the project site twice to gather information and to participate in discussions with Charlie Muerhoff, Brett Holmes, Ron Clayton, and Kurt Allen of the Hecla Rosebud staff, Don Cameron of Hecla's corporate staff in Coeur d'Alene, Idaho, and Steve Ristorcelli of MDA. Three previous TWC memoranda (included in the Appendix) issued during the course of the evaluation discuss TWC's observations, concerns, and recommendations. These memoranda are the April 25, 1995 memo to Ron Clayton from Don Earnest, "Status of TWC Review of Rosebud Ore Reserves", the May 31, 1995 memo to Ron Clayton from Don Earnest, Bill Oppenheimer, and Rick Sims, "Evaluation of the Hecla Rosebud Project Ore Reserve Model", and the August 16, 1995 memo to Ron Clayton And Charlie Muerhoff, "Final Summary of TWC Observations and Recommendations, Rosebud Ore Reserve Model". TWC makes reference to these earlier memoranda in order

Reserve Model". TWC makes reference to these earlier memoranda in order not to repeat here a discussion of its concerns relative to the ore reserve/resource model. During the course of the evaluation, TWC's observations, concerns, and recommendations were discussed openly and in detail. Hecla has responded such that almost all concerns have been explained or resolved to TWC's satisfaction. Only those concerns which remain and relate to the most recent feasibility study draft will be discussed in this report. TWC's following comments on the Geology and Mineral Resources section of the feasibility draft are arranged by section, in accordance with the structure of the draft. TWC has not attempted to correct any grammatical or spelling errors, assuming that Hecla will address these before publication of the final document.

3.1 History of the Rosebud District

This section is well written and contains an appropriate amount of detail. One minor item to check is whether or not Freeport Mining Company should be shown as Freeport McMoRan Exploration. ✓

? ↑
~~I don't know.~~

3.2 Geology and Ore Controls at the Rosebud Deposit

This section is generally well written and contains an appropriate amount of detail. In Section 3.2.3, TWC recommends that Hecla consider moving the discussions of mineralization and alteration of the stratigraphic units (Chocolate Tuff, Bud Tuff, etc.) closer to the front of the section and follow these descriptions with those of the South, North, and East zones. In the descriptions of the South, North, and East zones it should be made clear that these zones are comprised of assemblages of the mineralized and altered stratigraphic units and structural features which play a major role in the control of the mineralization. Hecla may also want to consider moving the list of minerals and mineral formulas to between the first and second paragraphs of the section, or place the information in a table which can be referenced from the text where appropriate.

in table

TWC notes that on cross section D-D' in the report, gold mineralization in the East zone is shown to lie immediately adjacent to the footwall of the South Ridge Fault. Since Hecla's decline and cross cut are both located in the hanging wall of the South Ridge Fault, a brief comment on the ground conditions anticipated in the South Ridge Fault zone based upon drill hole intercepts would be appropriate.

we drifted thru the SRF in the section

3.3 Resource Estimation

3.3.1 Database for Resource Estimation

Like the previous section, this portion of the feasibility draft is generally well written. TWC has only the following minor recommended changes or additions:

1. ✓ TWC recommends that Hecla either remove the reference to the SME criteria for drill spacing from this section and discuss this issue in Section 3.3.3, or at least refer to a description of the SME criteria to be inserted in either another section (such as Section 3.3.3) or in the Appendices.
2. ✓ The diameter of the drill core should be specified. If core of differing diameters was drilled, the amounts of each diameter drilled need to be stated. If different sampling procedures were employed for different core sizes these need to be individually discussed.
3. ✓ The data for the assay comparison summaries cited (cyanide soluble assays versus fire assays, fire assays with AA finish

versus fire assays with gravimetric finish, metallic screen analyses versus original fire assays) need to be included in the Appendices.

3.3.2 Orebody Modeling

TWC believes that some revision and expansion of this section is needed. For example, the description of the design of the mineral domains on cross sections should be clarified so that it is clear that the domains were first interpreted on the cross sections. The use of the terms "domain" and "mineral boundary" should be consistent so it is clear that only one type of geologic shape has been developed to constrain grade interpolation.

The basis of all modeling parameters should be explained, and examples of the variograms which were used to determine the search ranges should be included as figures in this section. Where the variography for any zone is anisotropic, the rationale for the elongation or reduction of the search ellipse axes should be given. This section states that the range projection of high-grade outliers was limited to 75 percent or 50 percent, depending on the domain. It is unclear to a reader what these percentages specifically represent and when these range projection reductions were used. The search distances used for the high grade outliers should be

included in the table on page 38. Concerning this same table, TWC notes that the maximum and minimum number of composites appear to be switched.

Hecla may want to consider moving the final paragraph of this section, which deals with the classification of the resource, to the following Section 3.3.3.

3.3.3 Resource Inventory

TWC understands that Hecla may elect to seek outside financing for the Rosebud Project. If this occurs, the Rosebud feasibility study will likely be subject to a thorough technical audit by a mining consulting firm retained by the lending institution. TWC believes that it would be in Hecla's best interests to expand the Resource Inventory section to discuss the classification of the Rosebud resource inventory into measured, indicated, and inferred categories. A description of the SME guidelines and criteria for classification of resources should be either included in this section or placed in the Appendices and referred to from this section. ✓

As mentioned in the comments related to Section 3.3.2, TWC believes that the final paragraph of that section would be better placed in

this section. In addition, this paragraph needs some clarification of the description of the indicated and inferred categories. As written, there is no explanation of what constitutes an inferred resource. The text states that any block with one or two samples used for estimation was classified as indicated. Using this criterion leaves the inferred category undefined. Also, the location of the inferred resource listed in the section text should be stated (South Zone, North Zone, East Zone, Far East Zone, or elsewhere).

In the table on page 39, Hecla should consider breaking down the tonnages in the individual zones into measured, indicated, and inferred categories. A technical auditor will likely ask for this breakdown, particularly since the classification criteria are stated in the section. In addition, this section should contain a discussion of the data characteristics of each resource category for each zone. These data characteristics include drill hole spacing, amount of underground development used to define reserves, amount of underground core drilling, amount of surface core drilling, and the amount of surface reverse circulation (RVC) drilling.

In the August 19, 1995 memorandum to Ron Clayton and Charlie Muerhoff titled, "Final Summary of TWC Observations and

Recommendations, Rosebud Project Ore Reserve Model", TWC discussed gold resources in the South zone that contain what TWC considers to be "high risk" ounces. This "high risk" material, which TWC estimated to total between 30,000 and 50,000 ounces, is contained primarily in Domain 4, the highest grade domain in the South zone. TWC's basis for labeling these gold ounces as "high risk" was founded on an examination of the individual block grades which were generated within the boundaries of Domain 4. In TWC's opinion, the grade of some of the higher grade blocks in Domain 4 was overestimated. A similar concern with regard to high grade blocks in the original resource estimate was noted by Hecla personnel. TWC understands that this concern was reportedly based upon the difference between block grades estimated by ordinary kriging and the block grades generated by a subsequent resource estimation made by Hecla and MDA using indicator kriging. Because it is likely that a technical auditor will have similar concerns, TWC recommends that Hecla discuss the nature and location of these high risk ounces and the impact of removing them from the mine plan, production schedule, and cash flow analyses.

TWC recommends that the final paragraph of this section (which discusses targets for additional potential) be placed in a separate subsection titled, "Potential for Additional Resources". The separate areas of potential

4.0 MINE DESIGN

4.1 TWC's Involvement

As part of TWC's review of the Rosebud feasibility study, TWC independently prepared a mine operating and capital cost estimate which was included in TWC's April 1995 report, "Preliminary Capital and Operating Cost Estimates and Schedules, Hecla Mining Company, Rosebud Project, Pershing County, Nevada."

John Dorsey, Senior Project Manager, and Don Earnest, Manager Geology, from TWC both visited the existing underground workings at Rosebud. John Dorsey visited Hecla's Republic mine prior to its being shutdown and reviewed those operating and cost data for the Republic mine which are applicable to the proposed operations at Rosebud. John Dorsey along with several of Rosebud's technical and operations staff also visited the American Girl mine to examine possible alternative mining methods which might be used in certain areas at Rosebud. Both John Dorsey and Don Earnest have had many discussions with the Rosebud staff regarding the methodology and assumptions used in preparing the mine design section of the Rosebud feasibility study.

4.2 General Comments

TWC believes that the overhand cut-and-fill mining method proposed in the feasibility study is appropriate for the large majority of the Rosebud deposit. There are a relatively small number of blocks which could potentially require the use of an underhand cut-and-fill mining method. Hecla will have to examine the various aspects of rock mechanics throughout the deposit as the mine is developed to determine the appropriate mining method and stope dimensions to be used for each block. For use in a feasibility study, TWC believes that Hecla has sufficiently addressed rock mechanics issues in the initial mine design.

TWC believes it will be critical for Hecla to dewater the orebody prior to mining. The feasibility study calls for development to lead production sufficiently to allow for at least six months of dewatering prior to mining in any area. Based on Hecla's experience in developing the decline this seems reasonable. Hecla should closely monitor water inflows as the decline is advanced and if inflows increase then the amount of lead time should be increased.

Hecla has a proven track record of successfully mining the Republic mine. The Republic mine is similar to the proposed Rosebud mine and used the same mining method as the one proposed for Rosebud.

4.3 Feasibility Study Content

4.3.1 Section 4.2.1 Cutoff Grade Definition

The cutoff grade estimation in the feasibility study has been calculated using an incremental operating cost that is five percent lower than that used in the feasibility study's cash flow estimates. The reason for using a five percent lower operating cost estimate is based on Hecla's belief that the mine operating cost estimate is very conservative and that using it would result in not developing (and furthermore sterilizing) ore which would be profitable if operating costs are actually lower as Hecla anticipates.

TWC does not disagree with Hecla that there is an opportunity to lower operating costs. TWC would like to point out that by assuming the costs will be lower when calculating the cutoff grade but not using the same costs in the cash flow model, the project's cash flow is being understated.

TWC agrees with using only incremental operating costs when it has been demonstrated that the major mining areas can profitably be developed. TWC believes that using a lower operating cost for calculating cutoff grades than for calculating cash flows unfairly penalizes the overall project economics. By definition all of the ore mined between the cutoff grade calculated using the lower

costs and the cutoff calculated using the cash flow costs will be unprofitable to mine when included in the cash flow model.

4.3.2 Section 4.2.2 Mineable Reserve

TWC believes Hecla should include a detailed explanation of how the mineable ore reserve was calculated and be prepared to discuss in detail the reserve estimation process to an outside auditor performing a review. It is not clear in the feasibility study exactly what portion or percentage of the geologic resource is mined. In order to illustrate this, TWC recommends the inclusion of a table that shows resource tons and grade by zone, classification, and a breakdown of dilution. For example, the tons and grade of measured and indicated geologic resources above 0.14 opt gold, the tonnage and grade of both "internal" dilution blocks and overbreak or "external" dilution and backfill dilution should all be separately tabulated by ore zone (South, North, etc.). A description of how external dilution was estimated should also be included.

Since the classification criteria for resources were discussed in Section 3.3.3, it is reasonable that the mineable reserves should be similarly categorized. For categorizing mineable ore reserves, TWC considers only material which can be classified as proven and probable ore reserves under the definitions established by the United States Securities and Exchange Commission (SEC). These definitions,

as quoted from SEC Form S-18, are included both in the Appendices and as follows:

- 1) *Reserve*: That part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination. Note: Reserves are customarily stated in terms of "ore" when dealing with metalliferous minerals;
- 2) *Proven (Measured) Reserves*: Reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings, or drill holes; grade and/or quality are computed from the results of detailed sampling and (b) the sites for inspection, sampling and measurement are spaced so closely and the geologic character so well-defined that size, shape, depth, and mineral content of reserves are well established.
- 3) *Probable (Indicated) Reserves*: Reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.

Several aspects of the SEC classification criteria are worth noting. First, the above definitions are almost identical to the Society of Mining Engineers (SME) classification, with the exception that the SEC does not recognize the category of Possible (Inferred) ore reserves. Second, the current SEC criteria are a result of a March 1981 revision (SEC Release 33-6299) of the original definitions for disclosure of ore reserves which were adopted by the SEC from Herbert Hoover's "Principles of Mining (1909). Hoover's original working definitions, which were most applicable in tabular underground deposits, were as follows:

Positive Ore or Ore Developed: Ore exposed on four sides in blocks of a prescribed size; ore where there is practically no risk in failure of continuity.

Probable Ore or Ore Developing: Ore Exposed on two sides; ore where there is some risk, yet warrantable justification for assumption of continuity.

Possible Ore or Ore Expectant: Ore in whole or in part below or beyond the range of vision; ore which cannot be included in the above classes, nor definitely known or stated in any terms of tonnage.

In order to recognize the relative uncertainties of the above classes, many mining companies applied percentages to the tonnages falling in these classifications. For

example, for proven ore, 90 to 100 percent of the tonnage was tabulated; for probable ore, 75 percent of the tonnage was considered; for possible ore, only 50 percent of the tonnage was tabulated. Although such discounting was regularly employed in-house by mining companies, the practice was never adopted by the SEC.

TWC strongly recommends that Hecla classify the Rosebud ore reserves in accordance with the current SEC definitions. This classification should be tabulated by category (proven and probable) and by zone (South, North, East, Far East). Because the SEC does not recognize possible or inferred reserves, TWC recommends that Hecla not include any material with this classification in the mineable reserve tabulation. In order for Hecla to arrive at this classification, TWC offers the following observations and recommendations.

- 1) In TWC's opinion, only the South Zone of the Rosebud deposit contains proven mineable ore reserves. This is because the South Zone is the only area in the deposit which has been accessed by underground workings. TWC notes that the presence of underground workings provided the Hecla geologists with invaluable structural and other geologic data. This greatly enhanced the geologic interpretation of the South Zone. In TWC's opinion, blocks which are ultimately classified as proven mineable reserves in the South Zone

this is B.S.

composites (perhaps three or more as is used for the estimation of measured resources) and some form of directional weighting which takes into account the known trends of the mineralization in the various domains (such as an octant search routine). TWC believes that those blocks in the South Zone resource which do not meet the criteria for proven blocks can instead be classified as probable mineable reserves.

- 2) The North, East, and Far East Zones have not yet been penetrated by underground workings. For this reason, in TWC's opinion none of the resource tonnage in these zones can be classified as proven mineable ore reserves. All available drill hole data indicates that the mineralization in these zones appears to be similar to that found in portions of the South Zone. Because of this similarity, TWC believes that most or all of the resources in these zones can be classified as probable mineable ore reserves.

As discussed with Ron Clayton, the final paragraph of this section should be expanded. TWC recommends that the expanded version include a discussion of the extraction parameters which Hecla applied to the measured and indicated resource to reach an undiluted mineable reserve, and a description of how the dilution tons and grade were determined.