STATEMENT OF NEED AND REASONABLENESS

IN THE MATTER OF THE PROPOSED AMENDMENTS OF THE RULES REGARDING PERMITS TO PROSPECT FOR AND LEASES TO MINE COPPER, NICKEL, AND ASSOCIATED MINERALS (MINNESOTA RULES, PARTS 6125.0100 - .0700)

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF MINERALS

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Contents

Contents

Contents

Contents

I. INTRODUCTION

Mineral Potential and Leasing Program

Minnesota is well-known as one of the world's foremost producers of iron ore and taconite. What is not well known is that Minnesota has tremendous potential for the discovery and development of mineral deposits of gold, silver, zinc, chromium, vanadium, cobalt, platinum, palladium and other minerals.

The Duluth Gabbro Complex contains the largest known nickel resource in the United States, as well as substantial amounts of copper. The greenstone formations that stretch across wide portions of the state are of continuing interest for precious and base metals that are found in similar formations in Ontario, Canada. Other geological formations in the state have the potential for minerals such as lead, zinc, massive sulphides and maganese.

Since 1889, Minnesota has had an active iron ore and taconite leasing program. The state commenced its current active program of issuing copper, nickel, and associated minerals leases with the adoption of rules in 1966.

Additions to the royalty rate provisions of the copper, nickel, and associated minerals lease were adopted in 1982. The amendments now being proposed are the first major revisions of the lease rules.

During the period of 1966-1986, 3,139,011 acres of state-owned mineral rights were offered for copper, nickel, and associated minerals leasing. This resulted in the issuance of 2,127 leases covering 892,751 acres to 54

companies and individuals. These leased lands were in the counties of Aitkin, Beltrami, Carlton, Cook, Itasca, Koochiching, Lake, Lake of the Woods, Marshall, Pine, Roseau and St. Louis.

In general, lessees have made their preliminary mineral evaluations of the leased properties within the first four years of the leases and, therefore, most of the leases are surrendered during that period. As of January 1, 1988, only one lease, covering 40 acres, is still in effect from the sales held from 1966 through 1973. (There were no sales held from 1974-1981.) From the sales held from 1982-1987, there are 573 leases in effect covering 232,717 acres.

The copper, nickel, and associated minerals leasing program has resulted in the payment of 2.96 million dollars of rental to the state as of July 1, 1987. As a result of the exploration conducted under the leases, the state has received an immense amount of geological, geophysical and geochemical data. This valuable information is used when the Department of Natural Resources makes management decisions to implement legislated mineral and other land use policy. With this data, actions are avoided which could otherwise adversely affect future exploration, leasing and mining of state-administered mineral lands.

Mining companies, by exploring public and privately owned lands, have discovered large copper-nickel deposits, as well as significant showings of platinum, palladium, titanium, iron and vanadium in the Duluth Gabbro Complex. Resource estimates indicate that over 4.4 billion tons of copper-nickel deposits, of which approximately 1 billion tons are on state-owned land, occur

along the northwestern basal contact of the Duluth Gabbro Complex in northeastern St. Louis and northwestern Lake counties.

Although no mineable deposits have as yet been found in Minnesota's greenstone formations, significant showings of gold, iron, zinc and copper have been located. Interest in the greenstone and other formations has continued to be demonstrated by a number of exploration companies.

History of rules and amendments

The rules for leasing copper, nickel and associated minerals were first adopted on November 8, 1966. On September 7, 1982 amendments to the royalty rate provisions of the lease were adopted. Pursuant to the request of the State Executive Council, a special royalty rate was added to address the possibility of a "bonanza" mineral deposit. The term "bonanza" in the present context refers to an unusually high grade mineral deposit of significant size.

In September of 1986, the Department published in the State Register a notice of intent to solicit outside opinion regarding possible amendments to the leasing rules. The purpose of the notice was to aid in determining the parts of the rules that should be considered for amendment. The notice was sent to public interest groups, legislators, exploration and mining companies, executive council members and staff of state agencies.

Eighteen responses were received by the end of January, 1987. Of these eighteen responses, fourteen suggested changes in the rules. Eight of those suggesting changes were from the mining industry and six were from

governmental agencies. The majority of the comments suggested changes in the current royalty rate structure of the lease. Comments were also received on defining the minerals covered by the lease, modifying work performance requirements, and allowing more negotiated leases. In addition to items commented on, the Department also identified the need to change fees and rental rates, modify administrative procedures for issuing leases and other minor changes.

The Department's review of the lease rules included a study of the leasing policies and procedures of other states and leases on privately-owned lands. The review also included the development of mine models for the types of deposits being explored for in Minnesota, and settlement sheets were developed to analyze costs and revenues from those types of mining operations. Alternative royalty rates and formulas were reviewed and analyzed in comparison to the current royalty structure.

A new notice of intent to solicit outside opinion was published in the State Register in June of 1987. A draft of proposed amendments was also made available for review and comment. This notice was sent to public interest groups, legislators, exploration and mining companies, executive council members and staff of state agencies.

Sixteen written responses regarding the preliminary draft were received by the end of August, 1987. Of these sixteen responses, four were from governmental agencies and twelve were from the mining industry. The majority of these comments recommended further changes in the proposed royalty rate structure. Half of those who commented objected to the increase in rental

rates during the first two years of the lease and about half of those who commented objected to proposed changes in reporting requirements. Other comments concerned land availability, the change in the name of the lease, and other miscellaneous provisions.

The Department decided that further changes in the draft of the rules were needed. The proposed royalty rate provisions were amended to address concerns about the stages in which ores were sold. The rental rates during the first two years of the lease were reduced to the rates under the current rules, with another tier added to phase in increased rates thereafter. Proposed changes in reporting requirements were limited to clarification of the types of reports that must be submitted and when they must be submitted. Minor changes were made in the name of the lease and other miscellaneous provisions.

Copies of a revised draft of proposed amendments were distributed and discussed at the Minerals Activity Forum at Ironworld in Chisholm on October 19-20, 1987. Copies were sent to all parties who had earlier commented on the rules as well as the county auditors for the counties in which the state has issued leases. Some minor changes were made in this revised draft based upon comments and questions.

Management Responsibilities

The State of Minnesota is a landowner, and its lands are managed on behalf of various funds. The school lands are managed on behalf of the permanent school fund. All revenue from leases on permanent school fund mineral rights is deposited into the permanent school fund, from which earnings are

distributed to the school districts throughout the state. Tax forfeited mineral rights are held in trust for the local taxing districts, and 80% of the revenue from leases on these mineral rights is returned for distribution among the county, school district and town or city where the leased lands lie. Other state lands are likewise managed on behalf of various funds.

Like any owner of mineral rights, the state collects payment when minerals are mined from its lands. The payment of rental for leasing and royalty for mining is based upon the concept that minerals are valuable objects of ownership, and their control is an incident of ownership deserving a rental payment and their removal constitutes a sale.

People unfamiliar with mineral rights ownership often ask why the state collects both taxes and royalties. The reason for this is easily explained; the state has two roles in dealing with the mining of mineral rights. These roles are as a regulator and as a proprietor.

The more commonly understood role is the traditional one of collecting taxes to meet the expenses of government associated with mineral development. Examples of government expenses associated with a mine are increased costs for roads, water and sewer systems, schools and environmental monitoring. There are other reasons the mineral industry may be taxed, but the taxes are imposed to accomplish goals set through the political process in the state legislature. In 1987, the Minnesota legislature made substantial changes in the mining tax laws for metallic minerals. The Minnesota Department of Revenue administers and collects the mining taxes.

The less commonly understood role is the state as an owner of mineral rights. While approximately 69% of the mineral rights in Minnesota are privately owned, the state owns about 24% of the mineral rights in Minnesota. The Department of Natural Resources administers these rights on behalf of the school and university trust funds and other funds. If a mining operation is conducted on lands where private parties own the mineral rights, the operator pays a royalty to the private parties and not to the state. Similarly, when a mining operation is conducted on state-owned lands, the operator pays a royalty to the state.

The state's leasing rules must balance the interest of a reasonable rate of return and the interest of encouraging the exploration and development of the state's mineral resources. The rates cannot be so high as to discourage exploration interest, since exploration is needed on a wide scale to increase the odds of finding a deposit. On the other hand, the rates cannot be so low that the funds would not receive equitable returns based on market conditions. These goals were carefully considered as the Department developed the proposed amendments to the leasing rules.

The amendments being proposed concern several provisions in the lease. For purposes of review, the provisions have been categorized as general and miscellaneous, rental rate, royalty rate, performance incentive and performance requirement.

II. REVIEW OF PROPOSED AMENDMENTS

A. GENERAL AND MISCELLANEOUS PROVISIONS

1. Purpose and name of lease: 6125.0100; 6125.0700, paragraphs 3, 4 and 33 (renumbered from paragraph 31); and throughout the lease

The current rules and lease are for the purpose of promoting and regulating the prospecting for, mining and removing of copper, nickel, and associated minerals. The only minerals specifically excepted from the lease are iron ore and taconite ore that are a part of the Biwabik iron formation.

The first proposed amendment is to change the name and purpose of the rules and lease from the specific "copper, nickel, and associated minerals" to the general "metallic minerals, except iron ores and taconite ores." Amending language is found in the purpose clause of Minnesota Rules, part 6125.0100 and 6125.0700, paragraph 3. The lease will not cover any ores that are primarily valuable for their iron ore or taconite ore content. However, iron ores and taconite ores would be covered under the lease as associated mineral products when the ores mined are primarily valuable for their non-iron metallic minerals content.

The current rules and lease were adopted in 1966. At that time there was considerable interest in exploring and possibly developing the copper and nickel deposits known to exist in the state. The current rules and lease were adopted to promote and regulate that exploration and development. At the

present time, while there remains some interest in copper and nickel, the minerals interest in Minnesota has shifted to other metallic minerals, including the precious metals. One of the principal reasons for the proposed change in the name and purpose of the rules and lease is to make it clear that these rules apply to those metallic minerals.

Another reason for the proposed change in the name and purpose is to clear up the confusion that seems to exist as to exactly what minerals are covered under the rules and lease. Two common questions that have been asked through the years are the definition of the term "associated minerals" and the clarification of when the royalty would have to be negotiated under paragraph 31 (proposed to be renumbered as paragraph 33). This paragraph prescribes that the royalty and other provisions for development would be negotiated if any minerals not covered by the lease are found on the mining unit.

Our response to these questions has been that if the ore mined from a particular mining unit contains copper or nickel, then the royalty for the copper, nickel, and other minerals is as specified in paragraphs 8 and 9 of the lease. It is not necessary for the grade of copper or nickel mined from the deposit to be sufficient for a successful copper or nickel operation.

Thus, a precious metal orebody containing some amounts of copper or nickel would be mined under the terms of the current lease, including the royalty provisions of paragraphs 8 and 9. If an industrial minerals deposit was located under a current state copper, nickel and associated minerals lease, the royalty provisions and other terms for development would need to be negotiated under paragraph 31 of the lease.

If the ore mined from a mining unit is primarily valuable for its metallic minerals content, paragraphs 8 and 9 of the proposed amended lease (part 6125.0700, paragraphs 8 and 9) prescribe the royalty for the metallic minerals and associated mineral products removed from the lease. If the ores mined are primarily valuable for other than their metallic mineral content, then the royalty and other provisions for development would be negotiated under paragraph 33 of the lease. Amending language to make this situation clear is contained in Minnesota Rules, part 6125.0700, par. 33.

To further clarify the minerals covered by the lease, definitions are added for metallic minerals and associated mineral products. "Metallic minerals" is defined as all mineral substances of a metalliferous nature, except iron ores and taconite ores. "Associated mineral products" is defined as those intermingled or associated materials and substances recovered from each ton of dried crude ore mined that are excluded from the definition of metallic minerals. These definitions are being added to Minnesota Rules, parts 6125.0200 and 6125.0700, paragraph 2.

The effect of these amendments is that if non-metallic minerals or iron ores or taconite ores are recovered from a mine that is primarily valuable for its metallic minerals content, the non-metallic minerals or iron ores or taconite ores are covered by the royalty provisions contained in paragraphs 8 and 9 of the lease. For example, if iron ore or feldspar was recovered from a mine primarily valuable for its gold content, the iron or feldspar would be defined as an associated mineral product and royalty paid under paragraphs 8 and 9.

If an ore found on the mining unit was primarily valuable for other than its metallic minerals content, the lessee would come to the state to negotiate royalty and development terms under paragraph 33 of the lease. For example, if the ore was primarily valuable for industrial diamonds, the lessee would have to negotiate royalty and development terms with the commissioner, with approval of the executive council, before the ore could be mined.

However, there are specific exceptions to paragraph 33 of the lease. The lessee may not negotiate terms for the removal of iron ore, taconite ore, and coal, oil, gas or other liquid or gaseous hydrocarbon substances when the ore is primarily valuable for these minerals or substances.

The current lease excepts mines of iron ore and taconite ore that are a part of the Biwabik iron formation from negotiations under paragraph 33. The proposed amendments extend this exception to all ore that is primarily valuable as iron ore or taconite ore. There are current statutory provisions and a statutory lease form for leasing iron ore and taconite ore.

The proposed amendments in paragraphs 4 and 33 of the lease add the new exclusions of coal, oil, natural gas, or other liquid or gaseous hydrocarbon substances. The purpose of these amendments is to exclude from coverage under these rules a type of mine that is significantly different from a metallic minerals mine. Oil and natural gas are normally found in a different geologic environment than metallic minerals and they are explored for, mined and removed by procedures unique to those types of minerals. It is appropriate that a separate leasing system be used for oil and natural gas.

2. Definitions: 6125.0200 and 6125.0700, paragraph 2.

The change in the rules and lease from "copper, nickel, and associated minerals" to "metallic minerals and associated mineral products" has required the addition of three definitions to the rules and lease. These definitions are needed to clarify exactly what minerals are covered by the rules and lease and to specify the weight measurement standard for a class of metals the rules and lease are intended to cover.

"Metallic minerals" is defined as any and all mineral substances of a metalliferous nature, except iron ores and taconite ores. The metalliferous nature requirement excludes from coverage under this lease all non-metallic minerals such as, but not limited to, sand, gravel, granite and limestone. Iron ore and taconite are metallic minerals, but are excepted from coverage under these rules and lease because there currently is in place a statutory leasing system for iron ore and taconite. Minnesota Statutes, chapter 93 sets forth the terms and conditions for the leasing of state-owned iron ore and taconite.

"Associated mineral products" is defined as those intermingled or associated materials and substances recovered from each ton of crude ore mined from said mining unit that are excluded from the definition of metallic minerals. Those materials and substances excluded from the definition of metallic minerals are all non-metallic minerals and iron ores and taconite ores. The provisions of the lease that would govern the development of deposits containing these minerals are discussed above in Section II.A.1.

The third definition added to the rules and lease is one defining "troy ounce." A "troy ounce" is the standard unit of weight for precious metals, i.e., gold, silver, platinum, palladium, etc. Price quotes for these precious metals are given "per troy ounce." These rules apply to any precious metals mining operation, thus, there is a need to define "troy ounce." The definition states that a "troy ounce" means a unit of mass equal to 480 grains or 31.1035 grams or 1.0971 avoirdupois ounces.

3. Forfeited severed mineral interests as a class of mineral interest available for lease: 6125.0400 and 6125.0700, paragraph 6.

As a result of the statutes requiring the registration (Minnesota Statutes section 93.52 - .58, originally enacted in 1969) and taxation (Minnesota Statutes sections 273.165, subd. 1, 272.039, 272.04 and 272.05) of severed mineral interests, the state has acquired through forfeiture proceedings, either for failure to pay the severed mineral interest tax or for failure to register the severed mineral interest, title to severed mineral interests. Other severed mineral interests have been acquired by donation from private parties.

The current lease rules, adopted in 1966, provide for leases on lands wherein an interest in the minerals is owned by the state and the rules list several types of those lands, e.g., trust fund lands, tax-forfeited lands, etc. However, because it was compiled before the severed mineral interest registration and taxation statutes were enacted, the list does not explicitly include lands wherein severed mineral interests have been acquired through

forfeiture for failure to register the severed mineral interest, or lands wherein severed mineral interests have been otherwise acquired.

To make it clear that severed mineral interests acquired through forfeiture for failure to register and that severed mineral interests otherwise acquired are available for lease under these rules, language has been added to part 6125.0400 and to part 6125.0700, paragraph 6, to show that these interests are available for lease.

4. Administrative procedures for issuing leases: 6125.0500

Part 6125.0500 of the rules sets forth the procedure for the public sale of leases. Several changes are made to update and streamline this procedure.

a. Subpart 1 of the rule provides for the publication of the sale notice. With the enactment of Minnesota Statutes chapter 331A (enacted in 1984 and effective January 1, 1985), the phrase "qualified newspaper that has its known office of issue" replaces the phrase "legal newspaper printed and published." No newspaper in the state can charge a fee for publishing public notices unless it is "qualified" under Minnesota Statutes, chapter 331A. "Known office of issue" means the principal office maintained to gather news and sell advertisements and subscriptions. Use of this phrase rather than "printed and published" allows for the possible situation of a small town newspaper contracting out to an out-of-town print shop the actual printing of the newspaper.

The sentence added to the rules is to cover the situation where no qualified newspaper has its known office of issue in the county seat. For example, no qualified newspaper has its known office of issue in Carlton, the county seat of Carlton County. However, pursuant to Minnesota Statutes section 375.12, all counties must designate a qualified newspaper as the publisher of the official proceedings of the county board. Thus, the sentence is added to the rule to identify the next newspaper to be used if no qualified newspaper has its known office of issue in the county seat.

The "county seats" language is left in the rule as the first choice of the newspaper to be used for publication of the sale notice because the largest newspaper, in terms of circulation, is usually located in the county seat and the newspaper designated by the county board may or may not be located in the county seat and may not have as large a circulation as a newspaper located in the county seat.

b. Subpart 2 of part 6125.0500 is changed to allow any type of check or money order to be used to pay for the mining unit book. The mining unit book is the listing of mineral rights offered for leasing, and is available for purchase. The mining unit book is also available for inspection at the Hibbing and St. Paul offices of the Division of Minerals. The rule is changed to no longer require the purchaser to go to the expense or inconvenience of obtaining a cashier's check, certified check, or bank money order.

c. In subpart 3 of part 6125.0500, the deadline for submission of bids is changed. The current rules provide that bids may be submitted at any time prior to the time specified for the opening of the bids. The bids are

delivered to the commissioner at the Saint Paul headquarters of the department and are then opened at a regularly scheduled meeting of the state executive council. For all previous lease sales the time set for the start of the executive council meeting has been the time specified for the opening of the bids.

The state executive council usually meets in the state capitol building, not at the offices of the department. This creates a timing and logistics problem when bids are received in the commissioner's office at or near the time set for the start of the council meeting. The proposed change in subpart 3 of 6125.0500 will eliminate this problem by allowing the submission of bids at any time prior to 4:30 o'clock p.m., Saint Paul, Minnesota time, on the last business day before the day specified for the opening of the bids. This will set the deadline for receipt of bids at a definite time that is sufficiently in advance so as to allow for timely and orderly opening of the bids.

d. The third paragraph of subpart 3 of part 6125.0500 states that the bids shall be publicly opened and announced by the commissioner together with the executive council. After opening, the bids are reviewed and analyzed. The commissioner, with the approval of the executive council, awards leases to the highest bidders. Past practice has been that the bids are opened at one meeting of the executive council and awarded at the next.

It is proposed that this procedure be changed so that bids are opened by the commissioner together with at least one member of the executive council as designated by the council. The actual public bid opening and announcement is

an important process, but it can be time-consuming. When leases are awarded, a majority of the executive council must give its approval, but at the bid opening stage of the lease sale process it is not necessary to involve the entire council. The proposed rule change provides for the presence of at least one constitutional officer, who is a party from outside the department, at the bid opening.

Another benefit accruing from this change is to allow the bid opening to be at times other than the regularly scheduled quarterly meeting of the executive council, or a specially called meeting of the council, both of which require the presence of a quorum. Designation of one or more council members for bid opening would allow greater flexibility in scheduling than presently permitted.

e. In the third paragraph of subpart 3 of part 6125.0500, a provision has been added for resolving tie bids. Subject to the approval of the state executive council, tie bids would be resolved by the random drawing of the name of one tied bidder from a pool comprised of the names of all the tied bidders. Tie bids are possible in a sealed bid process and there needs to be a mechanism by which they can be resolved.

5. Change in division's name and address: 6125.0500, subpart 2 and 6125.0700, paragraphs 17 and 36

Since the time these rules were originally adopted in 1966, both the name and address of the division of minerals of the department of natural resources have changed. The name has evolved from the division of lands and minerals to

the division of waters, soils and minerals to its present form of the division of minerals. At part 6125.0500, subpart 2, and at part 6125.0700, paragraph 17, references to the division have been changed to reflect the current name.

In December, 1984 the St. Paul headquarters of the division moved to its present Lafayette Road address. At part 6125.0700, paragraph 36 (renumbered from paragraph 34), the lease form has been changed to reflect the current address.

6. Fee for leases: 6125.0500, subpart 3 and 6125.0600

Subpart 3 of part 6125.0500 requires that all bids submitted be accompanied by a certified or cashier's check or bank money order for $50. If the bid is successful and the bidder is awarded a lease, the $50 is retained as a fee for the lease. If the bid is unsuccessful, the check or money order is returned, uncashed, to the bidder. The amount of this fee has been fixed at $50 since 1966. The proposed change is to increase this fee to $100. Considering inflation (using the Producer Price Index for All Commodities, 1967=100), one dollar in 1966 is now worth approximately 32 cents, thus, it would take approximately 150 dollars in 1987 to equal 50 dollars in 1966. Balancing the state's interest in promoting exploration and development and the potential impact on small businesses against the results of inflation, increasing the fee to $100 is reasonable.

The current rules for negotiated leases (part 6125.0600) do not provide for any fee. Leases awarded through a public sale process are subject to a fee. It is proposed that all applications for negotiated leases be accompanied by

the same fee of $100. This application fee would be nonrefundable and would not be returned if the application for a negotiated lease is denied. Negotiated lease requests are requests for special consideration outside the public lease sale process that require detailed review, thus providing ample justification for the fee.

7. Negotiation of leases: 6125.0600

The rules (Minnesota Rules, part 6125.0600) currently provide that the commissioner may issue leases through negotiation, rather than by public sale, under certain conditions. The commissioner must find it is impractical to hold a public sale because of the location or size or extent of the state's interest in the minerals and that the best interests of the state will be served by a negotiated lease. Any negotiated lease must be approved by the state executive council.

The state has primarily issued these leases through public sale. Since the beginning of the leasing program, only 9 of the 2,127 copper, nickel, and associated minerals leases have been issued by negotiation.

The public lease sale process encourages competition and thus greater returns to the trust funds and other funds. A public lease sale allows everybody the opportunity to bid on a lease, provided that they can subsequently show financial and technical capability to perform under the lease.

During the comment periods in 1986 and 1987, several comments were submitted on land availability and negotiation of leases. There is interest in more extensive use of negotiations for the issuance of leases in certain situations.

One possible scenario raised concerns the lease by the state of an undivided fractional interest in a forty through public sale. It is subsequently learned that the state owns an additional undivided fractional interest in the same forty or, alteratively, the state subsequently acquires an additional fractional interest in this forty. It has been the policy of the state, and will continue to be the policy of the state, to allow the state's current lessee the first opportunity to negotiate a state lease covering such additional interest.

Second scenario concerns the lease by the state of a certain number of acres in a section but less than the entire section. It is subsequently learned that the state owns additional land in that section or that the state has acquired additional land in that section. It has been the policy of the state to review the land position of all adjacent state lease holders and adjacent lands leased from private owners before offering the lands at public sale. If a request for a negotiated lease is submitted, the state also reviews any geological information supplied by the applicant.

In the second scenario, the state may or may not agree to proceed with a negotiated lease. The state reviews the lease holdings adjacent to the property, which may include lands leased in adjacent sections. The area under lease must be reviewed in conjunction with the location of the new area. They

could be a greater distance apart than lands leased in other sections. The size of the new area is also considered in comparison to the type of mine that could be found in the area. For example, a gold deposit could be found and the mine sited on a relatively small acreage of land.

These and other factors are used in deciding whether the new lands meet the criteria for a negotiated lease. The state believes these procedures are in the best interests of the trust funds and other funds, and that amendment of the rules on negotiated leases is not needed.

The deletion of the last sentence in Minnesota Rules, part 6124.0600, is to remove obsolete language. When the rules were adopted in 1966, this sentence was added to provide that no negotiated leases could be issued until at least one public sale was held. That provision was complied with in 1966.

8. Commingling and sampling of ores: 6125.0700, paragraphs 10 and 14.

The proposed amendments to part 6125.0700, paragraph 10, are additions of specific items and general categories of data and information that must be measured, determined and reported before ores from the mining unit may be commingled with other ores. The current rules allow commingling after the quantities and metal and mineral contents of the ores have been measured and determined. The proposed amendments further define what data and information must be part of those measurements and determinations, and specify that the measurements and determinations must be reported on a monthly basis. The data and information that must be measured, determined and reported is necessary to

ensure complete and accurate calculation of royalties. If the measurements and determinations are not made before the ore from the mining unit is commingled with other ores, it is difficult if not impossible to accurately calculate royalties due from the mining unit as that ore is then part of a commingled mass containing other ores of greater or lesser quantities and qualities. The commingled mass will have a total quantity and an average metal and mineral content separate and distinct from its component ores. The separate identity of the mining unit ore in terms of quantity and metal and mineral content will be lost in the commingled mass.

Another proposed amendment to paragraph 10 of part 6125.0700 specifically allows commingling in the smelter. The current rules allow commingling in the mine, in stockpile, or in the mill. The overall tenor of the current rules deals with the ore through the mill concentrate stage. The proposed amendments change that tenor to one of dealing with the ore through the point at which it is sold. Ores, or the metallic minerals contained therein, are often sold after smelting, and the material processed by the smelter can be the combined output of more than one mine.

It is for these same reasons that the amendment to paragraph 14 of part 6125.0700 is proposed. The current rule states that samples for royalty purposes shall be taken of ores and mill products. The amendment requires samples of ores and all their products, not just the mill products. If royalties are to be determined or adjusted based on a smelter product, then samples of that smelter product will have to be taken.

9. Reporting requirements: 6125.0700, paragraph 16

Paragraph 16 of part 6125.0700 describes the data and information that is required to be reported to the state by the lessee. Amendments to two parts of paragraph 16 are proposed.

Sub-paragraph a. of paragraph 16 requires the submission of exploration and other geologic and testing data and information. The proposed amendments describe the types of exploration data that must be submitted. The amendments also identify with specificity the other geologic and testing data, records and information that must be submitted. The proposed amendments to sub-paragraph a. also provide that the data, records and information required under the sub-paragraph shall be submitted to the commissioner on an annual basis and shall be available for inspection at all reasonable times. The proposed amendments do not change the provision that the data, records and information available and submitted to the state under this sub-paragraph and sub-paragraph b. remain confidential during the life of the lease.

Sub-paragraph b. (there are no amendments proposed for this sub-paragraph) requires that the lessee submit to the commissioner at least a one-quarter portion of all exploration samples. The statutes governing the registration and licensing of exploratory borers, Minnesota Statutes, section 156.01 et seq., also require the submission to the commissioner of at least a one-quarter portion of all exploratory boring samples. Some lessees have asked whether the lease and the exploratory boring statute will be read cummulatively to require the submission of a total of one-half of all exploratory boring samples. The position of the commissioner is that the

submission of only a one-quarter portion of the exploratory boring sample will satisfy the requirements of both the lease and the statute.

Sub-paragraph d. is amended to require the submission of smelter statements, schedules, agreements, and settlement sheets or receipts from sales. These documents are to be certified and must show the product sold and all factors relevant to the calculation of royalties. With the changes in these rules for calculating or adjusting royalties on the basis of what is sold, the documents and information required by the amendments to this sub-paragraph are necessary for accurate calculation of royalties.

The data, records and information required under paragraph 16 are within the purview of the information the commissioner, as manager of state-owned mineral resources, is entitled to receive. The proposed amendments to sub-paragraphs a. and d. further define and identify the types of data, records and information needed. The assurance of confidentiality of all data, records and information required under sub-paragraphs a. and b. is preserved.

The commissioner, as manager of state-owned mineral resources, is entitled to know what activities are taking place on the mining unit and the results and implications of those activities. This knowledge is needed to properly administer the leased resources, to ensure that operations are being conducted in accordance with the lease, and to ensure that the state is receiving the return provided for in the lease.

10. State inspection: 6125.0700, paragraph 18

Under paragraph 18 of part 6125.0700, the commissioner has the right to enter the mining unit at all reasonable times for the purposes of inspection, sampling, etc. If the commissioner requests it, the lessee must also provide a room for the use of the state inspectors. The current rule states that the room shall be at least equal in size and equipment to that customarily furnished for the use of the mine engineer or captain at comparable operations. One of the comments received in the solicitation of comments for proposed amendments, was that perhaps this room requirement, as far as the size and equipment aspects, was a bit overreaching.

This being a state lease of state-owned minerals, the state has a right and a duty to ensure that operations are conducted in accordance with the lease and to ensure that ores mined are completely and accurately sampled and accounted for. To perform these tasks it is necessary that state inspectors be on the mining unit. It is a reasonable requirement that suitable workspace be provided for the use of those inspectors. That work room does not have to be sized and equipped in the manner customary for a mine captain, but as the functions of the state inspector are similar to those of a mine engineer, it is not unreasonable to require room size and equipment like that customarily furnished to the mine engineer. Accordingly, paragraph 18 of part 6125.0700 is proposed to be amended by deleting the reference to the mine captain.

11. Removal from property deadline: 6125.0700, paragraph 31 (renumbered from paragraph 30)

Part 6125.0700, paragraph 31, provides that upon termination of the lease the lessee has 180 days in which to remove all equipment, materials, and other property from the mining unit. Three amendments to this paragraph are proposed. The first provides that, if necessary to comply with any applicable mineland reclamation statute or rule, the lessee can remain on the mining unit longer than 180 days after termination of the lease. This 180 day deadline was adopted in 1966. The mineland reclamation statutes (Minn. Stat. 93.44-.51) were enacted in 1969. The department is currently developing administrative rules for metallic mineral mineland reclamation. Those rules may require periods of time longer than 180 days during which certain deactivation and other reclamation requirements must be met.

The current rule says that anything placed or erected on the mining unit by the lessee and not removed within the time deadlines becomes the property of the state. The second proposed amendment to paragraph 31 gives the commissioner the discretion to either remove the item at the lessee's expense or to accept it as the property of the state. The reason for this amendment is that a not-removed item, e.g. a building, could pose a hazard to persons or property and present potential liability problems to the state. The commissioner would have the discretion to decide whether the state is willing to accept those potential liabilities. If the potential liability is not acceptable and the lessee does not remove the source of that potential liability within the time deadlines of paragraph 31, then the state, at the lessee's expense, will remove that source of potential liability.

The third proposed amendment to paragraph 31 is the addition of a clause to put the lessee on actual notice that the mining unit is to be reclaimed in accordance with all applicable mineland reclamation statutes and rules.

12. Recovery of expenses: 6125.0700, paragraph 32 (new paragraph 32, old paragraph 32 is renumbered 34)

New paragraph 32 of part 6125.0700 sets forth the state's right to recover from the lessee all expenses incurred in the enforcement of its rights under the lease, whether by court action or otherwise. Such rights include the right to remove persons or property from the leased premises, the right to recover rent or royalty due, and any other right or remedy provided under the lease.

Such expenses can be substantial. Substantial expenditures made necessary by the lessee's default or inaction should be borne by the lessee, not the state. This new paragraph provides a contractual basis for the recovery of those expenses.

13. Language changes by revisor of statutes: 6125.0200 - .0700

The proposed amendments to the rules have been reviewed by the revisor of statutes, a unit of state government under the direction of the Minnesota Legislature. All rules must be approved as to form and style by the revisor before publication in the State Register.

The revisor has been directed to clarify, modernize and simplify the text of rules without material change to substance or effect. To the extent practicable, the revisor must use plain language and avoid technical language in the rules. The revisor has also been given other specific directions, such as replacing gender specific words with gender neutral words.

An example of changes made by the revisor of statutes is found in 6125.0200. In subpart 1, the proposed deletion of the words "these", "shall" and "ascribed to" and the addition of "6125.0100 to 6125.0700" and "given" are all changes by the revisor. In subpart 2, the removal of the gender specific reference to the commissioner of natural resources is also a change by the revisor. Other changes in the rules include the deletion of words like "such," "said," "therein," "thereafter," and "shall" and appropriate substitutions.

The department had not originally proposed amending several provisions of the rules. Changes are now proposed due to the requirements of the revisor of statutes. The changes by the revisor are not substantive in nature, and are needed to comply with the revisor's requirements as to form and style.

B. RENTAL PROVISIONS

1. Existing rental rates and credits: 6125.0700 par. 6

The current lease provides for rentals that increase during the term of the lease and provides for crediting rental payments against royalties due. The following summarizes the current rental rates:

Rental Rate	Period of Lease
$1.00/acre/year	5 years plus unexpired portion of calendar year in which lease is issued.
$5.00/acre/year	next 5 years
$25.00/acre/year	thereafter, provided rate shall not exceed $5.00/acre/year if lessee is actively engaged in mining from mine within township or specified adjacent townships

The lease also provides that the rental paid for any calendar year may be credited against royalty due for ore removed during that calendar year. Further, any rental paid in excess of $5.00 per acre may be credited against royalty due in any subsequent year after use of any credits from that year's rentals. Both of these credits are conditioned upon the requirement that the rental was paid into the particular land fund for which such royalty is due.

2. Proposed amendments

The proposed rental rates are as follows:

Rental Rate	Period of Lease
$1.00/acre/year	2 years plus unexpired portion of calendar year in which lease is issued
$3.00/acre/year	next 3 years
$8.00/acre/year	next 5 years
$25.00/acre/year	thereafter, with no reduction if lessee is actively engaged in mining.

The amount paid in consideration of the lease at the time it is issued will be the rental due for the unexpired portion of the calendar year of issuance and the next two succeeding calendar years. The current lease requires payment of rental at the time it is issued for the unexpired portion of the calendar year of issuance and the next one succeeding calendar year.

The proposed changes do not change the credits allowed under the current lease, except that only rentals in excess of $8.00 per acre, rather than $5.00 per acre, may be credited against royalty due in any subsequent year after use of any credits from that year's rentals.

3. Analysis and reasonableness of proposed amendments

There were several factors considered in the preparation of these proposed changes in rental rates. The department reviewed price inflation since the adoption of the rules, the leasing systems of other states, some of the

private leases recently negotiated on lands in Minnesota, and the overall goals of the state's leasing program.

The current rental rates were adopted in 1966. Due to price inflation, the value of the dollar has been steadily declining since that time. If measured by the Producer Price Index of All Commodities, one dollar in 1966 is now worth about 32¢. If measured by the Consumer Price Index of All Items, one dollar in 1966 is now worth about 30¢.

One alternative would be to increase the 1966 rates by the rate of inflation as measured by the Producer Price Index for All Commodities. This would result in a rental schedule of $3.11 per acre for the first 5 years, $15.56 per acre for the next 5 years, and $77.78 per acre thereafter.

Another factor reviewed was the rental rates contained in leases issued by other states. The department reviewed the leasing system of eighteen states that have nonferrous metallic mineral deposits or have the potential to have such deposits. The rental rates of these leases are summarized in a table contained in Appendix A.

The rental rates of other state leases also usually vary during the term of the lease. The range of the initial rates varies from $0.25 to $20.00 per acre. The range of the highest rates during the term of the lease varies from $1.00 to $55.00 per acre.

Michigan has an active leasing program for metallic minerals and had 45,000 acres leased as of June 1986. Michigan's rental rates are $3.00 per acre per

year for the first five years, $6.00 per acre per year for the next five years, $10.00 per acre the eleventh year, and thereafter $5.00 per acre per year increases up to a maximum of $55.00 per acre per year.

The department also reviewed rental rates in private leases and agreements. Our information on these leases is limited, but we have obtained copies of some leases as part of negotiations for state leases. Also, some leases have been recorded in the county offices. However, in many instances only a memorandum of a lease agreement has been recorded, and the actual lease with its terms has not been recorded.

The rental rates of the private leases also vary with time. The range of the initial rates varies from $4.00 to $10.00 per acre. The range of the highest rates during the term of the leases varies from $15.00 to $25.00 per acre.

An overall consideration is the goal of the state's leasing program. In accordance with the policy of the state's laws, the department is encouraging exploration of state lands. The greater the amount of exploration, the greater the chances of a discovery.

The intent at the time the rules were first adopted and the current intent is to keep initial rental rates low to encourage exploration. The preference is for exploration dollars to be used principally for conducting exploration work, provided that the trust funds and other funds receive a reasonable return based upon the market conditions. Thus, a decision was made to keep

the rental rates at $1.00 per acre per year for the unexpired portion of the year the lease is issued and the next two succeeding calendar years.

However, a change that is proposed regarding the first few years is that the rental for the second full year of the lease also be paid in advance at the time of issuance. This change is a recognition that the trust funds and other funds should receive more revenue from the leases up-front. If the leases are quickly terminated, the trust funds and other funds will still have received revenue from rental payments for a period of between two and three years.

The proposed rental rates increase after the second full year of the lease, again at the fifth full year of the lease and again at the tenth full year of the lease. The proposed increase in rates after the second full year of the lease recognizes the impact of inflation and the market conditions. These increases are financial incentives to the companies to perform exploration work before the increases take effect. They motivate the companies to do the exploration and either terminate the leases or proceed to further development work if a deposit is found.

The proposed changes eliminate the current provision that provides for a decrease in rental rates if the lessee is actively engaged in mining. If the lessee is actively engaged in mining, the rentals will be a very small factor in overall costs and can be used as credits against royalties due and payable. If a lessee wishes to retain lands needed for its operations but is not actually mining lands of the same fund or even in the same mining unit, that

fund should be receiving an equitable rate of return from the use or retention of those lands.

The proposed increases reflect the acknowledgement of price inflation and the current market of mineral leasing. It must be kept in mind that the State of Minnesota is competing in a worldwide market for mineral exploration. The projected increase in rental rates reflects the overall goals of the state in encouraging exploration while also providing a reasonable return to the trust funds and other funds.

C. ROYALTY PROVISIONS AND COMPUTATION OF VALUE

The amount of royalty due for ore mined from state land is determined by multiplying the royalty rate times the value of the metallic minerals recovered. The royalty rate is described in paragraph 8 of 6125.0700, and the value of the metallic minerals is described in paragraph 9 of 6125.0700.

The royalty rate and value are discussed separately in this statement. In Appendix B, the rate and value are combined and illustrated through the use of a mine model.

1. Royalty Rate Provisions: paragraph 6125.0700, paragraph 8

a. Existing royalty rate structure: 6125.0700, par. 8

The state copper, nickel, and associated minerals leases are primarily issued through public sale with competitive, sealed bidding. For each lease, the applicants submit a bid royalty rate which is in addition to the royalty rates specified in the state leases in accordance with Minnesota Rules, parts 6125.0100-.0700. The leases are awarded by the commissioner of natural resources, with the approval of the state executive council, to the highest bidder for each lease. No bids are accepted that do not equal or exceed the royalty rates specified in Minnesota Rules, parts 6125.0100-.0700, and the state reserves the right, through the executive council, to reject any or all bids.

The royalty rate consists of a base rate composed of two parts, a special royalty rate that applies to that portion of the value of the metals and

mineral products recovered in the mill concentrate exceeding $50 per ton (subject to escalation) of dried crude ore and the bid rate. The royalty rates are a percentage of the value of the metals and mineral products recovered in the mill concentrate from each ton of dried crude ore mined. This royalty rate mechanism has a built in escalation provision since it is tied to the market prices of metals and adjusts for the fluctuations in those prices.

The current state lease provides that the base royalty rate increases during the term of the lease and the rate also varies according to whether ore is being mined by underground or open pit methods. For ore mined by either underground or open pit methods during the first ten years of the lease, the base rate is 2% of the value of the metals and mineral products recovered in the mill concentrate from each ton of dried crude ore, plus an additional 2% of the value of the metals and mineral products recovered in the mill concentrate that exceeds $17 per ton of dried crude ore. For purposes of discussion, this additional 2% is hereafter called the additional royalty rate.

For ore mined by underground methods, the base and additional royalty rates each increase an additional ½% for each subsequent ten-year period. For ore mined by open pit methods after the first ten years of the lease, the base and additional royalty rates are 33-1/3% greater than these rates for mining by underground methods.

The bid royalty rate is also a percentage of the value of the metals and mineral products recovered in the mill concentrate from each ton of dried crude ore. This rate does not change during the term of the lease.

The special royalty rate was adopted by the amendment of the rules in 1982. The two main reasons for adoption of a special royalty rate were: (a) as landowner, the state has a legitimate right to share in the windfall profits derived by the mine operator from the discovery and development of high-grade mineral deposits on state lands or derived from the metals price increases due to speculation or boom times; and (b) discoveries outside Minnesota (in Canada, Wisconsin and elsewhere) have indicated that potentially richer and more diverse mineral deposits might be found in greenstones and other geological formations in Minnesota.

The special royalty starts to apply when the value of the metals and mineral products recovered in the mill concentrate exceeds the special royalty base. The amount of special royalty that will be payable for ore mined and removed from the leased lands will be calculated by multiplying the special royalty rate by that portion of the value of the metals and mineral products recovered in the mill concentrate from each ton of dried crude ore that exceeds the special royalty base.

The special royalty rate is .04% of that portion of the value of the metals and mineral products recovered in the mill concentrate from each ton of dried crude ore that exceeds the special royalty base. Furthermore, the special royalty rate is subject to increase or decrease each calendar month by multiplying the special royalty rate by a fraction, the numerator of which is

that month's base value of the metals and mineral products recovered in the mill concentrate from each ton of dried crude ore, and the denominator of which is that current month's value of the metals and mineral products recovered in the mill concentrate from each ton of dried crude ore.

The current month's value of the metals and mineral products recovered in the mill concentrate is determined by multiplying the total pounds of each metal and mineral product recovered during the month by that month's average market price per pound of each metal and mineral product. The base value of the metals and mineral products recovered in the mill concentrate is determined by multiplying the total pounds of each metal and mineral product recovered during the current month by the respective average of the average market price per pound of each metal and mineral product for each of the twelve complete calendar months of 1981. (The third paragraph of Minnesota Rules, parts 6125.0700, par. 9 specifies how the average market price of each metal and mineral product is determined.)

Finally, if the special royalty payable in any calendar month exceeds twenty percent of that month's value of the metals and mineral products recovered in the mill concentrate, the lessee may apply to negotiate a modification of the special royalty rate for the amount exceeding such twenty percent. Any modification of the lease terms must be approved by the state executive council.

In summary, the state's current royalty structure is as follows:

Royalty payable = Base royalty rate x VC
+ Additional royalty rate x (VC - $17.00)
+ Special royalty rate x (VC - SRB)
+ Bid royalty rate x VC

Where: VC = current value of metals and mineral products recovered in mill concentrate

SRB = Special Royalty Base = $50.00 x $\frac{(VC)}{(VB)}$, and

VB = Base value of metals and mineral products recovered in the mill concentrate (average of 1981 market metal prices)

And Where: Base royalty rate and additional royalty rate are prescribed by the state lease and vary based upon time period for mining and method of mining.

Special royalty rate = .0004 x $\frac{(VB)}{(VC)}$ x (VC-SRB).

Bid royalty rate is amount specified in lease from high bid submitted at public sale or as negotiated in a negotiated lease.

b. Proposed royalty rate structure

1) Proposed royalty rate formula

The proposed royalty rate formula is contained in paragraph 8 of the state lease. The royalty rate formula is being modified to consist only of a base royalty rate and a bid rate. These two rates are then added together and multiplied by the value of the metallic minerals and associated mineral

products recovered in the mill concentrate to determine the total royalty payable per ton. The value of the minerals is first calculated as provided in paragraph 9 of the state lease.

The bid rate is not changed by the proposed amendments. It continues to be a flat percentage rate submitted through the bidding process of a public lease sale or rate agreed upon for a negotiated lease.

The proposed base rate varies with the value of the metallic minerals and associated mineral products recovered from each ton of dried crude ore. The base rate will be calculated each month in which minerals are recovered and removed from the mining unit.

The base rate shall not be less than 3 1/2 percent nor more than 20 percent. The calculation of the base rate is as follows:

(1) If the value of the minerals is equal to or less than $75.00, the base rate is 3 1/2 percent;

(2) If the value of the minerals is greater than $75.00 but less than or equal to $150.00, the base rate is 3 1/2 percent plus an additional .015 percent for each dollar above $75.00;

(3) If the value of the minerals is greater than $150.00 but less than or equal to $225.00, the base rate is 3 1/2 percent plus an additional .015 percent for each dollar above $75.00, plus

a further additional .02 percent for each dollar above $150.00; and

(4) If the value of the minerals is greater than $225.00, the base rate is 3 1/2 percent plus an additional .015 percent for each dollar above $75.00, plus a further additional .02 percent for each dollar above $150.00, plus a further additional .025 percent for each dollar above $225.00.

Thus, for each month there are minerals mined and removed from the mining unit, a calculation of value of metallic minerals and associated mineral will be made under paragraph 9 of the lease. This value will then be used as prescribed in paragraph 8 of the lease to calculate the base royalty rate.

Examples of how the base royalty rate would be calculated are as follows, assuming the value (v) of metallic minerals and associated mineral products recovered from a ton of dried crude ore was first determined under paragraph 9 of the lease:

(1) If v = $ 65.00, then the base rate = 3.5%

(2) If v = $125.66, then

Base Rate = .035 + [.00015 x (v-75.00)]

= .035 + [.00015 x (125.66-75.00)]

= .035 + [.00015 x 50.66]

= .035 + .007599

= .042599

= 4.2599%

(3) If v = $200.00, then

Base Rate = .035 + [.00015 x (v-75.00)] + [.0002 x (v-150.00)]

= .035 + [.00015 x (200.00-75.00)] + [.0002 x (200.00-150.00)]

= .035 + [.00015 x 125.00] + [.0002 x 50.00]

= .035 + .01875 + .01

= .06375

= 6.375%

(4) If v = $250.00, then

Base Rate = .035 + [.00015 x (v-75.00)] + [.0002 x (v-150.00)] +
[.00025 x (v-225.00)]

= .035 + [.00015 x (250.00-75.00)] + [.0002 x (250.00-150.00)]
+ [.00025 x (250.00-225.00)]

= .035 + [.00015 x 175.00] + [.0002 x 100.00] +
[.00025 x 25.00]

= .035 + .02625 + .02 + .00625

= .0875

= 8.75%

The proposed royalty formula also provides instructions as to rounding of numbers during calculations. In computing the base rate, there is no rounding before the total royalty due is calculated.

2) Indexing of values used in base royalty rate formula

The proposed royalty rate formula also provides that the values of $75.00, $150.00 and $225.00, that are used in the base royalty formula, are subject to escalation each calendar quarter. Any increases in these values will be based

upon the changes in the Producer Price Index for All Commodities (PPI-AC). This index is published by the Bureau of Labor Statistics of the United States Department of Labor.

The increases in the values are computed by multiplying the values by a fraction, the denominator of which is the "Base Index", and the numerator of which is the amount by which the PPI-AC for the first month in the calendar quarter exceeds the Base Index. The Base Index is the level of the PPI-AC index for August of 1987. Thus, the increases in the values will reflect inflationary increases of the values from August of 1987.

The amount of increases are then added to the values to obtain new values that will be used in the calculation of the base royalty rate. These values may increase or decrease quarterly, but they will never go below $75.00, $150.00 and $225.00. If there is a decrease in the PPI-AC below its level of August of 1987, the base royalty rate will not exceed 3.5% until the value of the ore mined and sold exceeds $75.00.

For example, the Base Index for August of 1987 was 310.5, and assume the PPI-AC for the first month of the calendar quarter in question is 325.5, then the increases in the values of $75.00, $150.00 and $225.00 would be calculated as follows:

$$\$ 75 \times \frac{(325.5 - 310.5)}{310.5} = \$ 3.62, \text{ rounded to } \$ 4.00$$

$$\$150 \times \frac{(325.5 - 310.5)}{310.5} = \$ 7.24, \text{ rounded to } \$ 7.00$$

$$\$225 \times \frac{(325.5 - 310.5)}{310.5} = \$10.86, \text{ rounded to } \$11.00$$

The indexed values to be used in the calculation of the base royalty rate for the calendar quarter in question would be:

$\$ 75 + \$ 4 = \$ 79$

$\$150 + \$ 7 = \$157$

$\$225 + \$11 = \$236$

The proposed royalty rate formula also provides for selection of a substitute index if the PPI-AC is no longer published.

3) Cap on base royalty rate

Under the current rules, the royalty rate is comprised of a base royalty rate, an additional royalty rate, a special royalty rate, and a bid royalty rate. Only the special royalty rate has the potential to vary from zero to 100%, depending on the value of the products recovered. The current rules mitigate this potential by allowing a lessee to apply to the commissioner for a modification of the special royalty rate with respect to the portion that exceeds 20% of the value of the metals and mineral products.

The proposed rules, in paragraph 8.b., provide an absolute ceiling of 20% on the base royalty rate. The proposed base royalty rate replaces the current rules' special royalty rate, additional royalty rate, and base royalty rate. With this ceiling, there is no need for the mitigating provision allowing application for modification of the special royalty rate.

The total royalty rate in the proposed rules may still exceed 20%, however, because the total royalty rate is comprised of both the base royalty rate and the bid royalty rate.

c. Analysis and reasonableness of proposed amendments

1) Selection of formula-rates and values

The department received numerous comments on the state's current royalty rate formula. A frequent comment was that the formula, with its four rates plus increases, was too complex. Many parties have had difficulty understanding and calculating the current royalty rate formula.

The addition of the special royalty rate in 1982 added a further complexity to the royalty formula. An important goal in the amendment of the rules was to simplify the formula. An understandable formula is an essential component for promoting the state's lease. Therefore, the royalty rate formula was simplified while preserving, with some decreases, the royalty return to the state.

In simplifying the formula, the royalty formula was reduced to two rates: a base rate and a bid rate. The bid rate will continue to be a percentage of the value, with leases awarded to the high bidders at the public lease sales. (A further discussion on the bid rate follows in Section II. C.1.c.5).)

The new base rate combines the current base rate, additional rate and special royalty rate. The base rate of 3.5% for ore values of $75.00 or less was selected after reviewing the combination of the current base and additional royalty rates during the first ten years of the lease.

For an ore value of $75.00, the current base and additional royalty during the first ten years of the lease totals about 3.5% of ore value. For an ore value of $150.00, these rates combine to a royalty of about 3.75% of ore value.

In its review, the department also considered the royalty rates of private leases and leases from other states. It is very difficult to compare royalty structures since they use different definitions and allow different deductions. Net smelter return, gross value and net proceeds are commonly used royalty systems, but specific calculations vary in determining the value of ore against which royalty is applied. It is thus only possible to develop comparisons with mine models, with results varying depending on type of mine, grade of ore and operating costs.

There is no one industry standard, but a typical royalty rate offered is a 5% net smelter return. The proposed royalty schedule is analogous to a modified net smelter return, without deductions for penalties, refining and

transportation charges. The proposed base rate, without a bid rate is roughly comparable to a 4.5% net smelter return, depending on the type and grade of ore produced.

Another goal was to continue to provide low rates for low-grade ores while assuring a reasonable return to the funds. It is believed that an initial base rate of 3.5% for ore values of less than $75.00 fits these criteria.

The new base rate also increases with the increasing value of the ore. This increasing factor combines the special royalty rate into the base rate. The special royalty rate provided that the total royalty payable would increase with the value of ore. The rate increases at $75, $150, and $225 follow these principles.

In selecting the values of $75, $150 and $225, and the percentages of .015%, .02% and .025%, the department reviewed many possible alternatives. The goal was to find a formula comparable to yet simpler and more understandable than the current royalty rate formula.

The alternative formulas reviewed had various base values of ore and various percentages for increases. The amount of royalties payable under different formulas for values of ores ranging up to $400 were compared with the current system.

In selecting the base values and percentages in the proposed amendments, the department also looked at the overall impact of change on the royalty rate. Lower rates for lower value ores should encourage development. Higher

rates for higher value ores assures the state a greater return for high grade deposits.

A significant factor in reviewing alternative formulas was that there would also be major changes in the definition and calculation of the value of the ore. In comparing proposed systems with the current system, it was also necessary to consider that allowing the deduction of base smelter treatment charges and smelter losses would reduce the value of ore that is subject to royalty payment. For certain types of mines, the amount of change in value has a major impact in total royalty due.

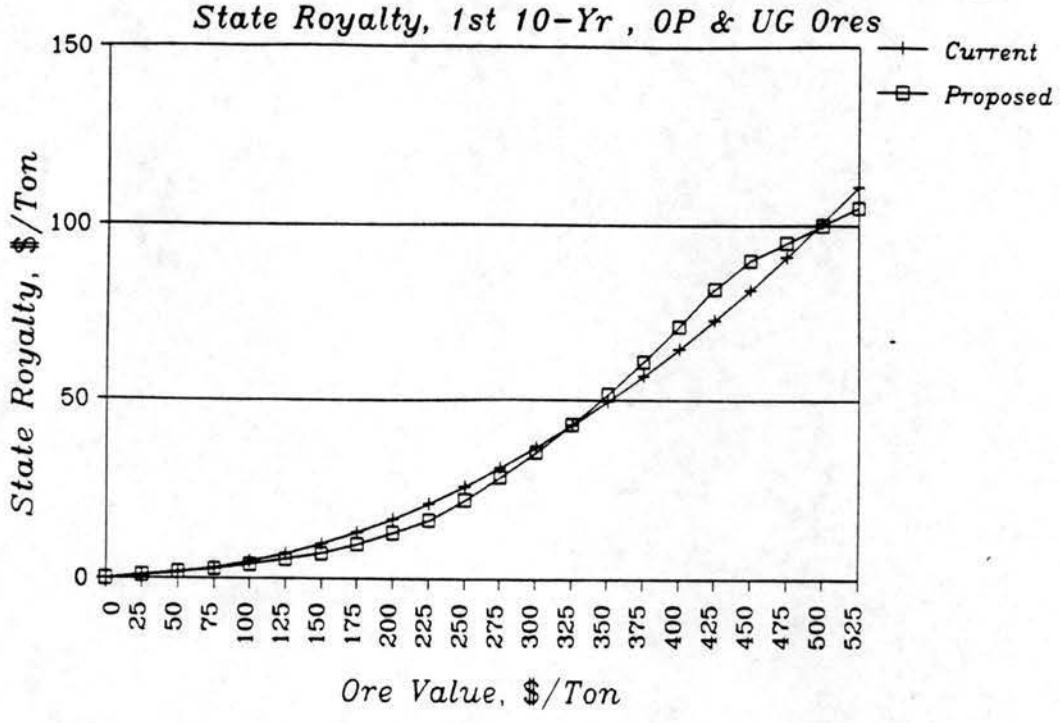
The rate of changes in the proposed base royalty formula closely aligns to the rate of change in the current royalty formula. See Graph C-1 for a comparison of the rates. The proposed base royalty rate formula reflects the rate of change in the current royalty formula for the first ten years of the lease, and is slightly lower for low grade ores and slightly higher for high grade ores.

(2) Indexing of values used in base royalty rate formula

The proposed base royalty rate increases with the increasing value of the ore mined. Specifically, when the ore reaches a value of $75, $150 and $225, the base rate increases by an additional .015%, .02% and .025% respectively, for each dollar increase in value above these values. Therefore, a higher grade of ore will generally yield a higher value of ore, a higher base royalty rate and a greater return to the state in the form of royalty.

Graph C-1

METALLIC MINERALS ROYALTY FORMULAE



It is important to note that the value of ore under the current rules is not calculated the same as the value of ore under the proposed rules. It is not correct to compare the total royalty payable for a particular mine by using this graph. For example, using the mine model example described in Appendix B, the value of $143.88 under the current rules would be compared against the value of $100.96 under the proposed rules.

The proposed royalty formula also provides for the indexation of the values of $75.00, $150.00 and $225.00 each calendar quarter. The reason for this indexation is to avoid increasing the base royalty rate for that portion of the ore value which may be attributable to increased production costs.

The value of the ore will usually vary based on the grade of the ore. Ore value can also vary with the rise and fall of metal prices and smelter charges. The rise and fall of metal prices is due to many causes, only one of which is the cost of producing the metal or concentrate. It is reasonable for the state to avoid penalyzing the lessee for uncontrollable increases in production costs. Escalation of the values of $75, $150 and $225 will minimize any such influence on ore value and royalty.

The Producer Price Index For All Commodities (PPI-AC) was selected as the escalator because it is one of the broadest price inflation indicators. It measures the average changes in the prices received in primary markets of the United States by producers of commodities in all stages of processing: raw materials, intermediate materials, and finished goods. Measuring the price trend at its most aggregate level, the PPI-AC is one of the more widely cited indicators of inflation in the overall economy.

3) Cap on base royalty rate

The special royalty rate under the current rules is intended to insure that the state, as owner of the minerals, will share in any bonanza deposit at a significantly higher rate than that provided by the royalty rate schedules in the rules adopted in 1966. The current rules also give the commissioner

discretionary power to modify a special royalty rate which runs higher than 20%.

By placing a flat ceiling of 20% on the base royalty rate in the proposed rules, the commissioner's discretion in the matter is removed and the lessee is assured that in no event will the base royalty rate exceed 20%. This change accommodates a concern expressed by many of the mining companies that the special royalty rate could equal or exceed 100% and that the commissioner in his discretion could deny any relief. The change thereby preserves some of the incentive for a lessee to take exploration risks with the promise of higher rewards. The state will still retain a significant share in the value of a bonanza deposit by receiving up to 20% in base royalty plus the bid royalty.

As a practical matter, however, a deposit rich enough to generate a 20% base royalty rate would be extremely rare. The deposit would have to contain metallic minerals and associated mineral products valued at $437.50 per ton of crude ore, or more, to result in a royalty over 20% under the proposed rules. If such a deposit is discovered, good engineering practice would generally dictate that high grade ores be blended with lower grade ores to extend the life of the orebody and to provide as uniform a feed to the mill as possible.

4) Deletion of increases in base rate during term of lease and for open pit mining

The current lease increases the base and additional royalty rates every ten years. Also, the base and additional royalty rates are 33-1/3 percent greater

for ore mined by open pit methods. The proposed amendments delete all of these increases in the base royalty rate.

One reason for this change is to simplify the royalty formula. Other more important reasons involve an analysis of the original purpose of the increases in rates.

The increase in the rates for the current lease were for the purposes of encouraging lessees to promptly develop the property and mine efficiently through the life of the mine. The higher rates for open pit ores recognized that operating costs may be lower for open pit mines and higher for underground mines.

A competing point of view is that an operation should be encouraged to remain in business as long as practical. When a mine has been in operation for some time with its orebody nearing depletion, the operator looks for ways and means to extend the life of the operation. The mining and processing of lower grade ores with attendant higher costs, is one way of extending ore reserves and prolonging the life of an operation.

The state's current lease increases the royalty rate in these later years at a time when the ore reserves may be depleting or the grade decreasing. Increased royalty would add to costs, decrease profits and discourage continued operation. Conversely, deletion of these increases should serve to encourage continued operation and greater utilization of an orebody.

The deletion of rate increases also reduces the overall royalty payable per ton during the term of the lease. These deletions of increases should encourage potential development and encourage good engineering practice and mineral conservation. Lower rates will encourage mining of lower grade material and larger volumes.

5) Retention of bid royalty rate

The amendments do not change the bid royalty rate or the state's system of issuing leases to the bidder who submits the highest bid royalty rate. (The right is reserved to reject any and all bids.) The bid rate is in addition to the base rate prescribed in the lease, and the bid rate does not change during the term of the lease.

This bidding system is part of the state's participation in the risks and costs of exploring for metallic minerals. The rental rates are low to encourage money to be spent for exploration. If an ore deposit was discovered and developed, the economic return to the state would be significant. The state shares in the risks and encourages exploration, so the state as a landowner should also benefit from a successful mining operation.

A bidding system also serves to fulfill the state's management responsibilities. The system encourages competition and thus a possibly higher economic benefit to the state.

Bids are submitted in sealed envelopes and opened at a public meeting. A sealed bid insures that nobody knows who is bidding on what mining units and

the amount they are bidding. Even though over 75% of the units bid upon at the last four lease sales received only one bid, the average successful high bid was 1.5%. These results indicate that the bidding system is of economic benefit to the state.

C. 2. Computation of value: 6125.0700, paragraph 9

a. Existing computation of value system

The current rules provide that the value of metals and mineral products recovered in the mill concentrate from each ton of dried crude ore is determined by multiplying the weight of each metal and mineral product recovered in the mill concentrate by the average monthly market price of each fully-refined metal and each mineral product, adding the values thus obtained, and dividing the sum by the number of tons of dried crude ore concentrated. If less than fifty percent of an associated mineral product recovered in the mill concentrate is sold or otherwise disposed of, then only that amount sold or otherwise disposed of is multiplied by the market price.

The source for market price quotations is the Metals and Mineral Markets section of the Engineering and Mining Journal. The price quotations to be used are only specified for copper and nickel. The base values of each metal and mineral products which are used to determine the special royalty rate, are calculated using the average annual market prices of that metal or mineral product for the year 1981.

b. Proposed amendments

The calculation of value of ore under the amended rules will still be based on the fully-refined metallic minerals and the associated mineral products contained in the mill concentrate. However, certain deductions will be allowed and the computation of value will be subject to adjustment when the metallic minerals and associated mineral products are sold, if they are sold.

Also, if material is to be recovered and sold on a basis other than for the purpose of recovering the fully-refined metallic minerals and the associated mineral products contained in the material, then the value of the material recovered and sold is subject to agreement between the commissioner and the lessee.

The initial calculation of value remains the same as in the current rules. The weight of each metallic mineral and associated mineral product recovered in the mill concentrate is multiplied by the average monthly market price of each fully-refined metallic mineral and each associated mineral product. The values obtained are added together, and the sum is divided by the number of tons of dried crude ore concentrated during the month, with the result being the value of the metallic minerals and associated mineral products recovered from each ton of dried crude ore that month.

Additional steps are proposed in the valuation process after this value has been obtained. These additions are the proposed new sub-paragraphs b., c., d. and e. of paragraph 9.

Sub-paragraph b. provides that if metallic minerals and associated mineral products are sold during the same month they are recovered, then only those metallic minerals and associated mineral products actually paid for by the purchaser are valued as part of the value of the metallic minerals and associated mineral products recovered during the month. If the metallic minerals and associated mineral products are not sold during the same month they are recovered, then the value of the metallic minerals and associated mineral products shall be adjusted at the time they are sold to reflect the

market price at the time of sale, and to reflect any metallic minerals and associated mineral products that are not sold. If the adjustment results in royalties having been overpaid, then the amount of the overpayment shall be a credit against future royalty payments due. If the adjustment results in the lessee owing additional royalties, those additional royalties are payable on or before May 20 of the calendar year following the year in which the sale takes place. (This payment deadline is set forth in the proposed amendments to paragraph 11 of part 6125.0700.)

Sub-paragraph c. defines when metallic minerals and associated mineral products are deemed sold. It also defines "affiliate" and defines when sales to affiliates are deemed to occur and how value is to be calculated when sales to affiliates occur. It also defines when metallic minerals and associated mineral products retained by the lessee for its own internal use and consumption are deemed sold and how they are to be valued.

Sub-paragraph d. provides that if material is recovered and sold on a basis other than for the purpose of recovering the fully-refined metallic minerals and the associated mineral products contained in the material, then the value of the material recovered and sold, for royalty calculation purposes, shall be agreed upon by the commissioner and the lessee. This sub-paragraph would apply in cases such as the sale of titanium dioxide concentrate for paint pigment uses.

Smelter charges that can be deducted in the value computation are defined in sub-paragraph e. as the total of the base smelter treatment charge assessed by the smelter for treating each ton of mill concentrate plus the smelter

losses that are deducted from assay or market values to arrive at the gross payment to the lessee for each of the metallic minerals and associated mineral products paid for by the smelter. No other production, beneficiation, sale, or other costs or charges are allowed to be deducted. If a metallic mineral or associated mineral product is sold without smelter treatment, then no smelter charge deduction is allowed.

The amendments to sub-paragraph f. change the source of market price quotations from the Engineering and Mining Journal to Metals Week. It is also proposed that the specific price quotations identified for copper and nickel be changed and that specific price quotations be added for gold, silver, zinc and lead.

With the proposed change in the royalty rate formula that eliminates the separate special royalty rate, that part of paragraph 9 dealing with 1981 prices for base value purposes is deleted as no longer necessary. The 1981 prices were used only in the calculation of the special royalty rate.

c. Analysis and reasonableness of proposed amendments

The royalty received by the state is calculated by multiplying the royalty rate by the value of the metallic minerals and associated mineral products recovered in the mill concentrate during the month. The amendments proposed to paragraph 9 add steps to the calculation of that value. These steps are in the form of deductions and adjustments that are not allowed in the current rules.

The current rules provide that the value upon which the royalty is based is the fully-refined metal value of the metals recovered in the mill concentrate from each ton of dried crude ore. One hundred percent of each metal recovered in the mill concentrate is valued. (The rules provide that if less than 50 percent of any associated mineral recovered in the mill concentrate is sold, then only that part sold is valued for royalty purposes, but for all other metals recovered, 100 percent of the amount recovered is valued for royalty purposes.)

When the department solicited comments regarding possible amendments to these rules, an issue raised by several parties was that the state's royalty should be based on the value the lessee receives when the lessee sells the metals and associated mineral products. They said a contained value system does not take into account the difficulty or cost of processing the salable minerals from the crude ore.

The parties who commented suggested that the state change its royalty system from one of value contained in the mill concentrate to one of net smelter returns or to one of net proceeds. A net smelter return system allows the lessee to deduct smelting costs, refining costs, penalties for impurities, and transportation costs, but not mining or milling costs. A net proceeds system allows deduction of all costs, including mining and milling costs.

A net smelter return system was not chosen because of concerns regarding the ability to monitor the processing of the state ore and the difficulty in verifying the costs incurred and deducted to arrive at a net smelter return. A net proceeds system was not adopted for these same reasons and for the

additional reason that if all costs are allowed to be deducted it is possible that there would be no net proceeds and thus no royalty payable. As one of the roles of the state as trustee is to secure a reasonable return on the resources mined, this would not be acceptable.

The amendments that are proposed to paragraph 9 are made in recognition of the propositions that existing royalty rates for massive sulfide deposits are high; that the lessee incurs very real and substantial costs which reduce the value of the metals recovered; and that the lessee cannot always sell all of the metals recovered in the mill concentrate. While these factors are recognized, they also must be balanced against the state's right to a reasonable return for its mineral resources and the state's goals in encouraging and promoting development. The results of that balancing process are the amendments proposed.

1) Smelter charges deduction: 6125.0700, paragraph 9e.

The first proposed change in the value calculation system is the allowance of a deduction for smelter charges. Smelter charges are defined in proposed new sub-paragraph 9e. as the total of the base smelter treatment charge assessed by a smelter for treating each ton of concentrate plus the smelter losses that are deducted from the assay or market values to arrive at the gross payment to the lessee for each of the metallic minerals and associated mineral products paid for by the smelter.

The base smelter treatment charge covers the costs of operating the smelter (including an allowance for profit) and is generally indexed to the principal

cost variables, i.e. labor, fuel and power. It usually takes the form of a fixed deduction per dry ton of material processed and thus its impact is greater on lower grade materials. A minimum treatment charge per lot is specified. As smelting costs rise, the increase will be reflected by higher treatment charges.

Since different types of concentrates require different smelting processes, the base treatment charge will vary with the type of concentrate being treated. Generally, a zinc concentrate is more expensive to treat than a copper or lead concentrate and the base smelter treatment charge for a zinc concentrate will generally be greater than that for a copper or lead concentrate. The model smelter schedules published by Western Mine Engineering in 1984, indicate that for copper concentrates the base smelter treatment charge can range from $90 to $125 per dry ton of concentrate; for lead concentrates, the range is from $110 to $140 per dry ton of concentrate; and for zinc concentrates the range is from $180 to $200 per dry ton of concentrate. This base smelter treatment charge may also vary from smelter to smelter. A mine may produce one or more concentrates. These concentrates may have to be sent to separate smelters. Lead, zinc and copper smelters are the primary types of operations that buy base-metal concentrates.

The second item in the definition of smelter charges is smelter losses. Ore that has been processed to the mill concentrate stage is assayed to determine the metal content of the concentrate. A smelter that purchases the concentrate on the basis of the metal content typically pays for a certain percentage of the metal contained in the concentrate. The remainder represents the expected process loss, i.e., that portion of the metal that is

lost in the smelting process as the process can't recover 100 percent of the metal contained in the mill concentrate. For example, a base metal smelter might deduct 15% of the metal content of zinc recovered, 5% of the metal content of gold recovered, and 2.5% of the metal content of copper recovered before paying the lessee for those metals recovered from the ore. The interests of the state and the lessee coincide here because the lessee will seek a smelter that will obtain the maximum metal recovery at the lowest cost per ton.

Only smelter charges actually incurred are allowed to be deducted. If metallic minerals and associated mineral products are recovered and sold without undergoing smelter treatment, then no deduction for smelter charges is allowed. In most precious metals operations to recover gold, the gold ore is processed to a salable form called a dore', and that processing does not involve a smelter. In such a case there would be no smelter charge deduction.

Only the base smelter treatment charge and the smelter losses are included in the definition of smelter charges that are allowed to be deducted. Neither transportation costs, refining costs, penalties for impurities, nor any other costs incurred are allowed to be deducted. The deductions allowed make up a significant portion of the total costs involved in the smelting process. Transportation costs will vary from one smelter to another, depending on the type of plant and distance to the plant. Ore mined from state land could be sent to a smelter in another state or even in another country. This cost is borne by the shipper and is not allowed as a deduction.

Penalties for impurities are not allowed because they differ from smelter to smelter. They are subject to negotiation between the smelter and the lessee. An element that is a penalty at one smelter may not be penalized or may even be given a premium at another smelter. Not allowing penalties to be deducted provides further incentive for the lessee to tailor its mill concentrate so as to minimize the content of the penalty element. The lessee can also look to more than one smelter to see which will give the best deal on the penalty elements.

The last step in the mineral processing flow sheet is refining. Refining costs vary depending on whether the smelter performs this service or the metallic product is sent to a custom refiner. In either case, the treatment charge is often based on the end use of the metal. If extremely high purity is desired, the refining costs will be high. In this case, allowing refining costs as a deduction would mean that the state is providing a subsidy to the lessee that desires a high purity, as compared to a lessee that does not desire as high a purity.

The reason any costs at all are allowed to be deducted is because the state recognizes that significant costs are incurred in the production of some metallic minerals. The state has decided to allow the deduction of certain of those costs, but, as has been discussed earlier in this statement of need and reasonableness, the state has decided not to change to a net smelter return system in which all costs associated with the smelting process are allowed to be deducted.

2) Adjustment to value when sold: 6125.0700, paragraphs 9b., c., and d.

In addition to the deduction of the smelter charges incurred, provisions are added to allow for adjustments to the value used for royalty calculation purposes. These adjustments would be made at the time the metallic minerals and associated mineral products are sold. One adjustment allowed would reflect the difference, if any, in the published market prices of the metallic minerals and associated mineral products sold as compared to the published market prices at the time the metallic minerals and associated mineral products were removed from the mining unit. The other adjustment allowed would change the value to reflect only those metallic minerals and associated mineral products actually paid for when the metallic minerals and associated mineral products in a mill concentrate are sold.

Valuation of the metallic minerals and associated mineral products would be a two step process, with the second step to take place if and when the metallic minerals and associated mineral products are sold. The first step in the valuation process remains the same as in the current rules. One hundred percent of all of the metallic minerals and associated mineral products recovered in the mill concentrate during the month are valued, based upon the published market price for those metals and mineral products for the month they are recovered. Liability for the payment of royalty attaches when the metallic minerals and associated mineral products, in any form, are removed from the mining unit. The royalty due is payable quarterly.

To this point the valuation process has not been changed from the existing rules. However, in recognition of the fact that the lessee cannot always sell all of the metallic minerals and associated mineral products that are recovered in the mill concentrate, the proposed amendments allow adjustments when the metallic minerals and associated mineral products are sold, if they are sold.

(a) Time of sale

The adjustments are applied only if the sale does not occur during the same month the metallic minerals and associated mineral products are recovered in the mill concentrate. If the sale occurs during the same month that the metallic minerals and associated mineral products are recovered in the mill concentrate, then only those metallic minerals and associated mineral products that are actually paid for are valued. The first step in the two-step valuation process is eliminated because both the recovery and removal from the mining unit and the sale occur in the same month.

If the sale does not occur during the same month the metallic minerals and associated mineral products are recovered and removed from the mining unit, then valuation is a two-step process. The initial valuation is done when the metallic minerals and associated mineral products recovered in the mill concentrate are removed from the mining unit. Then, when the metallic minerals and associated mineral products are sold, adjustments may be made to the initial valuation.

The reason for this initial valuation and subsequent adjustments is because the lessee is to retain all the risk of not selling the metallic minerals and associated mineral products that have been recovered in the mill concentrate and removed from the mining unit. The lease assesses a royalty when the metallic minerals and associated mineral products are removed from the mining unit regardless of whether or not the metallic minerals and associated mineral products are sold. Later adjustments to value occur only if and when there is a sale of the metallic minerals and associated mineral products. That sale, although most likely to occur within a relatively short time after removal, could occur months or even years after the metallic minerals and associated mineral products have been removed from the mining unit.

The lease provides that title to the ore mined, for royalty purposes, passes when the ore, in whatever form, is removed from the mining unit (6125.0700, paragraph 11). Any ore, mined or unmined, that is not removed from the mining unit remains the property of the state. When ore (or if the mill is located on the mining unit, mill concentrate) is removed from the mining unit, then liability for royalty attaches and the royalty payment is due on or before the next royalty payment due date.

That royalty payment is due even if no sale of the metallic minerals and associated mineral products has taken place. If and when a sale does take place, then any necessary adjustments are made to the value of the metallic minerals and associated mineral products sold and the royalty due on the metals sold is recalculated. If that adjustment and recalculation results in the royalty having been overpaid, then the lessee is entitled to a credit against future royalty payments due. If the adjustment and recalculation

result in the lessee owing additional royalty, then the additional amounts that are due as a result of sales during that calendar year are due and payable on May 20 of the next calendar year.

(b) Point of sale

Proposed new sub-paragraph 9c. defines "affiliate" and specifies when sales to affiliates and non-affiliates are deemed to occur. It also defines when the sale occurs if metallic minerals are retained by the lessee for internal use and consumption. The manner in which the value for royalty purposes is to be calculated in the cases of sales to affiliates and retention by the lessee is also specified. This sub-paragraph is needed to avoid possible sham transactions between related parties.

The proposed adjustments allowed at the time of sale are intended to benefit the lessee in the case of a good-faith, arms-length sale. This sub-paragraph would prohibit the lessee from getting the benefits of the adjustments by selling to a subsidiary corporation or otherwise related affiliate. In those cases, this sub-paragraph specifies that value for royalty purposes shall be the fully-refined metal value at the time of the deemed sale.

(c) Adjustments

(i) Adjustment to reflect metallic minerals not actually paid for.

Some metals recovered in the mill concentrate will not be specifically paid

for by the smelter or other purchaser of the metallic minerals in the mill concentrate. The reason could be that the quantity recovered in the mill concentrate is too small to be subsequently recovered in the smelting process or it could be that the metal recovered is actually a non-desirable element in the smelting process. In either case, the smelter does not pay the lessee for that specific metal even though it is a metallic mineral contained in the mill concentrate.

Under the existing rules, all metallic minerals contained in the mill concentrate are valued for royalty purposes. The rules, as amended, will initially value the metals contained in the mill concentrate; but when the concentrate is sold for its metallic minerals content, only those metallic minerals in that concentrate that are actually paid for will be valued.

For example, assume a mill concentrate is produced that contains copper, gold and arsenic - all metallic minerals. A copper smelter purchasing the concentrate for its metallic minerals content will pay the lessee for the copper and gold that is recovered from the concentrate. However, because arsenic is a non-desirable element in a copper smelting process, the smelter will not pay for the arsenic. In fact, the smelter will probably charge the lessee a penalty for some or all of the arsenic contained in the concentrate.

In this case, the initial valuation when the ore is removed from the mining unit will value all of the copper, gold and arsenic contained in the mill concentrate. The values of each of these will be added to get a total value of the metallic minerals contained in the mill concentrate. When these metallic minerals are sold, the total value of the metallic minerals contained

in the mill concentrate will be adjusted to reflect only the values of the copper and the gold as these were the only metallic minerals actually paid for by the smelter. This adjustment will be done only in the case of a sale.

(ii) Adjustment to reflect market prices at the time of the sale.

Valuation of the metallic minerals and associated mineral products is to be done with reference to the average monthly market prices of the metallic minerals and associated mineral products as published in Metals Week. When metallic minerals and associated mineral products are recovered in the mill concentrate and removed from the mining unit in one month and sold in another month, the metallic minerals and associated mineral products are valued twice - once when recovered and removed and again when sold. Any differences, either up or down, in the published market prices are accounted for and the royalty due is adjusted accordingly. The final determination of royalty due is based upon the published prices at the time of sale.

An adjustment to account for metals that are actually sold can only be made at the time of sale. It follows that if adjustments are to be made at the time of sale, then the market prices at the time of sale should also be used.

(iii) Adjustments may result in overpayment or underpayment of royalty

The net effect of these adjustments to value when sold could be either no change in the royalty due, additional royalty due, or overpayment of prior

royalty payments. If the adjustments result in additional royalty due the state, then that additional amount due will become payable on or before May 20 of the calendar year following the year in which the sale that caused the adjustments took place.

If the adjustments result in a prior payment of royalty becoming an overpayment of royalty, then the lessee is entitled to a credit against future royalties due. Royalty received is credited to various funds depending on the type of lands included in the mining unit, e.g. school trust fund, tax-forfeited, etc. Refunds of amounts paid into certain of these funds may be precluded by statutory or constitutional provision. Also, the monies credited to the tax-forfeited accounts are distributed to local units of government and that distribution could occur before the time of the sale that results in adjustment of the royalty paid. Due to these factors, it was decided that credits rather than refunds would be used to handle for any overpayments.

(iv) Illustration of adjustments

To illustrate the application of these adjustment provisions, assume a copper concentrate is produced from ore mined from the mining unit. That concentrate contains copper, gold and arsenic. Assume for the month the concentrate is recovered and removed from the mining unit that fully-refined copper has a published average monthly market price of 78 cents per pound; that fully-refined gold has a published average monthly market price of $460

per troy ounce; and that arsenic has a published average monthly market price of 44 cents per pound. Also assume that copper smelters are charging a penalty of $4 per twenty pound unit for each unit of arsenic in the concentrate.

Scenario #1.

During the same month that the concentrate is recovered from the mining unit, it is delivered and sold to a copper smelter which pays the lessee for the recoverable copper and gold contained in the concentrate. The smelter does not pay for the arsenic, but rather charges the penalty. The value of the metallic minerals recovered, for royalty purposes, will be the combined values of the copper and the gold based on the published prices for each metal for that month. This is because the metallic minerals were sold in the same month that they were recovered and removed and because the copper and the gold were the only metallic minerals actually paid for. The penalty charged for the arsenic is not taken into account.

Scenario #2

The copper concentrate is recovered and removed from the mining unit in February. However, the concentrate is not delivered and sold to the copper smelter until August of that same year. In August, fully-refined copper has a published average monthly market price of 80 cents per pound; gold $459 per troy ounce; and arsenic 44 cents per pound. The arsenic penalty is still $4 per unit.

Because the sale did not occur during the same month the metallic minerals were recovered and removed, there is a two-step calculation of value for royalty purposes. Under the rules, royalty on metallic minerals recovered and removed in February is due and payable on or before May 20 of that year. As there has been no sale by that due date, the value for purposes of the payment due on that date will be based on the February market prices for the copper, the gold, and the arsenic contained in the mill concentrate.

When the metallic minerals are sold in August, the lessee is entitled to adjustments to the value for royalty purposes. Those adjustments will be to recalculate the value including only the copper and the gold as those were the only metallic minerals actually paid for, and valuing the copper and the gold at the August (month of sale) published market prices. This means that the recalculation will not include the value of the arsenic as was done on May 20, and will value the copper and the gold at the August prices.

If the result of these adjustments is that the lessee owes additional royalty, that additionally royalty will be due and payable on May 20 of the following calendar year. If the result is that the royalty paid on May 20 of the current year was more than is now finally determined to be the amount due, the amount of the overpayment will be a credit against future royalties due.

Scenario #3.

The copper concentrate is recovered and removed from the mining unit in February. The lessee does not sell the metallic minerals, but rather stockpiles the concentrate. Under the rules, royalty on metallic minerals

recovered and removed in February is due and payable on or before May 20 of that year. As there has been no sale by that due date, the value for purposes of the payment due on that date will be based on the February market prices for the copper, the gold, and the arsenic contained in the mill concentrate.

If the metallic minerals are never sold by the lessee to a non-affiliate in an arms-length transaction, the lessee will not be entitled to any adjustments to that royalty paid on May 20.

3) Value if sold on basis other than fully-refined metal value: 6125.0700, proposed new sub-paragraph 9d.

Sub-paragraph 9d. is added because certain legitimate metallic mineral mining operations might not be economically feasible under the current system of valuing the ore removed. Some metallic mineral ores have uses that do not require the metallic mineral to be in a fully-refined form. The metallic mineral ore will have a market price less, and in some cases substantially less, than the market price of the fully-refined metallic mineral.

Under the current rules the metallic mineral ore can be valued for royalty purposes in only one manner, and that is on the basis of the metallic mineral content of the mill concentrate multiplied by the fully-refined metallic mineral price. If the purpose of the mining operation is to recover the metallic mineral and process it to a fully-refined level of purity, then the royalty valuation system is a fair system. However, if the purpose is to recover a metallic mineral ore and to use it in a form other than for its fully-refined metallic minerals state, the current royalty valuation system

could effectively prohibit the opening of the mine. The royalty due could exceed the value of the product to be recovered and sold.

To address this situation, the value calculation sections of the rules are proposed to be amended by adding sub-paragraph 9d. If the purpose is to recover and sell a material on a basis other than as a fully-refined metallic mineral, then the value of the material, for royalty calculation purposes, will be subject to agreement between the commissioner and the lessee. Satisfactory proof of that purpose must be submitted. The purpose would be analyzed to be certain that it was not a sham transaction designed to avoid payment to the state of the higher royalties that would be due if the purpose was to recover a fully-refined metallic mineral.

The recovery and sale of titanium dioxide is one example of the application of this alternative method of valuation. Ore containing titanium can be sold at two separate stages of processing. The ore can be sold in its mill concentrate form as a titanium dioxide concentrate, for uses such as paint pigment. The ore can also be further processed, smelted and refined until fully-refined titanium is produced for sale and other use. The titanium dioxide concentrate has a published market price separate and distinct from the published market price for fully-refined titanium. The last available published market price (avg. annual 1985 price) for titanium dioxide concentrate was $75 per ton of concentrate. Fully-refined titanium currently has a published market price ranging from $8 to $10 a pound, depending on the metallurgical format in which it is sold.

A modest recovery of 100 pounds of fully-refined titanium from each ton of crude ore would mean a contained value of $900 (using a price of $9 per pound). Under the current rules the royalty due on that value would be approximately $325 (first 10 years of the lease, and that part of the special royalty, which is $289, that exceeds $180 would be subject to negotiation.) Under the rules as proposed to be amended, the royalty due would be capped at 20 percent of value or $180 less a substantial smelter charge deduction. Bid rate royalties would increase the total royalty due.

Under either system the royalty due greatly exceeds the market price that could be obtained for the titanium dioxide concentrate, i.e. $75 per ton. The commissioner, upon satisfactory proof that the ore is to be recovered and sold for purposes other than recovering and selling fully-refined titanium, can agree to a value, for royalty purposes, other than the fully-refined titanium content value.

A concern regarding the allowance of this alternative method of valuation is whether the state is getting a fair and reasonable return for its resources. In the titanium example, the state would get more royalty dollars if the value of the titanium content of the mill concentrate as fully-refined titanium is used as the royalty value, than if the value of the titanium dioxide mill concentrate is used as the royalty value.

This is an issue the commissioner will have to consider in the decision of whether to agree to the alternative valuation. Factors to be considered would include the local, national and world markets for titanium and for titanium dioxide concentrate, and the characteristics of the ore body to be mined.

Generally it would be to the lessee's advantage if fully-refined titanium metal could be produced. However, many titanium ores are not amenable to fully-refined titanium metal production.

4) Market price source and quotations: 6125.0700, paragraph 9f.

Currently, the metal prices used to calculate the value of the metallic minerals and associated mineral products are the monthly averages of the daily prices taken from the Engineering and Mining Journal ("Metals and Minerals Markets" section), a monthly magazine published by McGraw-Hill, Inc. Copper and nickel are the only metals for which specific quotations are identified. For copper, the "Atlantic Seaboard" price is used; and for nickel, the price is specified as "Port Colborne".

It is proposed that metal prices used to calculate the value of the metallic minerals and associated mineral products shall be the monthly arithmetic averages of the daily prices for each metal as quoted in Metals Week, a weekly newsletter published by the same company mentioned above. Public Holidays when metal prices are not quoted on the metals exchange are not counted as days of the month in which prices are to be averaged.

Metals Week is a weekly newsletter published every Monday reporting the latest and most significant news of the metals industry around the world. The coverage is global with the focus on North America.

Since 1930 it has served as an independent price authority for the international nonferrous metals industry. Its price quotations are widely

used by industry and government for contractually pricing metals and ores, levying taxes and tariffs, determining freight rates, and evaluating mining projects.

This newsletter is also the original source of price quotations for the Engineering & Mining Journal. The timeliness of its availability, the wide reference to it by trade and government agencies (e.g., Bureau of Mines, U.S. Department of Interior), as well as by the mining industries, justifies the state's use of Metals Week in place of the Engineering & Mining Journal as the source of metal prices for royalty calculations.

For each major metal, the monthly market price shall be that quoted for the following specifications:

METAL	SPECIFICATIONS	PRICE/WEIGHT UNIT
Copper	US Producer Cathodes ("US PROD CATH")	cents/pound
Nickel	New York Dealer Cathodes ("NY DEALER/CATH")	cents/pound
Gold	London Final	dollars/troy ounce
Silver	Handy & Harman	cents/troy ounce
Zinc	METALS WEEK US High Grade ("MS US HG")	cents/pound
Lead	North American Producer Low ("NA PRODUCER L")	cents/pound

COPPER: The market price used in the current rules is the "Atlantic Seaboard" price, which is computed by deducting shipping costs from the c.i.f. Europe price. Since our main concerns are with the US producer market, the appropriate price to use is "US Producer Cathodes", which indicates the official list price of full-plate cathodes, grade 99.9% copper, sold and delivered directly to consumers by producers.

NICKEL: The "Port Colborne" price used in the state's current rules has been suspended since August 1977. In its place, the "New York Dealer Cathodes" price is now proposed. The latter is the result of a survey by Metals Week of producers and consumers of nickel. It is based on 4x4 cathodes of 99.9% nickel, f.o.b. North American shipping point. It is an estimated "spot" (i.e., for immediate delivery) price widely accepted as the standard market value of nickel traded in the North American continent. It is also recommended by the Bureau of Mines.

GOLD: "London Final" refers to a consensus price set by major London bullion dealers at the end of the second session ("second fix") in the afternoon of a trading day at the London Metals Exchange, for 99.5%-pure "fine gold". As a spot, and not a "futures" (i.e., for delivery at some point in the future) price, it does not contain built-in speculative elements, and therefore reflects the true demand/supply situation of the gold market at any given moment of time. It is the most commonly used quotation around the world, and is recommended by both Gold Institute, a trade organization, and the Bureau of Mines.

SILVER: "Handy & Harman" specifies the consumer buying price. Handy & Harman is a silver dealer and trader that handles both bar silver and fabricated silver goods. The "Handy & Harman" price is the lowest price at which offers can be obtained by Handy & Harman for silver in commercial bar form for delivery at New York in quantities sufficient to meet its daily requirements. That commercial bar silver is refined silver, grade 99.90%, in accordance with the American Society for Testing and Materials "B413-69 Specification." This price quotation is selected because it represents the

only spot price on the U.S. market for bar silver as opposed to fabricated silver goods.

ZINC: The "MW US High Grade" specification represents the price of high-grade zinc sold on a delivered basis. It is a daily weighted average that reflects fixed shipment sales, as well as a compilation of sales of other grades by domestic producers to consumers. This, and not the primary producers' list price, reflects the price in actual transactions.

LEAD: "North American Producer Low" specifies the lowest list price, on a delivered basis, for common-grade lead sold by North American primary producers. It was selected, because it reflects the least-cost, hence most-efficient, lead producers in North America (U.S., Canada, Mexico, and Honduras).

For other metallic minerals and associated mineral products, the monthly average market prices shall be those quoted for their customary shipping quantities, f.o.b. the usual and customary place of shipment, U.S. import duty included, as reported in Metals Week.

If Metals Week does not, or ceases to, report an average monthly market price for any metallic mineral or associated mineral product, then the average monthly market price of that metallic mineral or associated product shall be the arithmetic average of the daily market prices for the same as reported by Metals Week for that month.

If Metals Week or its successor ceases to furnish such quotations, or its quotations cease to be recognized in the trade, or a particular metallic mineral or associated mineral product is not listed, then the quotations of such other source as the parties may agree upon shall govern.

3. Impact of changes in royalty rate and computation of value.

Under the proposed royalty formula the rate structure has been simplified, the royalty rates reduced, the base rates indexed, and deductions allowed for smelter losses and smelter treatment charges. The cumulative effect of these changes should be to encourage additional mineral exploration, which in turn may lead to discoveries of viable mineral deposits in Minnesota. Any mineral discovery that becomes an operating mine could lead to increased metallic mineral exploration and mining activity in the state, which would be of economic benefit to the state.

The most noticeable impact of the proposed changes is to reduce the amount of royalties the state will receive on a ton of ore mined. That reduction can be the result of the changes in the royalty rate structure, the result of the changes in the value computation system, or the result of a combination of these changes.

The changes in the royalty rate structure (i.e., simplification, reduction in rates, etc.) alone result in less royalty due the state per ton of ore. For example, if the value of the metallic minerals and associated mineral products recovered in the mill concentrate is $100, the royalty payable (bid rate not included) under the current rules will range from $4.66 to $8.32,

depending on whether the mine is open pit or underground and also depending on the year during the term of the lease in which the ore is mined. Under the rules as proposed to be amended, the royalty due will be $3.88. See Table C-1 for numbers illustrating the impact of these changes.

Further reductions in the royalty due will result if smelter charges are incurred in the recovery of the metallic minerals. The allowance of the smelter charge deduction is a change in the value computation system that impacts the royalty due. If smelter charges are deducted from the value of the metallic minerals, then royalty is calculated using a smaller value of minerals and a lesser amount of royalty will be due. Table C-1 shows the affect of this deduction in the case of smelter charges in the amount of $37 deducted from $100 ore.

An impact this reduction in royalty payable should have is to make Minnesota more attractive to the mineral exploration and development industry. It creates a fairer system that more closely recognizes the costs of the miner while stil encouraging the miner to seek the maximum return from the ore.

The reduction of royalties will affect the economics of a mineral deposit. Reducing the royalty payable will encourage the opening of a marginal mine and discourage the high-grading of a mine once it is opened.

Royalties are a part of the cost of production. When the costs associated with a mineral deposit near, equal, or exceed the revenues to be derived, the deposit ceases to be economically viable. Reducing the costs will lower the point at which the mine becomes no longer economically viable - the "cut-off

TABLE C-1: COMPARISON OF ROYALTY PAYABLE UNDER CURRENT AND PROPOSED RULES

ASSUME: 1) $100 = value of metallic minerals contained in mill concentrate

2) 37% = percentage of value deducted for smelter charges

If ore mined in:	Then royalty due state on each ton of crude ore is:							
	Existing Rules				Proposed Rules			
	Underground Mining		Open Pit Mining		No Smelter Charges		Smelter Charges Deducted v = $63	
	No Bid	1.5% Bid	No Bid	1.5% Bid	No Bid	1.5% Bid	No Bid	1.5% Bid
1st 10 years of lease	4.66*	6.16*	4.66*	6.16*	3.88*	5.38*	$2.21 (3.5% of $63)	$3.15 (5% of $63)
2nd 10 years	5.12	6.62	6.49	7.99	3.88	5.38	2.21	3.15
3rd 10 years	5.58	7.08	7.09	8.59	3.88	5.38	2.21	3.15
4th 10 years	6.03	7.53	7.72	9.22	3.88	5.38	2.21	3.15
5th 10 years	6.49	7.99	8.32	9.82	3.88	5.38	2.21	3.15

*As value equals $100, this number is both the dollars and the percentage of value

*If material is recovered and sold on a basis other than for the purpose of recovering and selling the fully-refined metallic minerals, and the commissioner agrees to a value of $100, then these numbers would apply to that material also.

grade." Lowering the cut-off grade will make marginal orebodies more attractive to development.

Lowering the cut-off grade also will lessen the incentive to leave otherwise merchantable ore in the ground, i.e., "high-grading." In an operating mine as operations proceed from higher grade ore to lower grade ore a cut-off grade is eventually reached. That cut-off grade is the point at which the marginal costs of producing the ore equal the marginal revenues to be derived from the ore. Reducing the royalty reduces the costs of production and thus may lower that cut-off grade.

Lowering the cut-off grade has the potential to mean increased royalty revenues to the state. A marginal orebody that might not otherwise be developed, may be developed and royalties paid on the ore mined. Also, in the case of an operating mine, the lower royalty payable per ton of ore may be offset by the increase in the overall royalties payable caused by the increase in the amount of tonnage now economically mineable as a result of the lower cut-off grade.

A royalty system that treats lessees in a fair and equitable manner and that at the same time provides a fair return on resources to the state, will encourage lessees to actively explore the state to find developable metallic mineral deposits.

D. Performance incentives and Requirements

1. Performance incentive: 6125.0700, proposed new paragraph 8d.

a. Proposed deferral of royalty payments

A proposed amendment to the royalty provisions of the lease, part 6125.0700, paragraph 8, would add a sub-paragraph d. This sub-paragraph would allow the lessee, after making application to and obtaining the approval of the commissioner, to defer payment of up to one-half of royalties due under the lease for a specified period. The existing lease has no provision for the deferral of any royalty payment under any circumstances. This proposed subparagraph 8d. establishes an option for royalty deferral and outlines the criteria, procedure, circumstances, and limits under which a lessee may request and receive a deferral of royalty payment.

Such a deferral would be at the discretion of the commissioner; would be for no more than one-half of the royalties due after taking into account any allowed credits against royalties for rental paid; and would be for either 1) no more than five consecutive years commencing with the first year that any royalties are due and payable under this lease, or 2) no more than the first one-half of the expected operational life of the first mine established under this lease, whichever period is less. Such deferred royalty would bear interest at the rate of eight percent per annum until finally paid after the end of the period of deferral.

The commissioner, in reviewing the application for deferral, would look at factors such as the expected operating life of the mine, the proposed uses of the deferred monies, the cash flow analysis of the mine, the investments made and to be made by the lessee for exploration and mining operations, and the technical and financial capabilities of the lessee.

To illustrate the application of this deferral provision, assume a lease under these amended rules, is issued in 1988 and covers a mining unit of 400 acres. In 1999, the eleventh full calendar year of the lease, rental is due at the rate of $25 per acre. A mine is developed on the mining unit and the first removal and shipment of ore from the mining unit occurs during the first calendar quarter of 1999. Assume that the royalty due on the ore removed during the first calendar quarter of 1999 is $50,000. On May 20, 1999 two payments are due the state from the lessee: rental for the first calendar quarter of 1999 in the amount of $2500; and royalty on the ore removed during the first calendar quarter of 1999 in the amount of $50,000. Under paragraph 6 of the lease, the rental due credits against royalty due resulting in a net payment due the state of $50,000 ($2,500 in rental and $47,500 in royalty payments). The lessee applies to the commissioner and the commissioner grants to the lessee the maximum deferral allowed for the maximum time period allowed. The maximum deferral allowed is one-half of $47,500 or $23,750. The maximum time period of deferral allowed is 5 years. One-half, or $23,750, of the net royalty is thus due and payable on May 20, 1999, and the remaining one-half, plus interest at the rate of eight percent per annum, is due and payable on May 20, 2004.

b. Analysis and reasonableness of the proposed amendment

The deferral provision is proposed as an incentive to the lessee to actively explore for, locate and develop an ore body. This provision takes into account the unique nature of the exploration and mining business, in that large capital investments are needed in the development and initial production stages of operation.

Its purpose is to free-up capital when it is needed most. Large outlays of capital are required to start a mining operation. The pre-production and initial production stages of an operation involve the spending of large amounts of monies for plant, equipment, supplies, labor, administrative costs, and other development and operating expenses. Royalties are a part of the cost of an operation. Deferring part of the cost of royalties will improve the lessee's cash flow and make it easier for the lessee to meet some of the other start-up costs.

During the first few years of pre-production and production, when these large costs are incurred, the cash flow may just be getting started and monies to meet these costs will be less readily available. Many of these costs, while continuing in nature, become relatively less burdensome the longer the mine is in production. This is because of the increased efficiencies of production after start-up and production of increasingly greater quantities of material from the mine. Allowing the lessee the opportunity to defer payment of some of the initial costs of an operation could be an important factor in the lessee's economic feasibility analysis.

It is important to remember that this is an incentive offered to the lessee and that the incentive is a deferral of part of the royalties due, not a cancellation of part of the royalties due. It could be argued that a better incentive for the lessee to develop an ore body would be an outright cancellation of part of the royalties due during the first few years of production. However, the state as lessor has several responsibilities. One of these is to promote the prospecting for, mining and removing of metallic mineral resources so that royalties from mineral production are produced. Another responsibility is to ensure that the state receives a fair return for its mineral resources so mined and removed. Cancellation of part of the royalty due might serve to promote the development of the state's metallic mineral resources, but it would not serve the competing responsibility of ensuring a fair return to the trust funds and other funds.

On the other hand, the deferral provision, as proposed, can serve both responsibilities. By deferring the payment of part of the royalties due and easing to a degree the capital outlay burden of the lessee during the initial stages of an operation, the state is providing the lessee with an incentive to commence operation and thereby promoting the development of the state's metallic mineral resources. Further, by deferring, and not canceling, payment of part of the royalties due, the state still receives the full amount of the return on its mineral resources as required for under the lease. Part of that return may not be realized for as long as five years, but it will eventually be realized and it will bear interest at the highest rate allowed by statute.

Restrictions and safeguards are built into the deferral provision. The first of these is that deferral is discretionary with the commissioner. It is

not automatically granted at the request of the lessee. The lessee must provide sufficient information and data, both economic and geologic, to justify a deferral. The uses to which the deferred monies are to be put must be revealed. As the commissioner would be agreeing to the forebearance, for a period of time, of the receipt of monies the state has a present entitlement to, this discretionary and strict control over the grant and use of the deferral is reasonable.

Any deferral granted would be for part of only those royalties due and owing after all credits against royalties, as provided for in the rental provisions of the lease are taken. Rental paid in the current calendar year credits against royalty due on ore removed during that same year. Rental paid in prior years that exceeded eight dollars per acre may credit on royalty due on ore removed during the current calendar year. While credits of rental against royalty may be enough to equal 100 percent of the royalty and thus eliminate the payment of any royalty, the deferral is structured so that it cannot be combined with the credits, if the credits are not sufficient in and of themselves, to eliminate the payment of royalty. The illustration in D.1.a., above, shows the effect of this restriction by showing that the deferral applies to the net royalty due of $47,500 and not to the gross royalty of $50,000.

The maximum amount deferrable is one-half of the net royalty due and payable. The commissioner may grant a deferral of any percentage of the royalty due up to that 50 percent maximum. As landowner the state wants to receive at least one-half of the return it is entitled to at the time it is entitled to it.

The period of deferral can be no more than five years. If the mine has an expected operational life of less than ten years, then the maximum period of deferral is one-half of that expected operational life. After considering all information and data submitted with the application, the commissioner may limit the deferral to less than the maximum time period allowable.

The time period of any deferral granted must commence with the first year that any royalties are due and payable. The period of deferral will then run uninterrupted to its conclusion. For example, a five year period of deferral would apply to any royalties due and payable during the first five consecutive years that commence with the first year any royalties are due and payable. If there are no royalties due and payable during the third year of that five consecutive year period, the period of deferral does not extend for an additional year. The deferral period is not interrupted by periods of time when no royalties are due and payable. Referring again to the illustration in D.1.a., above, the period of deferral granted was five years. It commenced on May 20, 1999 as that was the first day and year on which any royalties were due and payable, and terminated on May 20, 2004, five consecutive years later. Under no circumstances would that period of deferral, in the example presented, be extended beyond May 20, 2004. Any royalties due and payable on or after May 20, 2004 would be payable in full on the day they initially became due.

Each royalty payment that becomes due and owing during the deferral period is entitled to deferral for the entire length of the time period granted. In the illustration above, the first royalty payment is due and payable on May 20, 1999. Under the terms of the deferral granted, payment of one-half of the

sum due, plus interest at the rate of eight percent per year, is to be made on May 20, 2004, five years later. Royalty is payable quarterly. Thus, royalty payments for ore removed during the remainder of 1999 would be due on August 20, 1999, November 20, 1999 and February 20, 2000. One-half of the sum due and payable on those dates would be deferred for five years and would become finally due and payable, with interest, on August 20, 2004, November 20, 2004, and February 20, 2005, respectively. Therefore, with a five year period of deferral, the last royalty payment to which the deferral can be applied is that payment due on the last royalty payment due date during that five year period. In this illustration the period of deferral commences on May 20, 1999 and runs for five consecutive years. The last royalty payment due date during that period is February 20, 2004. Any royalty due and payable on that date is the last royalty to which the deferral can be applied. Any of the royalty due on February 20, 2004 that is deferred would be finally due and payable, with interest, five years later on February 20, 2009.

The amounts deferred that become finally due and payable on a later royalty payment due date, will be payable in addition to any other royalty regularly due and payable on that later due date. In the illustration above, one-half the royalty due and payable on May 20, 1999 is deferred and becomes finally due and payable on May 20, 2004. If any ore is removed from the mining unit during the first calendar quarter of 2004, royalty is due on that ore on May 20, 2004. As May 20, 2004 is outside the five year deferral period, royalty payable on that date is not eligible for deferral and thus is payable in full on May 20, 2004. Therefore, there is a two-part royalty payment due on May 20, 2004 - the amount deferred from May 20, 1999, plus interest, plus the amount due for ore removed during the first calendar quarter of 2004. On any

royalty payment due date that falls in the period of time during which the deferred payments become finally due and payable, there will be a two-part royalty payment due. One part is the deferred payment finally due and payable and the other part is any royalty regularly due on that date for production during the previous calendar quarter. This two-part payment schedule will continue until all the deferred royalties have been paid.

2. Performance requirement: 6125.0700, proposed new paragraph 29 (old paragraph 29 renumbered 30.)

a. Existing performance requirement: 6125.0700, paragraph 6

The current rules and lease contain a performance requirement that the lessee must be actively engaged in mining ores containing copper, nickel and associated minerals from a copper-nickel mine on the mining unit, or from a mine within a specified area, and must have produced, within one calendar year, not less than 100,000 tons of such ore by the end of the twentieth full calendar year of the lease. If this performance requirement is not met, the state has the option to cancel the lease during the twenty-first calendar year,. The copper-nickel mine that produces the required 100,000 tons of ore must be located on the mining unit leased, or within the government township in which the mining unit is situated, or within a government township that has at least one point in common along its boundary line with the government township in which the mining unit is situated. Thus, the area within which the mine that produces the required 100,000 tons of ore must be located includes up to nine contiguous government townships.

b. Proposed amendment: 6125.0700, new paragraph 29

It is proposed that the portions of paragraph 6 dealing with performance be deleted and that the performance requirement be set forth in a separate paragraph. Paragraph 6 is the rental provision paragraph and these rules, as proposed to be amended, will no longer provide for reduced rental based upon production. See the discussion at part B of this Statement of Need and Reasonableness.

The proposed performance requirement is that the lessee must be actively engaged in mining ore under the lease from the mining unit leased, or from a metallic mineral mine located within a specified area (same area as in the current rule), and must have produced enough ore to have paid to the state, within one calendar year, not less than $100,000 in earned royalty under a metallic minerals lease by the end of the twentieth full calendar year of the lease. If this performance requirement is not met, the state has the option to cancel the lease during the twenty-first calendar year, . Additionally, if the state, during the twenty-first calendar year, has the option to cancel the lease and does not exercise it, then the lessee must have produced enough ore to have paid to the state, within one calendar year, not less than $100,000 in earned royalty under a metallic minerals lease by the end of the thirty-fifth full calendar year of the lease, or the state has the option to cancel the lease during the thirty-sixth calendar year,.

The proposed paragraph 29 also includes a sentence stating that the commissioner shall consider the lessee's financing needs and the state's

proportional ownership interest when determining whether or not the performance requirement has been met.

c. Analysis and reasonableness of the proposed amendment.

The reason for the inclusion of a performance requirement is that the state has an interest in securing development of the mining unit in a timely manner. A performance requirement ensures that activity takes place and provides a method to quantify that activity. The state does not want the mining unit tied up for the 50 year lease term without significant exploration and development activities occurring. If exploration does not take place, or if exploration does not reveal a deposit the lessee desires to develop, and the lessee does not voluntarily terminate the lease, then the state has the option to terminate after 20 or 35 years. Twenty years, or 35 years if the state does not exercise its right to cancel in the twenty-first year, is a reasonable amount of time to explore the mining unit and commence production in the quantities necessary to satisfy the performance requirement.

The current rules and lease were developed in 1966 when copper and nickel were the primary minerals of interest. Copper and nickel mining operations of the type contemplated for Minnesota would have been low grade, large tonnage operations. In such an operation, measuring production in terms of tonnage mined is reasonable, and thus the performance requirement in the current lease was based on tonnage.

While copper and nickel operations are still very possible, other metallic minerals, including the precious metals, are the current focus of interest in

Minnesota. Some of these other metallic minerals would be produced in high grade, low tonnage operations. It is possible that such an operation would not produce 100,000 tons of ore within a calendar year. Changing the performance requirement measurement unit from tons to dollars of royalty serves to broaden the scope of the lease in terms of the types of potential mining operations that can meet the performance requirements. Using a set amount of royalty to be paid is a way to quantify production in a manner that would be equitable for all types of metallic minerals and associated mineral products that could be mined under this lease.

The area in which the mine producing the ore that provides the qualifying royalty payments can be located remains the same as in the current rules. The royalty payments must be made to the state by the lessee under a metallic minerals lease. That lease may be the lease under consideration or it may be another state metallic minerals lease covering a mining unit in the same or in another government township that meets the common boundary line point requirement. It must be a metallic minerals lease royalty payment. For example, if the lessee also holds a state taconite lease in a government township that meets the common boundary line point requirement, royalty paid to the state under that taconite lease cannot be used to meet the $100,000 requirement under the metallic minerals lease.

The reason for allowing the required royalty payment to be made under another metallic minerals lease held by the same lessee covering a mining unit located in an adjacent area is because it is the same lessee and it is from a nearby area. If the lessee discovers and develops a royalty paying deposit on a nearby state metallic minerals lease, that lessee is the party most likely

to do extensive exploration and development work on this mining unit. The purpose of the performance requirement is to ensure that exploration and development activity takes place on the mining unit. If the lessee has developed a producing mine in the area, it is likely that part of the lessee's total mine area operations plan is to explore and develop other nearby mining units that the lessee has under lease.

Some of the parties who commented, expressed concern about the issue of force majeure as it relates to the performance requirement. They said that, for financing purposes, lessees will need assurance that they can reasonably retain the lease for more than 20 years. Their concern is that events or circumstances beyond their control and that could not be avoided by the exercise of due care, could make it impossible to meet the performance requirement. It was suggested that a force majeure clause be added stating that failure to meet the performance requirement because of such events or circumstances would not be grounds for the state to cancel the lease. Such an event or circumstance would include acts of God, war, inevitable accident, etc.

It is the department's position that a force majeure clause is not necessary. First, cancellation for failure to meet the performance requirement is optional with the commissioner. It is not automatic. The commissioner can and will consider all facts and circumstances relevant to the situation. Second, such an optional cancellation could occur only during two separate years in the 50 years of the lease term - the twenty-first full calendar year and the thirty-sixth full calendar year. Third, payment of $100,000 in royalty in one calendar year only has to be made in one of the

first twenty calendar years of the lease in order to meet the performance requirement. Finally, if the commissioner opts to not cancel the lease after the first twenty years, then the lessee has an additional fifteen years in which to have at least one year during which not less than $100,000 in royalty is paid. The performance requirement is not a requirement that $100,000 in royalty be paid each and every year.

Also, the state's proportional ownership interest will be considered in determining if the performance requirement has been met. This means that if the state owns only part of the total acreage of the mine producing the royalty paying ore, or if the state owns only an undivided fractional interest in the whole mine, then these facts will be part of the information considered by the commissioner. A proportional ownership interest in the total production of the mine may lead to the payment to the state of less than $100,000 in royalty within a calendar year, but could still represent a significant part of the lessee's total royalty obligation from the mine. In such circumstances, to cancel the lease for failure to pay a full $100,000 to the state within a calendar year could jeopardize the existence of the mine and be inequitable to all concerned.

Another factor that the commissioner would consider would be the lessee's area mining operations development plan. If the lessee is developing a metallic minerals mine on nearby non-state property and the metallic minerals orebody on that non-state property is part of the metallic minerals orebody on the state property leased, and the lessee has a mine plan that calls for the mining operations to be extended to the state property under lease, but not in time for production sufficient to meet the royalty payment requirements of

this lease, then the commissioner will take that mine plan into consideration in the determination of whether or not to cancel this lease.

The inclusion of a performance requirement and the determination of whether or not it has been met are part of a balancing process - the balancing of the state's interest in timely development of the mining unit and the lessee's concerns regarding retention of the lease.

III. SMALL BUSINESS CONSIDERATIONS IN THE RULEMAKING PROCESS

Minnesota Statutes, section 14.115, requires that the Department consider and incorporate rule language that reduces the impact of the rules on small businesses to the extent that doing so would not be contrary to statutory objectives that are the basis of the proposed rules. The Department is required to consider specified methods by which the impact on small businesses could be reduced.

The state lease requires the lessee to have the financial and technical capability to perform mineral exploration work. The lessee must have technical knowledge about the type of geology that exists in Minnesota and knowledge of the methods that can be used to explore for metallic minerals. The lessee must also have the financial ability to pay for these geophysical and geochemical surveys, drilling work, and other exploration activities.

There are currently 26 parties holding state metallic mineral leases. Many of these lessees are large, international corporations with extensive experience in the mineral field. Some of the lessees are small or medium-sized companies that have expertise in the mineral field. Two of the lessees are individuals, (one individual has recently died so the leases are held by his heirs), who have shown financial and technical capability to perform under the state lease.

Minnesota Statutes, section 14.115, subd. 2, requires the department to consider five methods for reducing the impact of the rules on small businesses. These methods are:

(1) The establishment of less stringent compliance or reporting requirements,

(2) The establishment of less stringent schedules or deadlines for compliance or reporting requirements,

(3) The consolidation or simplification of compliance or reporting requirements,

(4) The establishment of performance standards for small businesses to replace design or operational standards required in the rules, and

(5) An exemption of small businesses from any or all requirements of the rules

The following describes how the proposed amendments to the rules have been written to reduce their impact on small businesses. As some of the methods are similar, they have been grouped together for the review of their impact.

Methods 1, 2 and 3: Simplification of Compliance Schedules and Requirements

As described under the review of general provisions, amendments to the reporting requirements are proposed. These amendments clarify the data that must be submitted by all lessees. The proposed amendments establish a less stringent deadline for the submission of data by requiring an annual submission of data rather than a specified date. Thus, a small business will not be required to submit reports on a specified date but merely on a regular, annual basis.

The June 1987 draft of the rules on which the second group of comments was submitted contained new standards for submission of data. This draft proposed

that all chemical analysis and assay data be sent directly from the laboratory to the department. It also established a March 31st deadline for annual submission of all reports and information not previously submitted during the year.

These proposed changes were modified in a subsequent draft to delete the requirement of sending chemical analysis and assay data directly from the laboratory. This will allow the lessees more time to separate data derived from privately-leased lands from data derived from state-leased lands. The proposed changes were also modified in the subsequent draft to change the March 31st annual deadline to a general annual deadline. The modifications recognized that the earlier proposed changes could have adverse impacts on small businesses.

Method 4: Establishment of Separate Performance Standards

The current rules provide that the commissioner may cancel the lease in its 21st year if the lessee has not mined 100,000 tons of ore in a year by the end of the twentieth year from the leased lands or a mine in the adjacent townships. This provision is being deleted with a new performance requirement enacted in paragraph 29 of the lease.

As described in the section under performance incentives and requirements, paragraph 29 authorizes the commissioner to cancel the lease in its 21st year if the lessee has not paid the state within one calendar year $100,000 in royalty from a mine on the state leased lands or from state lands in adjacent

townships. This requirement would not be difficult for a small business to meet.

For a small gold mine, it would only require mining of 11 ounces of gold per day at today's value of gold. A small gold operation would normally produce about 70 ounces per day.

Paragraph 29 also directs the commissioner to take the state's proportional ownership interest into consideration in determining whether the lessee has met this performance requirement. These requirements are less stringent then current standards, yet address the interests of the state in development of a mine by the twentieth year or, in the alternative, authorize cancellation of the lease so that another party could develop a mine.

Method 5: Exemption from rules

The proposed amendments do not exempt any small businesses from the requirements of the rules. However, there are amendments that have a beneficial impact on small businesses. Some of those provisions were discussed in the preceeding section; others are discussed below.

The department believes exemption of small businesses from requirements of the rules would be contrary to the basics of the statutory objectives of the rules. A lessee must be able to conduct the technical work required under the lease and have the financial means to perform such work. If drilling occurs, the state's exploratory borings law requires performance standards for filling the drill hole, protection of groundwater, and financial capability to perform

such work. Before a mine can be opened, a lessee would need to obtain a permit to mine from the department, prepare an environmental impact statement, and obtain numerous regulatory permits from several state agencies. Even though small businesses are involved in mining, they will have or hire the expertise needed to perform the requirements of the state lease and other laws.

Amendments that reduce impact on small businesses

There are several amendments that reduce the impact of the lease rules on small businesses. First, the rental rates during the first two full years of the lease and the year of issuance remain at $1.00 per acre. These low rates minimize the burden on a small business to obtain a lease and allow them to spend more money for exploration work.

In our June of 1987 draft of proposed amendments, the initial rate of $3.00 per acre per year was proposed. Several parties commented that this initial increase would hamper exploration by small companies. It is a fact that many mineral deposits are found by individuals or small companies, who then enter into joint ventures with larger companies for development work. Our revised low rental rates during the first five years of the lease greatly assist small businesses in competing in the mineral industry.

Other amendments that greatly aid small businesses as well as all other parties are the royalty rate amendments. Reduction in royalty rates, as explained earlier, reduces the cost of opening and operating a mine. The state must collect a reasonable return to the trust funds and other funds, but

a reduction in the royalty rates recognizes the risk undertaken for mining operations and shares in that risk.

An amendment that is of a significant benefit to small businesses is the deferral of royalty provision contained in paragraph 8d of 6125.0700. It is expensive to start up a mine, and deferral of half of the royalty payments for up to five years allows the money to be used for capital costs. This paragraph will assist a small business since this deferral is similar to a low interest loan at the time the lessee is commencing mining operations. For a small business, assistance with the cash-flow of an initial operation is of great importance.

Effect of the rules on agricultural lands

Minnesota Statutes, Section 14.11, subdivision 2 requires that the department shall consider the effect of the rules on agricultural lands. However, Minnesota Statutes, section 17.81, subdivision 2 specifically excepts leasing of state-owned land for mineral exploration or mining from this review. Based on current geological knowledge, most exploration and mining of state-owned minerals would occur on non-agricultural land. Based on current geological knowledge, it is also likely that most mining will be underground with limited impact on the surface.

Participation in rulemaking

Minnesota Statutes, section 14.115, subdivision 4, directs the department to provide an opportunity for small businesses to participate in the rule making process. During the drafting of these amendments, the department has distributed drafts to all state lessees, some of whom are small businesses. In addition, the two notices of intent to solicit outside opinion have been sent to over 250 individuals, consultants, small businesses and corporations involved in the mining industry.

Several individuals and small businesses submitted comments on the proposed amendments. Some of their comments were incorporated in subsequent drafts of the amendments. Other comments could not be incorporated as they were not in the best interests of the state and would not fulfill trust fund and land management responsibilities.

In addition to the individual mailings, the two notices of intent to solicit outside opinion were published in the State Register. Finally, the notice of intent to adopt rules without a public hearing, together with the proposed amendments to the rules, will be published in the State Register. This last notice and final draft will be sent to all state lessees and a letter on the notice and rules will be mailed to over 250 individuals, consultants, small businesses, and corporations involved in the mining industry.

IV. CONCLUSION

The State, as a landowner, has both a duty and a legitimate right to share in the revenue derived by a mine operator from the discovery and development of a mineral deposit on state lands. The state follows a policy of leasing most of its lands through public sale, which allows all capable parties the equal opportunity to lease state land. The payment of rentals and royalties to the state is based on the policy that minerals are non-renewable objects of ownership, and their removal should result in payment to the owner.

The proposed changes to the rules cover a wide range of items. Some changes, such as in the reporting requirements, are principally there to clarify the current understanding of the lease terms. Other changes, such as in the administrative procedures, are there to ease the process of issuing leases.

More substantial changes are found in the rental, royalty and performance requirement provisions. There is a proposed increase in the rental rates to reflect the changes in the economy from when the rules were first adopted in 1966. Yet this proposed change is tempered with consideration of its impact on initial exploration by the explorers.

The changes in the royalty rate structure reflect the interest in the wide variety of minerals currently being explored for in Minnesota as well as legitimate concerns from the mining industry about the current royalty structure. The changes are procedural in part, to simplify and ease the calculation of royalty due. The changes are also substantial in part, and

reduce the base royalty for all mines, especially massive sulfide mines. Overall, these changes should encourage exploration and development, as well as good engineering practice and mineral usage. The changes in the royalty structure create a fairer system that more closely recognizes the costs of the miner while still encouraging the miner to seek the maximum return from the ore.

The changes in the performance requirements are directed toward helping the operator of a new mine yet providing the state some control over the leasing of the land. The operator of a new mine has an opportunity for a partial deferral of royalty in the start-up years. The state also has the means to terminate the lease if a lessee retains a lease but does not develop a deposit.

The department believes that the proposed changes to the lease rules equitably balance the concerns of the mining industry and the concerns of the trust funds and other funds, as represented and managed by the state. Based on its research and studies described herein, the department of natural resources believes that the proposed amendments to the rules are needed, reasonable and should be adopted.

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Appendix A

The following table presents a brief summary of rental rates currently imposed in each of the eighteen states studied. The more detailed descriptions should be consulted for qualifying provisions and definitions of terms.

	Rental
Alaska	$10/acre/year - Years 1-5 $15/acre/year - Years 6-10 $20/acre/year thereafter $3/acre/year on tide and submerged lands.
Arizona	$1/acre/year during permit term. $15/lease/year during lease term.
California	$1/acre/year
Colorado	$1/acre/year Advance minimum royalty negotiated individually
Idaho	$160/year for any amount up to 160 acres. $1/acre/year thereafter
Michigan	$3/acre/year - Years 1-5 $6/acre/year - Years 6-10 $10/acre/year for Year 11, with $5/acre/year increments to maximum of $55/acre/year
Missouri	$2/acre/year - Years 1-5 $4/acre/year - Years 6-10
Montana	$1/acre/year + bonus-Year 1 $1/acre/year - Years 2-3 $2.50/acre/year - Years 4-5 $3/acre/year - Year 6 and following.
Nevada	Negotiated individually.

	Rental
New Mexico	$.25/acre/year - Years 1-3 * $2.50/acre/year - Years 4-5 * $3/acre/year - Years 6-10 $10/acre/year - Years 11-15 Plus advance royalty of: $10/acre/year - Year 11 $20/acre/year - Year 12 $30/acre/year - Year 13 $40/acre/year - Year 14 $50/acre/year - Year 15 * Established at time leased.
South Dakota	$.50/acre/year during permit term. $2/acre/year during lease term.
Texas	$.50/acre/year during permit term. Leases negotiated individually. Current range is $5 to $20/acre/year for first year of lease. $3-$5/acre/year during remainder of lease term.
Utah	$1/acre/year
Virginia	$2/acre/year for first year with $2/acre/year increments until production established.
Washington	$.25/acre/year during term of prospecting lease. Mining Contract $.25/acre/year Years 1-2 $.50/acre/year Years 3-4 $2.50/acre/year Years 5-20
Wisconsin	Proposed, but not adopted. $3/acre/year with increments to $35/acre/year. (See rental schedule).
Wyoming	$1/acre/year - Years 1-5 $2/acre/year - Year 6 on

Appendix B

Computation of Royalty-Mine Model Example

To provide a more comprehensive example of the leasing system proposed under the new rules, a mine model was developed to illustrate the application of several parts of the royalty provisions of the lease to a possible mining operation in Minnesota. A massive sulfide ore body containing marketable quantities of zinc, copper, lead, gold and silver was selected. This type of ore body could easily exist in Minnesota, hosted in a metasedimentary environment or in volcanogenic greenstones.

The mine model, although not addressing all situations which could arise under the lease, does represent a realistic example of a potential development in Minnesota. We have assumed for purposes of this model that:

(1) The massive sulfide ore body contains recoverable zinc, copper, lead, gold and silver.

(2) The lessee is the Bonanza Mining Company.

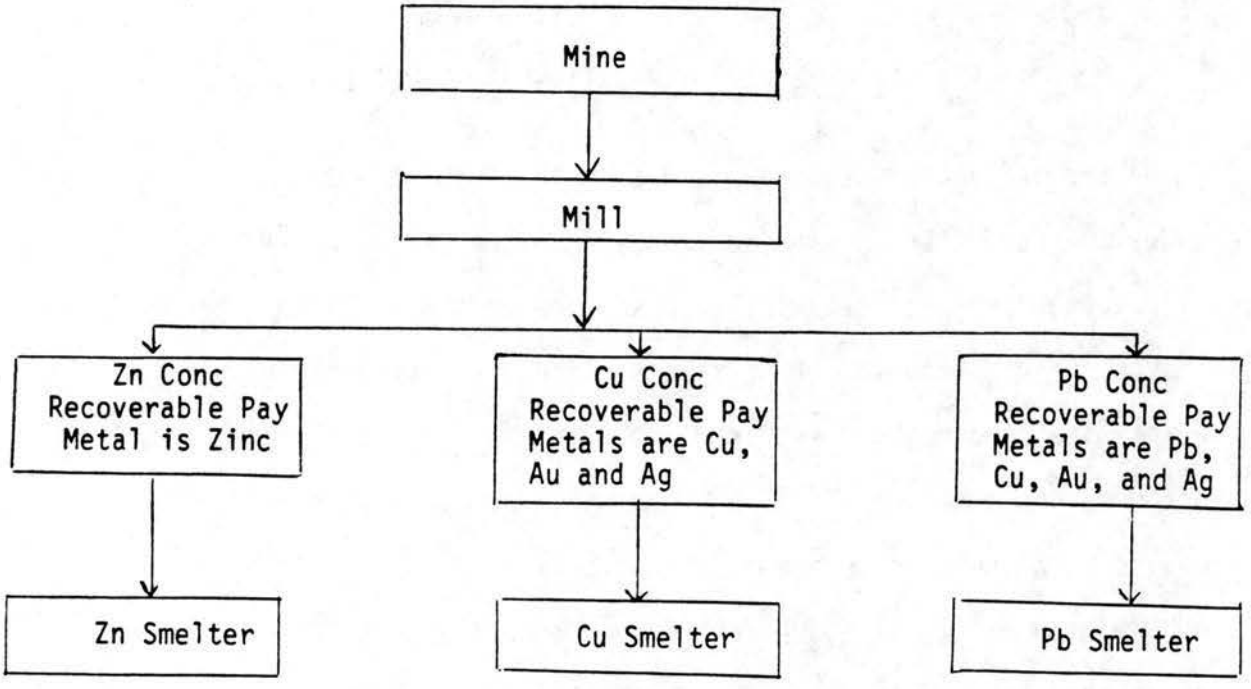
(3) The ore body is developed and producing at the rate of 1000 short tons per day.

(4) The concentrating plant produces three separate concentrates from the ore, namely, zinc, copper and lead.

(5) The ore body is mined by underground methods on state property wholly within the leased mining unit.

(6) The lease has been in effect for 12 years.

(7) The basic generalized flow sheet for this operation by Bonanza Mining Company, particularly as it relates to ore valuation for royalty purposes, is as follows:



(8) The metallurgical balance sheet for the concentrate produced from this operation is assumed to be:

	Tons/ Day	Zn%	Cu%	Pb%	Ag tr oz	Au tr oz	Ratio of Conc.
Mill Feed	1000	6.53	2.66	1.12	1.32	0.09	
Zinc Conc.	92.3	60.00	0.86	0.24	0.86	0.06	10.84
Copper Conc.	85.8	3.81	28.00	0.28	4.57	0.81	11.65
Lead Zinc	15.9	9.06	3.70	62.00	13.76	0.64	62.93
Mill Tailing	806.0	0.65	0.16	0.11	0.07	0.01	1.24

To provide a comparison between calculation of value and royalty due under the current rules and the proposed rules, we will first apply the provisions of the current rules and then those of the proposed.

(a) Calculation of value of ore

To calculate the value of the ore under either the current rules or the proposed rules, you need the market prices for the metals contained in the ore. Tabulated below are the prices for these metals, as quoted in Engineering and Mining Journal for 1981 and as quoted in Metals Week for September 1987:

	Zn ¢/lb	Cu ¢/lb	Pb ¢/lb	Au $/tr oz	Ag ¢/tr oz
Avg. price, 1981	44.555	74.836	36.531	459.715	1051.837
Sept. 1987	42.592	77.970	42.000	460.348	759.048

(1) Current rules

There are two vaues calculated under the current rules. One, referred to here as VC, is the current aggregate value of the metals and mineral products recovered in the mill concentrate from each ton of dried crude ore and is based on current prices. The other, referred to here as VB, is the base aggregate value of said metals and mineral products and is based on the average monthly market prices for 1981.

To make these two aggregate value calculations, we must also know the percent of each metal or mineral product that is recoverable in the mill. These percentages are assumed as follows:

Zn	Cu	Pb	Au	Ag
5.88%	2.5%	1.01%	0.08% (in troy ounces per ton)	1.25%

The resulting aggregate values are tabulated below:

	VC	VB
Zn	$ 50.09	$ 52.40
Cu	38.99	37.42
Pb	8.48	7.38
Au	36.83	36.78
Ag	9.49	13.15
Total	$143.88	$147.13

(2) Proposed rules

Under the proposed rules, if a concentrate is treated at a smelter, base smelter treatment charges and smelter losses are allowed as deductions in determining the value of the ore for royalty purposes. To verify the costs that are allowable as deductions, the commissioner must review smelter schedules and settlement sheets, submitted by the lessee.

Since this mine model includes three concentrates (Zn, Cu and Pb), each of which are assumed to be sent to separate smelters, we have developed a typical set of settlement sheets for the three concentrates.

(i) Zinc Concentrate

Gross Wet Weight	Percent Moisture	Net Dry Weight	Settlement Assays		
			Ounces per Ton		Percent
			Gold	Silver	Zinc
5,384,167 lbs	6	5,061,117 lbs	0.06	0.86	60

Metal Content

Gold	Silver	Zinc
152 tr. oz.	2176 tr. oz.	3,036,670 lbs.

Gold payment	(not recovered at this smelter because of low gold content)	$0.00
Silver payment	- deduct 2.0 troy ounces per dry ton and pay for 75% of remaining Ag content at market price	0.00
Zinc payment	- pay for 85% of Zn content at market price	$1,099.371.71
	Total Payment =	$1,099,371.71

The total payment indicated above is not the amount paid to the shipper (lessee); rather, it represents the metal content for which the smelter will actually pay. Those metals for which payment is not made are considered metal losses. These losses are usually metallurgical but must be accounted for in some manner as shown above and in the other settlement sheets to follow.

There must necessarily be deductions for the costs of treatment, transportation and penalties, as well. In this mine model, we have assumed no deleterious metals or elements that would incur a penalty. Under the proposed rules, there is no allowance for the deduction of penalties or transportation costs. These are considered to be quite variable from smelter to smelter.

The following listed deductions are typical:

Base Treatment Charge	$180/ton dry conc. on 2,531 tons	$ 455,580.00
Transportation Charge		
Truck	$2.50/wet ton conc. on 2,692 tons	6,730.00
Rail	$20.00/wet ton conc. on 2.692 tons	53,840.00
	Subtotal	$ 516,150.00
Total Payment		1,099,371.71
Net Proceeds Due Shipper (lessee)		$ 583,221.71

Under the proposed rules, only the smelter charges as defined are deductible. Transportation charges, being not one of the defined allowable smelter charges, must be added back in to determine a value per ton for royalty purposes. This computation is as follows:

Net proceeds due shipper (lessee)	$ 583,221.71
Plus transportation charges	60,570.00
Value of 2531 dry tons concentrate	$ 643,791.71
Concentrate value per dry ton	$ 254.36
Ratio of concentration for Zn concentrate	10.84
Equivalent crude ore value per dry ton, zinc	$ 23.46

(ii) Copper Concentrate

Gross Wet Weight	Percent Moisture	Net Dry Weight	Settlement Assays Ounces per Ton Gold	Silver	Percent Copper
5,005,000 lbs	6	4,704,700 lbs	0.81	11.57	28

Metal Contents

Gold	Silver	Copper
1,905.40 tr oz	27,216.69 tr oz	1,317,316.00 lbs.

Gold payment on 95% of metal content per dry ton at market price	$ 833,289.73
Silver payment on 95% of metal content per dry ton at market price	196,258.35
Copper payment - subtract one unit and pay on remaining 97.5% of metal content per dry ton at market value	1,060,253.20
Total Payment	$2,089,801.28
Base Treatment Charge $125/ton dry concentrate on 2352 tons	$ 294,000.00
Transportation Charge	
Truck $1.50/wet ton conc. on 2503 tons	$ 3,754.50
Rail $20.00/wet ton conc. of 2503 tons	50,060.00
Subtotal	$ 347,814.50
Total Payment	2,089,801.28
Net proceeds due shipper (lessee)	1,741.986.78
Plus transportation charges	53,814.50
Value of 2352 dry tons concentrate	$1,795.801.28
Concentrate value per dry ton	$ 763.52
Ratio of concentration for Cu concentrate	11.65
Equivalent crude ore value per dry ton, copper	$ 65.54

(iii) Lead Concentrate

Gross Wet Weight	Percent Moisture	Net Dry Weight	Settlement Assays: Ounces per Ton Gold	Ounces per Ton Silver	Percent Lead	Percent Copper
927,500 lbs	6	871,850 lbs	0.64	13.76	62.00	3.70

Metal Contents

Gold	Silver	Lead	Copper
278.99 tr oz	5,998.33 tr oz	540,547 lbs	32,258.48 lbs

Gold - deduct 0.02 tr oz per dry ton, then pay on 95% of remaining metal content at market price	$ 118,198.87
Silver - deduct 1.00 tr oz per dry ton, then pay on 95% of remaining metal content at market price	40,110.24
Lead - deduct 1.0% per dry ton, then pay on 95% of remaining metal content at market price	212,199.57
Copper - deduct 1.5% per dry ton, then pay on 60% of remaining metal content at market price	9,852.01
Total Payment	$ 380,360.69
Base Treatment Charge $120 per ton of dry conc. on 436 tons	$ 52,320.00
Transportation Charges	
Truck - $1.50 per ton of wet conc. on 464 tons	696.00
Rail - $20.00 per ton of wet conc. on 464 tons	9,280.00
Ocean - $20.00 per ton of wet conc. on 464 tons	9,280.00
Subtotal	$ 71,576.00
Total Payment	380,360.69
Net proceeds due shipper (lessee)	$ 308,784.69
Plus transportation charges	19,256.00
Value of 436 tons dry concentrate	$ 328,040.69
Concentrate value per dry ton	$ 752.39
Ratio of concentration for Pb concentrate	62.93
Equivalent crude ore value per dry ton, Lead	$ 11.96

We have computed the equivalent crude ore values per dry ton for each of the three concentrates produced from the mill. These three values must be combined to find the aggregate ore value for royalty purposes, as follows:

Zinc concentrate	$ 23.46 per dry ton
Copper concentrate	65.54 per dry ton
Lead concentrate	11.96 per dry ton
Total Value	$100.96 per dry ton

The difference between the value of $100.96 per dry ton under the proposed rules and the value of $143.88 per dry ton under the current rules is the deduction of smelter losses and base smelter treatment charges

(b) Royalty

Royalty under the current rules is comprised of four parts--base royalty, additional royalty, special royalty and bid royalty. Base royalty for the first 10 years is simply 2% of VC, current aggregate value, and the additional base royalty is 2% of VC in excess of $17.00. Special royalty, which has been set forth in detail previously in the Statement of Need and Reasonableness, may be expressed as:

$$SR = 0.0004 \frac{VB}{VC} (VC-50 \frac{VC}{VB})^2$$

Bid royalty is the percent rate bid times the VC. Furthermore, under the current rules for underground operations, both the base royalty and the additional royalty are increased to 2¼% of VC and VC-17, respectively, for the second ten years of the lease.

Inserting the values of VC and VB determined in the valuation section described above, the following royalty table can be computed from the formulas and bid rate assumptions:

Underground Mine
Royalty Per Ton
Second Ten-Year Period

Assumed Percent Bid	($) Bid Royalty	($)Base Royalty	($)Add. Royalty	($)Spec. Royalty	($)Total Royalty
0.0	0.00	3.24	2.85	3.69	9.78
1.5	2.16	3.24	2.85	3.69	11.94
3.0	4.32	3.24	2.85	3.69	14.10

(2) Proposed rules

Royalty under the proposed rules is comprised of two parts--base royalty and bid royalty. In this mine model, with a value per dry ton of $100.96, the base royalty rate is 3.8894%. This is calculated from the formula:

$$\text{Base Rate} = 3.5\% + .015\ (V-75)\%$$

The royalty payable under the proposed rules is $3.93 per ton, assuming a bid of 0%. Assuming a 1.5% bid, the royalty is $5.44 per ton. The comparison between the royalty payable under the current rules and the proposed rules for this mine model is shown below.

Current-Proposed Comparison
Underground Mine
Royalty Per Ton
Second Ten-Year Period

Assumed Percent Bid	Current Rules Total Royalty	Proposed Rules Total Royalty
0.0	$ 9.78	$ 3.93
1.5	11.94	5.44
3.0	14.10	6.96

This is one example of the application of the proposed amendments to the rules. Different royalty comparisons would result if different mine models are used. As shown in Chart C-1, the changes in the royalty due are not as significant if the ore, such as a gold dore', is produced and sold without being treated at a smelter.