



UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

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ENERGY AND MINERALS  
DIVISION

May 24, 1982

B-207450

The Honorable Jesse Helms  
Chairman, Committee on Agriculture,  
Nutrition and Forestry  
United States Senate

Dear Mr. Chairman:

Subject: Potential Cost of Purchasing or Exchanging  
Phosphate Mining Lease Rights in Florida's  
Osceola National Forest (GAO/EMD-82-85)

In your letter of April 2, 1982, you requested the General Accounting Office (GAO) to (1) study the potential cost of purchasing or exchanging preference right leases for phosphate mining in the Osceola National Forest, including an evaluation of the technical and cost information already developed in this regard, and (2) comment on procedures that should be followed by the Department of the Interior and the companies involved in assuring that fair market value is properly determined.

As you are aware, proposed legislation, S. 1873 and H.R. 9, both provide for the designation of wilderness in the Osceola National Forest in the State of Florida. The bills also provide for the compensation of several companies that have applications for preferential lease rights for mining phosphates within the boundaries of the proposed wilderness areas.

Because of the short time frame involved in responding to your request and the Committee's urgent need for this material, we did not obtain formal agency comments. Verbal views of some agency officials were obtained and are presented in the text of the report where appropriate. Their remarks do not, however, represent the official position of their agency.

As outlined during our prior briefing of your staff on April 26, 1982, the intent of this letter is to summarize our findings.

--First, conflicts and deficiencies in existing technical and cost information provide an insufficient basis for determining the value



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of the phosphate deposits. In this regard, insufficient geological information has been collected and no field verification has been made by the Department of the Interior of the drilling data submitted by the companies.

--Second, the administrative process to issue preference right leases has not yet been completed. This makes determination of compensation premature. At present, phosphate deposits within the Osceola National Forest remain the property of the Government. Further, our evaluation raises questions regarding mining profitability, which, in turn, raises questions as to the companies' entitlement to preference right leases.

--Third, procedures to be followed in proper determination of fair market value should, at a minimum, include (1) additional drilling and field verification of available drilling data, (2) the cost of capital in the calculation of operation and production costs, and (3) determining the commercial value of the deposits.

During our review, we gathered data and conducted interviews with officials in the Bureau of Mines (BOM), U.S. Geological Survey (USGS), Minerals Management Service (MMS), and the Bureau of Land Management (BLM) within the Department of the Interior; and the Forest Service within the Department of Agriculture. Our review also included telephone contacts with company and Florida State officials. The short time frame involved in responding to your request, however, precluded indepth analysis and verification of agency-supplied data.

Our review was performed in accordance with GAO's current "Standards for Audit of Government Organizations, Programs, Activities and Functions." A more detailed discussion of our findings follows.

CONFLICTS AND DEFICIENCIES IN EXISTING  
TECHNICAL AND COST INFORMATION PROVIDE  
AN INSUFFICIENT BASIS FOR DETERMINING  
THE VALUE OF THE PHOSPHATE DEPOSITS

Among the most important factors in determining recoverable phosphate rock are (1) size and quality of resource, (2) technological feasibility of recovery, (3) potential mining and process

losses, and (4) economics in terms of estimated operating and production costs. We found that agency estimates of some of these factors vary widely. This raises serious questions with regard to reliability of available information for determining the value of the Osceola phosphate deposits.

Varied technical information exists on phosphate deposit estimates

Varying estimates of total phosphate deposits in the Osceola National Forest were obtained from the BOM Minerals Availability System (MAS), MMS, BLM, and the BOM Commodity Specialist (COM). Information that was provided to us represented estimates at various stages of the phosphate mining and processing cycle which ranged from the amounts of matrix 1/ all the way to the quantity of the final phosphate product.

To obtain comparable data, we applied standard engineering calculation procedures to the above estimates to compile the following table:

<u>Source</u>	<u>Short tons of phosphate</u>			
	<u>MATRIX</u>	<u>Product in ground</u>	<u>Mineable product</u>	<u>Final product</u>
MMS	Unknown	<u>a/101,750,000</u>	86,487,500	73,514,400
BOM (MAS)	<u>a/648,000,000</u>	93,364,000	79,359,000	<u>a/67,455,000</u>
BOM (Com.)	Unknown	121,800,000	103,530,000	<u>a/88,000,000</u>
BLM	Unknown	<u>a/120,000,000</u>	102,000,000	86,700,000

a/These were the estimates provided by these agencies. Other values were calculated by GAO to present a total table.

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1/The matrix is the total quantity of the mix of phosphate and other matter in the ground.

Limited drill data and  
lack of Government verification

Current geological data on the Osceola phosphates are limited to exploratory drilling by four companies. These data have not been subjected to field verification by the Government. Ordinarily, such data are sufficient for deciding lease issuance. However, in our opinion, serious questions are raised regarding the adequacy or verification of such data for determining the value of the deposit for purposes of sale or exchange.

Each company submitted a different pattern of drilling, with drill densities ranging from 1 hole per 30 acres to 1 hole per 70 acres. Government verification of these holes, however, is presently limited to examination of lab forms submitted by the four companies. No Government field verification of this information or examination of the actual samples submitted to the lab has been made. In fact, lab deposit samples have since been disposed of.

It is also significant to note that current industry practice calls for densities of 1 drill hole per 40 acres for exploration, 1 drill hole per 10 acres for delineation of reserves, and 1 drill hole per 2.5 acres prior to mining. A corporation that is presently mining the same mineral deposit adjacent to the Osceola National Forest drill 1 hole per 2.5 acres prior to mining. Based on these facts, we believe additional drilling and verification, at minimum, is necessary for determining the value of the Osceola phosphate deposits prior to any sale or exchange.

Conflicting drilling  
information on quantity  
and quality of phosphate

Conflicting drilling data on the quality and quantity of the Osceola phosphate deposits raise questions as to whether a reliable estimate of economic value can be determined and also suggests the need for more drilling and verification. The Environmental Impact Statement (EIS) completed June 27, 1974, by BLM for the Osceola National Forest contained a description of the size and quality of the phosphate deposit. However, late in 1974, in conjunction with a study of the effects of mining on the aquifer in the Osceola National Forest, 10 holes were drilled by the Government in areas referred to by the EIS as the centers of the ore body. Analysis of these core samples, which are the only samples still available for examination, was performed by a private contractor for USGS and indicated a significantly lower quality of phosphates than reported in the EIS. The contractor's analysis also indicates that the amount of the phosphates in the deposit may be considerably less than originally estimated.

DETERMINATION OF RIGHTS TO A LEASE FOR  
THE APPLICANTS IS NECESSARY PRIOR TO  
DECIDING TO PURCHASE THOSE RIGHTS

At this time, there is clearly no way to adequately determine a fair market value basis for decisionmaking on lease issuance, much less for purchase or exchange, until the Department of the Interior completes its evaluation of the applicants' "final showing." <sup>1/</sup> Interior's evaluation, which is scheduled later this year, will determine whether the companies (1) have discovered a valuable deposit and (2) are able to profitably mine the deposit.

In April 1982, MMS and BOM (MAS) provided us with an estimate of about \$25/short ton as the cost of producing a ton of phosphates in the Osceola National Forest. Our discussion of these cost figures with MMS and BOM (MAS) showed that they were derived independently of each other and had a difference of only 3 cents per short ton. However, our evaluation indicated that their estimates did not include the cost of capital, an important item at the current interest rates in today's economy. Our calculations, including the present cost of capital, suggest that mining of phosphates in the Osceola by these companies could be unprofitable. This raises questions regarding mining profitability, which, in turn, raises questions as to the companies' entitlement to preference right leases.

PROBLEMS WITH EXISTING  
CALCULATIONS OF COMPENSATION

While no official Government estimate has been made, BOM's Commodity Specialist stated that the costs to compensate the companies for the Osceola phosphate mining lease rights could range from as low as \$129 million to over \$1 billion. In an April 1982 letter, the BOM Commodity Specialist calculated potential compensation for the Senate Committee on Energy and Natural Resources. He recommended that the Government purchase the product in the ground in a similar way as other phosphate transactions have taken place among many mining companies. This would be at a price between \$1.25 and \$3 per short ton of mineable product. Using these cost estimates and the Commodity Specialist's estimate of total mineable product, the preference lease right purchase cost could range between \$129 million and \$311 million. Telephone discussions with officials of two of the four companies involved indicate that the companies might accept a Government offer in the higher portion of this range.

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<sup>1/</sup>The final showing should support the fact that a company can produce a commercial product at a profit, considering the costs of production, capital, and reclamation.

The BOM Commodity Specialist also suggested to the Senate Energy and Natural Resources Committee that, in addition to preference lease right purchase cost, a legal settlement on opportunity costs of mining lost over prior years could range as high as \$788 million. This would make total possible compensation in excess of \$1 billion. This assumes an annual production rate of 4 million short tons, net profits after taxes ranging between \$0.29 and \$9.65 per ton, and triple damages awarded by the courts since 1969. However, such assumptions may not be valid, considering company application for all 51,826 acres were not filed until 1972. In addition, it would take about 6 years to build plant facilities and comply with routine regulatory requirements for environmental requirements, etc., which probably would have allowed potential mining to begin in 1980.

MINIMUM PROCEDURES TO BE FOLLOWED IN ASSURING  
PROPER DETERMINATION OF FAIR MARKET VALUE

There is of course, no reason to consider cost of compensation until it has been determined that the applicants are entitled to a lease. Therefore, the potential cost of compensating holders of preference right lease applications in the Osceola National Forest should not be determined without additional geological data and verification of available information as well as clear determination of mining profitability and company ownership of preference rights to mine.

At a minimum, the procedures to be followed by the Interior Department to determine fair market value or compensation cost should include:

- Additional drilling and field verification of available drilling data.
- Determining commercial value of the deposits.
- Assuring that the cost of capital is included in the calculation of operation and production costs.

CONCLUSION

Proposed legislation provides for compensation of the four companies applying for preferential mining lease rights in Florida's Osceola National Forest. However, lease entitlement must be clearly established before it is proper to consider either lease issuance or compensating the four companies for the fair

market value of their lease rights. At present, this lease entitlement, which is dependent upon determination of mining profitability, has not been established by the Department of the Interior.

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If we can be of any further assistance, please let us know.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "J. Dexter Peach". To the left of the signature is a large, stylized initial "J" that extends downwards.

J. Dexter Peach  
Director