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

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RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION

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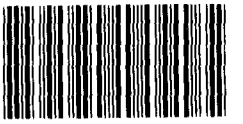
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The Honorable James H. Weaver
Chairman, Subcommittee on Mining, Forest Management, and Bonneville Power Administration
Committee on Interior and Insular Affairs
House of Representatives

Dear Mr. Chairman:

Subject: Adequacy of Geologic Data for Proposed Coal Lease Tracts in Central Utah and Western Colorado (GAO/RCED-85-35)

In a June 9, 1983, letter you requested our evaluation of two issues relating to the Department of the Interior's management of its federal coal leasing program: (1) adequacy of geologic data on coal reserves contained in tracts that were proposed for coal lease sales in the San Juan Basin and Uinta federal coal regions and (2) the Bureau of Land Management's (Bureau's) decisions relating to the Duck Nest coal lease exchange. As you know, the Department, in late 1983, postponed the leasing of the San Juan tracts and we provided a briefing to your office on the geologic data issues affecting these tracts. Concerning the Duck Nest coal lease exchange, we are developing a report which we will provide to you in the near future.

This report responds to that segment of your letter requesting that we determine the adequacy of data on coal reserves contained in tracts being considered for leasing in the Uinta federal coal region, which covers central Utah and western Colorado. As requested, we reviewed the impact programmatic changes made in 1981 had on the adequacy of and timely access to geologic data developed by or made available to Department of the Interior geologists for delineating[1] and valuing Uinta lease tracts. These

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[1]Tract delineation is the process of determining the location of tract boundary lines for deposits of coal reserves. The determination is made by a team of Interior Department geologists, mining engineers, land use planners, and other specialists on the basis of technical coal data, conservation of coal and other natural resources, land ownership patterns, and coal industry expressions of interest in developing those lands.

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tracts were originally scheduled for leasing in February 1984 but were recently postponed to at least the summer of 1985.

We conducted our review at the Bureau and Office of the Assistant Secretary - Land and Minerals Management, Department of the Interior, Washington, D.C., during the period September 1983 through June 1984. We interviewed agency officials at these offices as well as officials at the Bureau's Salt Lake City, Utah, office and reviewed agency documents, tract delineation guidelines, correspondence, files, and proprietary and nonproprietary geologic data related to the proposed Uinta sale. We also interviewed geologists, mining engineers, and mineral economists at the Bureau's offices in Washington, D.C.; Salt Lake City and Vernal, Utah; Denver, Colorado; and Casper, Wyoming. In addition, we contacted officials at the U.S. Geological Survey headquarters in Reston, Virginia; representatives of coal companies operating mines in the Uinta area; and a consulting firm about geologic data adequacy, data quality standards, and their use in determining the value of tracts. Our resident geologist and mining engineer (1) reviewed and analyzed each tract delineation report and the underlying technical source documents and (2) assisted in interviewing Interior and industry experts on the issues discussed in this report.

Our review of the 24 Uinta tracts proposed for leasing disclosed that 19 were delineated without sufficient geologic data to determine coal reserves[2] and values. This resulted from Interior's effort to lease large quantities of coal while eliminating the federal drilling program and lowering its standards for the amount and quality of geologic data required to delineate and value prospective tracts. These changes reflected the Department's belief that the marketplace could be relied upon to establish the value of prospective federal lease tracts, thus reducing the need for federal drilling and independent coal valuations. For the Uinta sale, inconsistencies and errors in tract delineation reports and the lack of adequate data verification procedures further compounded the problem of insufficient data.

As you know, the Secretary of the Interior recently postponed further coal leasing until he has made various changes to the Department's coal leasing procedures, including the development of

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[2]Estimates of the amounts of coal a tract may contain fall into two categories--reserves and resources. Coal is classified in the reserve category when the geologist can determine the continuity of coal beds and correlate available drilling data; number of coal beds and their thicknesses, depth, quality; and that the coal is mineable given current technology and economic conditions. If the geologist is unable to make these determinations, the coal is classified as resources.

geologic data standards and new tract delineation guidelines. These, along with proposals to reinstitute the federal coal drilling program and presale coal valuations--currently being circulated for public comment--address most of the problems we noted with data adequacy for the Uinta tracts. Because of this and the uncertainty of when and how much coal eventually will be leased in Uinta, we are offering no recommendations in this report. However, along with changes under consideration, there are two additional actions we believe the Department should consider to further the adequacy of geologic data for future coal leasing.

UINTA TRACT DELINEATION

Interior began delineating Uinta tracts in late 1981 and completed the process in June 1982. Initially, 50 tracts (48 in Utah and 2 in Colorado) were delineated, representing over 200,000 acres containing more than 4 billion tons of estimated coal resources. The amount of reserves was not known at the time. Twenty-three of the 50 tracts were eliminated from further consideration by Secretarial decisions, tract modifications, and environmental concerns. The remaining 27 tracts (25 in Utah and 2 in Colorado) were considered for leasing in the October 1983 final environmental impact statement (EIS). Subsequent to the final EIS, one of the 27 tracts was transferred to the State of Utah under a special program, another was leased in Utah under Interior's emergency leasing provisions,[3] and a Colorado tract was leased competitively in February 1984, as authorized by special legislation.[4] The remaining 24 tracts covered about 76,000 acres and contained an estimated 1.7 billion tons of coal resources, of which about 554 million tons were classified as reserves. We focused our evaluation on these 24 proposed coal lease tracts.

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[3]Interior's emergency leasing regulations (43 C.F.R. 3425.1-4) provide for a leasing-by-application process which allows the Bureau to conduct emergency lease sales in certain circumstances. The emergency leasing regulations require the applicant to demonstrate a short-term need for the coal or avoid the bypass of the federal coal which is unlikely to be mined by another operator in the reasonably foreseeable future.

[4]Public Law 98-146, which authorized fiscal year 1984 appropriations for the Department of the Interior, contained a special provision which prohibited Interior, subject to certain exceptions, from leasing federal coal until the Commission on Fair Market Value for Federal Coal Leasing submitted its report to the Congress and 90 days subsequently elapsed. The exceptions included the leasing of two coal maintenance tracts, one in Colorado and one in Montana.

EARLY PROGRAMMATIC CHANGES TO
THE COAL LEASING PROGRAM

In 1981, Interior made several significant policy changes affecting the federal coal leasing program, which included plans for offering greater quantities of coal for leasing and reduction in the program's budget through streamlining its leasing procedures. The policy changes reflected the Department's belief that the marketplace could be relied on to establish a value for the coal, thus reducing the need for independent government valuations. This resulted in two critical decisions affecting the amount and quality of geologic data required to delineate and value prospective coal leases. First, Interior decided to terminate the federal coal drilling program. This decision was based on several factors: the desire to reduce the coal program budget; a belief that adequate information was available to evaluate the coal resources that it planned to offer; and the conviction that private industry drilling would become a primary source of new geologic data. Second, in line with the objective of reducing the coal program budget, Interior adopted tract delineation guidelines to reflect the use of less drill hole data and lower standards for evaluating the adequacy of geologic data used to delineate new coal lease tracts. Prior to these changes, Interior delineated new lease tracts on the basis of reserve data calculated from drill hole information. The federal coal drilling program had previously supplemented private industry drilling on those tracts needing additional drill hole information for determining reserves.

The 1981 policy change permitted field geologists to delineate lease tracts with little or no drilling data. According to an Interior memorandum, dated October 20, 1981:

> "Effective immediately, all drilling performed for gathering coal data used for tract delineation purposes will use drill hole spacings that are based upon a prudent geological approach within applicable budget constraints. Demonstrated or inferred reserve categories will no longer dictate drill hole spacing. All effort is to be used to space drill holes as far apart as is possible to assure that all tracts delineated have some geologic data. Resource calculations for tract delineation purposes are to be based on professional geologic judgment."

In January 1982, Interior developed tract delineation guidelines reflecting Interior's streamlining efforts and the 1981 policy changes (see enclosure I). These guidelines, used to delineate the Uinta tracts, required that tracts be delineated using best available data. The guidelines indicated that if correlation between data points could be demonstrated, then coal quantity could be calculated.

Field geologists who delineated the Uinta lease tracts told us that the guidelines resulted in tracts being delineated and considered for leasing even though some tracts did not contain any drill hole data within their boundaries, making it difficult--if not impossible--to measure reserves.

INTERIOR LACKED ADEQUATE GEOLOGIC DATA DESCRIBING UINTA COAL LEASE TRACTS

We found that Interior did not have adequate geologic data to determine coal reserves and values for 19 of the 24 proposed Uinta coal lease tracts. The table on page 6--compiled from the Bureau's tract delineation reports and drilling records--shows the estimated resources and reserves reported to the Regional Coal Team in June 1982 in each of the delineated tracts as well as the number of drill holes located within the boundary of each tract.

The tract delineation reports prepared by Interior's geologists and mining engineers indicated that they were concerned with the accuracy, reliability, and completeness of the data available for delineating 20 of the 24 tracts. Our analyses--with assistance from our mining engineer and geologist--tended to confirm concerns by Interior's geologists. Specifically, we found that only 5 of the 24 proposed lease tracts may have had sufficient data to determine coal bed continuity and the correlation of coal between drill holes, thus adequate data to determine the occurrence of coal reserves and to estimate their values. The five tracts are discussed below:

Quitchupah and The Pines. These two tracts had 16 and 12 drill holes, respectively, within their boundaries and thus probably had sufficient data to determine the continuity of coal beds and correlate the occurrence of coal. In addition, Interior's tract delineation team identified these two tracts as having the best data for all tracts under consideration.

Ferron Canyon. This tract may have had adequate geologic data because, subsequent to tract delineation, the Bureau acquired drill hole data from a private company under a government exploration license. This additional information may have provided adequate geologic data to allow an acceptable determination of coal reserves.

Acord. Our analyses indicated that geologic drill hole data within the Acord tract boundary, in relation to its size and four additional drill holes located outside the tract boundary and the adjacent ongoing mining operation, may have provided adequate geologic data to permit determination of coal reserves within the tract boundary.

Ivie. This tract may have adequate data because the five drill holes, and five other observation points from where the

Estimated Resources and Reserves
Uinta Federal Coal Region

Tract name	Tract size in acres	Quantity of coal (millions of tons)		Number of drill holes located within tract boundary
		Resources	Reserves	
Utah				
Acord [a]	120	3.4	3.4	1
Alkali Creek [a,b]	2,098	33.8	-	0
Alton Amphitheater [a,b]	2,817	74.8	-	0
Blue Trail Canyon [b]	320	1.0	-	0
Castle Valley Ridge [a,b]	3,362	73.7	73.7	9
Coal Creek [a,b]	4,198	114.4	-	0
Dugout-Pace [b]	3,150	106.7	-	0
Ferron Canyon [a,b]	2,640	28.5	-	0
Fisher Canyon [a,b]	6,189	134.0	-	0
Flax Lakes [a,b]	5,480	112.7	-	0
Ford Pasture [b]	1,560	39.4	-	0
Graves [a,b]	550	19.8	19.8	1
Ivie [a,b]	1,040	10.1	10.1	5
Mill Creek Canyon [b]	7,202	204.0	-	1
Mud Creek [b]	1,206	27.9	-	3
North Trough Springs [b]	3,240	30.2	-	3
The Pines [a]	8,600	166.8	166.8	12
Quitchupah [a]	9,860	276.3	276.3	16
Skumpah [a,b]	640	4.5	4.5	0
Soldier Creek [a,b]	2,168	82.0	-	0
Trail Mountain [a,b]	6,730	85.5	-	1
Walker Flat [b]	1,520	73.6	-	0
Whitmore Park [a,b]	160	6.3	-	0
Colorado				
Cedaredge	1,847	49.0	-	3

[a]Recommended in October 1983 for leasing by the Regional Coal Team which is the intergovernmental body comprised of federal and state government officials responsible for advising the Secretary of the Interior on coal leasing matters within a given region.

[b]Tract delineation report contains geologist's disclaimer or other qualification pertaining to data accuracy, reliability, and completeness.

Source: Compiled by GAO from Bureau of Land Management tract delineation reports and drilling records, as of June 1982.

coal outcrops on the surface, appear to provide sufficient data for determining coal bed continuity for nearly all of the tract acreage.

In addition to these five tracts, seven other tracts had some drill holes and three, reportedly, had reserves within their boundaries. However, Interior's tract delineation team believed and we confirmed that these drill holes and reported reserve quantities--considering the size of the tracts and other geologic data outside the tracts' boundaries--were not adequate to establish the continuity of the coal beds and the correlation of coal between drill holes, and thus to determine reserves for tract delineation and valuation purposes.

INCONSISTENCIES AND ERRORS IN TRACT DELINEATION REPORTS FURTHER COMPOUNDED THE DATA PROBLEM

We also found that tract delineation reports prepared by Interior's geologists and mining engineers contained inconsistencies and the maps accompanying the reports contained errors which, because of the lack of data verification procedures, were not detected. This reduced their reliability and usefulness to the Regional Coal Team in preparing for the Uinta sale.

Our analysis of the tract delineation reports and the tract summary report for the 24 proposed tracts showed the following inconsistencies and errors in the data provided:

--Coal deposits were not uniformly classified. Because the guidelines did not provide criteria for classifying and measuring coal deposits, the various geologists who prepared the tract reports used different criteria. Although most tracts had insufficient drill hole data within their boundaries, Interior's geologists nonetheless attempted to estimate coal reserves. Some geologists projected reserves up to 1/2 mile from a data point (i.e., a drill hole or outcrop measurement) while others projected beyond 3/4 of a mile or more. As a result, reserve estimates differed on the basis of distance from a data point even though there was insufficient subsurface geologic data to support such projections. Further, the tract reports did not explain the basis for the distances used for projecting the occurrence of coal reserves, making it difficult to compare and rank tracts consistently on the basis of available geologic data.

--Coal measurements were not uniformly reported. The tract delineation guidelines stated that a range of the estimated amount of coal resources was to be given in the tract reports. Five reports measured resources and reserves as expected ranges between a maximum and minimum while other

reports provided only a single measure. The reason for this reporting difference was that some geologists implicitly incorporated the uncertainty involved in estimating coal by using a range while others did not take uncertainty into account and reported a single figure. Those reports using a range did not explain the basis for the size of the range, making it difficult for users of the reports to interpret the results and make comparisons among the tracts.

--Coal bed dip measurements not properly documented. All but one of the tract reports provided an estimate of the angle measuring the extent to which coal beds deviate from a horizontal position, i.e., the dip of the coal beds. These reports, however, did not explain the basis for the dip measurement. The dip is regarded by mining engineers and geologists as a key factor in measuring the quantity of coal correctly and formulating a preliminary mining plan. The guidelines did not indicate whether coal bed dip measurements were to be presented in the tract reports.

--Drilling information not accurately recorded. The guidelines did not indicate what format was to be used in preparing geologic maps supporting the tract delineation reports. As a consequence, maps and supporting tract delineation reports varied in format. In addition, our review found that the reports also contained errors. Some maps provided the location of proprietary drill holes while others did not. In some cases, coal measurements were not accurately transferred from original source documents onto tract delineation maps. Thus, the usefulness and reliability of the maps were questionable because such plotting errors adversely impact determination of tract reserves and values.

--Reserves incorrectly calculated. We also noted an error in the calculation of tract reserve estimates in the summary report which the tract delineation team prepared and transmitted to the Regional Coal Team. The report--which summarizes data on all tracts considered for leasing--is an important technical document used in ranking tracts and analyzing the impacts of alternative leasing levels as part of the regional environmental impact statement. The error occurred when a coal recovery factor (i.e., the percent of coal in a reserve deposit thought to be recoverable) was applied to coal resources--resulting in an overstatement of estimated reserves. The tract delineation guidelines indicated that the summary report was to provide estimated coal resources and reserves as well as estimated coal recovery factors but did not describe how reserve estimates were to be calculated. The Bureau's geologists and mining engineers who helped prepare the report told us that this error occurred because of inadequate review of the report.

Lack of verification

Verification of geologic data is an important measure for assuring the accuracy, reliability, and completeness of the data before they are used to delineate lease tracts. The need for verification takes on even greater significance since it is now Interior's policy to rely on private company exploration as a primary source of geologic data for tract delineation and valuation purposes and since companies providing drilling data generally also participate at coal sale auctions. However, at the time of our review, the Bureau had not prescribed internal control or review procedures for verifying or otherwise assuring the accuracy, reliability, and completeness of geologic data used for delineating and valuing tracts.

In a 1982 written statement responding to questions of a House Subcommittee,[5] Interior described its program of verification of geologic data as one of inspecting exploration progress as it is conducted. According to the statement, the existence of the verification program resulted in little likelihood that private coal companies would submit inadequate and inaccurate information. However, Interior's former Chief of Resource Evaluation in Washington, D.C., and five of Interior's field geologists in Utah told us that no such verification program exists.

Interior's regulations on coal exploration and mining operations (43 C.F.R. 3480), which govern inspection and verification of geologic data, are general and need supplemental interpretation for effective administration. However, the Bureau had not developed guidelines for its field personnel to use in interpreting and applying these regulations. Generally, Bureau inspections have been restricted to checking compliance with environmental stipulations governing drilling activities and have not addressed the need to validate geologic data. As a result, when tracts were delineated in the Uinta coal region, Interior's field office accepted and used private coal company geologic data without verifying it. In addition, Interior had neither supervisory nor peer reviews which might have helped assure the accuracy, reliability, and completeness of geologic data used in developing tract delineation maps and reports.

A related concern pertains to the lack of verification of the location of drill holes used for preparing tract delineation maps and resource calculations. To accurately plot drill holes onto tract delineation maps, their true location must be known to the geologist preparing the maps. Land surveys are normally conducted

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[5]Hearings before the Subcommittee on the Department of the Interior and Related Agencies, House Committee on Appropriations, April 1, 1982, pp. 213 and 214.

to identify drill hole elevation, longitude, and latitude. However, the Bureau's files did not include any documentation that the results of such surveys were made available to the Bureau. Bureau field geologists told us that the Bureau does not require companies conducting drilling on federal lands to submit land survey results. The absence of a land survey undermines the integrity of the tract delineation process and raises questions about the accuracy of the location of drill holes plotted by the Bureau and the reliability of its tract delineation maps. Inaccurately plotted drill holes can cause distortions in reserve calculations, particularly in Utah where coal seam thickness varies over a short distance.

COAL LEASING DEFERRED UNTIL ADEQUATE DATA ARE AVAILABLE

The Secretary of the Interior recently announced that the Department will defer any further coal leasing until it completes a supplemental environmental impact statement to analyze the effect of various changes being made to the coal leasing program as a result of (1) recommendations by the Commission on Fair Market Value Policy for Federal Coal leasing (Linowes Commission) and (2) a recent report by the Office of Technology Assessment on the environmental impacts of federal coal leasing. In general, the changes address many of the problems we noted with the adequacy of data on the Uinta tracts. These include reinstituting the federal drilling program and presale coal valuations as well as developing tract delineation guidelines, geologic data adequacy standards, and appropriate internal controls to help ensure that only coal tracts with adequate geologic data are considered for leasing in the future.

In addition, as a result of congressional concerns about the geologic data for proposed lease tracts in the San Juan Basin and Uinta federal coal regions, Interior, in November 1983, adopted a policy of requiring adequate geologic data before leasing tracts. In our opinion, development and adoption of geologic data adequacy standards could result in reductions in the amount of coal offered for sale in the Uinta region or delays of 2 or more years until either Interior or industry conducts the necessary drilling activities to acquire more data.

ADDITIONAL PROGRAMMATIC ACTIONS WARRANTING CONSIDERATION

There are two programmatic actions which are not a part of Interior's current effort, and which appear to warrant consideration: (1) requiring coal companies participating in the leasing process to either provide geologic data on federal coal lands through government drilling licenses or pay for acquiring the data and (2) establishing geologic data requirements on an individual coal field basis. Both appear compatible with the needed improve-

ments discussed in this report and the programmatic changes envisioned in the Department's tentative proposals for implementing the recommendations of the Linowes Commission. Over the next several months, in connection with its evaluation of other proposed changes, Interior should have an opportunity to consider the merits of these two actions, the benefits of which are outlined below.

Require companies to either provide geologic data or pay for acquiring them

Recognizing that coal companies participating in the leasing process could contribute significantly to the enhancement of geologic data adequacy, companies nominating prospective federal coal tracts for lease sale could be required to either

--provide geologic data on federal coal lands acquired under government drilling licenses conforming to the government's data adequacy standards or

--agree to reimburse the government, or its contractor, for drilling expenses incurred to obtain geologic data on federal coal lands needed to delineate and value the tract(s) of interest.

If incorporated in coal program regulations, this action could--in addition to ensuring adequate geologic data--strengthen the program as a whole. It might, for example, reduce the potential for what are commonly referred to as "frivolous" expressions of interest in proposed tracts. As a consequence, expressions would become a better indicator of the actual demand for coal.

This action is also consistent with Interior's policy objective of giving industry more responsibility for exploration and drilling on federal coal lands. To help ensure that drilling is actually conducted and that the results are properly recorded, however, the government either would have to monitor or make arrangements for an independent geologist to conduct on-site monitoring of industry-conducted drilling activities.

A drawback of this approach is that coal companies conducting drilling activities might be in a position--due to their access to the drilling data--to acquire bidding advantages over their competitors. However, the potential for creating such an advantage seems quite small since tracts large enough to support a new mine--so-called new production tracts--will most likely receive expressions of interest during periods of growth in regional markets for coal. Since individual companies bear the cost of drilling activities, their desire to minimize those costs--through greater participation in drilling partnerships and other cooperative arrangements--can reasonably be expected. These partnerships, already common in some regions, would negate the potential for a bidding advantage.

During periods of little or no growth in regional coal markets, companies generally will be less interested in acquiring large tracts for developing new mining opportunities and more interested in small tracts located adjacent to their ongoing operations for the purpose of expanding their mines. The smaller mine expansion tracts--known as production maintenance tracts--are essentially noncompetitive properties of value only to the adjacent mining operation.[6] Therefore, any bidding advantage may, in essence, already exist for these types of tracts.

In future situations where industry-submitted drilling data are insufficient for tract delineation and valuation purposes, Interior, through a drilling program of its own, could supplement the industry drilling on selective tracts. Such supplemental drilling, however, is contingent on the etablishment and funding of a new coal drilling program.

Establish geologic data requirements on an individual coal field basis

This action would recognize differences in coal resource occurrence within regions and establish data requirements on an individual coal field basis. Coal can be found in various amounts, geologic formations, and qualities within and among different coal regions. Therefore, generalized criteria for geologic data adequacy do not take into consideration the localized pattern in which coal deposits occur. That is, geologic data should be available in sufficient quantity to determine coal bed continuity and correlation as well as the occurrence of other geologic features (e.g., faulting, erosion) in estimating tract value.

The variations of coal deposits occurring in the Uinta region--which contains about 20 different coal fields--limit the potential value of generalized criteria. Coal deposits in the highly productive Wasatch Plateau Coal Field, for example, occur in a structurally different manner than deposits in the remote Kaiparowits Plateau Coal Field. Wasatch coal beds are gently inclined; Kaiparowits beds, on the other hand, lie in a warped table land where dips up to 25 degrees have been observed. In

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[6]In two previous reports on the federal coal leasing program, we found that legislative changes are needed to authorize Interior to conduct negotiated lease sales for tracts which lack competitive interest and are of value only to the adjacent ongoing operations. Legislative Changes Are Needed to Authorize Emergency Federal Coal Leasing (GAO/RCED-84-17, Aug. 2, 1984) and Analyses of the Powder River Basin Federal Coal Lease Sale: Economic Valuation Improvements and Legislative Changes Needed (GAO/RCED-83-119, May 11, 1983).

terms of geologic data needs, on the average, Interior may only need drilling data from 2 to 4 drill holes per square mile to delineate and value a Wasatch tract. To develop a similar understanding for a Kaiparowits tract, it may need data from 8 to 12 or more drill holes per square mile. Thus, a generalized regional and/or national standard setting forth a requirement for a specific number of drill holes might result in too much or too little data.

The primary advantage of setting geologic data adequacy standards on a coal field basis, rather than on a national or regional basis, is that the standards could be set to reflect the unique geologic characteristics of each coal region. This would be more appropriate than the use of generalized standards in identifying and valuing coal reserves. In addition, requirements for each coal field could be developed easily, and at little expense, based on input from local experts in and outside government.

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As requested by your office, we did not obtain Department of the Interior comments on this report. However, we discussed the contents of the report with Interior officials who informed us that after the Department completes revisions to the programmatic EIS for the coal program, all 24 proposed Uinta tracts will be reevaluated based on the revised drilling and data adequacy standards. In addition, the regional EIS for the Uinta sale will be revised as appropriate. Except as noted above, our review was conducted in accordance with generally accepted government auditing standards.

We trust that this report will be of assistance in your continuing oversight of the Federal Coal Management Program and your evaluations of Interior's planned actions in response to the recommendations of the Commission on Fair Market Value Policy For Federal Coal Leasing. Copies of the report are being sent to the Director, Office of Management and Budget; the Secretary of the Interior; and other interested parties.

Sincerely yours,

J. Dexter Peach
Director

Enclosure

ENCLOSURE I

INTERIOR'S JANUARY 1982 GUIDELINES USED TO DELINEATE PROPOSED LEASE TRACTS IN THE UINTA FEDERAL COAL REGION

1. In delineating preliminary tracts for competitive lease sales, the tract delineation team should consider the following factors:

   -Expressions of industry interest and existing or planned coal operations on adjoining lands or in the same locale.

   -Technical coal data.

   -Conservation considerations, land ownership patterns, and the formation of logical mining operations.

   -Surface ownership and the results of surface owner consents.

   -Regional leasing levels and guidance from the Regional Coal Team (RCT).

2. The Conservation Manager will designate a tract delineation team leader who will be responsible for coordinating overall tract delineation efforts. The team will report on delineation progress to the Conservation Manager in accordance with established procedures. Coordination with other Federal Agencies and private entities will be handled by the team leader within established field office procedures.

3. Any official correspondence (oral or written) to other Federal Agencies or private entities which deal with departmental policy must be reviewed by the Conservation Manager. If the correspondence pertains to the establishment of policy guidelines, the Deputy Division Chief for Onshore Minerals Regulation (DDC-OMR) will review the document prior to transmittal. Specific to tract delineation, any correspondence regarding slippage of USGS or departmental deadlines must be reviewed by the DDC-OMR.

4. Tracts will be delineated using best available data. If correlation between data points can be demonstrated, coal quantity may be calculated as measured, indicated or inferred. If correlation cannot be shown or lateral continuity is suspect or if available data are insufficient this should be stated in the geologic report to the RCT. A range of possible coal resources should be given. Reports on tracts which include or are totally composed of lands of this nature should include the statement that "The presence of minable coal has not been established throughout the delineated tract. Further exploration will be required by the lessee to

determine the extent of any contained coals. The delineatd tract is, however, of sufficient size that it constitutes a logical target for further exploration and possible development." Mine life, recovery rate, and annual production will be determined from either specific tract data or from assumptions based upon actual mines in the coal region.

Any later evaluations of tracts which were delineated using insufficient information should be based on either comparable sales with other undrilled or poorly drilled tracts or on a highly risked discounted cash flow (DCF). It would not be unexpected to state as an assumption in a DCF that the probability of development is 10 percent and the probability of the lessee not finding the type and quantity of coal to meet his needs is 90 percent. This is a common type of DCF in oil and gas and is applicable to coal.

5. The tract delineation summary of the tract profile report, which will be prepared by the tract delineation team, will include only those factors critical for tract ranking by the RCT and will be a public document. Personnel from the USGS and any other bureau on the team will work closely together in developing the delineation information. It is the responsibility of the team leader to ensure close coordination exists between all team personnel such that tract delineation efforts are performed in a timely and efficient manner. The tract delineation team should be prepared to modify preliminary tracts throughout activity planning, as determined necessary by the BLM and the RCT. Any proprietary data used in tract delineation efforts will be handled separately by the USGS members on the team.

   Information that will be provided in the tract delineation summary is as follows:

   Tract Identification

   - Tract name/identifier.
   - Coal region.
   - State.
   - County.
   - USGS quandrangle map(s).
   - Known Recoverable Coal Resource Area.
   - Coal Resource Occurrence/Coal Development Potential map(s), name(s).

- Legal description (Township and Range or metes and bound) of tract.

- Name and address of entity(s) expressing interest in subject tract.

Coal Quality

- Rank of coal.

- BTU content.

- Sulfur content.

- Ash content.

- Moisture content.

- Fixed carbon content.

- Volatile matter content.

- Minor and trace element content (if available).

- Coking properties (if available).

- Type of coal (metallurgical, steam, etc.).

Technical Geological Information

- Surficial geology and geologic section of coal-bearing rock sequence.

- Dip of coal-bearing strata.

- Estimated minimum and maximum overburden and interburden.

- Estimated coal resources or reserves.

- Potential geologic hazards (i.e., seismic activity/landslide potential, etc.).

- Potential geologic constraints to mining, if known (i.e., burn areas, oxidized zones, faults, folds, igneous intrusions, unstable roof material for underground mines, etc.).

- Estimated coal recovery factor (i.e., percent of recoverable reserves to minable reserve base).

- Potential mining method(s).

ENCLOSURE I

- Estimated stripping ratio.
- Estimated maximum mining depth.
- Estimated range of annual coal production.
- Estimated range of mine life.
- Hydrologic information (if available).