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BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Secretary Of The Interior

Interior Should Solve Its Royalty Accounting Problems Before Implementing New Accounting System

The Department of the Interior is developing a new royalty accounting system to correct many serious financial management problems that have plagued it for over 20 years. While GAO is encouraged by the Department's ongoing correction efforts, it is concerned that certain problems will not be resolved before the February 1, 1983, implementation of the new system.

If Interior aggressively pursues its current and planned actions before implementation, many of the critical problems will be solved. GAO recommends that the Department delay implementing the new system until the problems identified in this report, as well as any others arising from the acceptance test, have been resolved.



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

ACCOUNTING AND FINANCIAL
MANAGEMENT DIVISION

B-210511

The Honorable James G. Watt
The Secretary of the Interior

Dear Mr. Secretary:

This report covers our review to date of the Department of the Interior's effort to design and develop a new royalty accounting system. This effort is consistent with previous recommendations made by GAO and the Commission on Fiscal Accountability of the Nation's Energy Resources. Royalty collections have rapidly increased during recent years primarily because of substantial oil and gas price increases. Based on January 1982 estimates by the Interior Department, annual royalties were expected to be at least \$5 billion during fiscal 1982 and could reach about \$15 billion by fiscal 1990.

One of the Commission's recommendations, and perhaps the most wide sweeping, was to remove the royalty management program from the Geological Survey. In response to the recommendation, an order was issued on January 19, 1982, removing the royalty management function from the Geological Survey and establishing a new entity responsible for royalty management--the Minerals Management Service (MMS). MMS is responsible for designing, developing, and implementing the royalty accounting system. The overall royalty accounting system development effort consists of two phases: (1) the Auditing and Financial System (AFS), scheduled to be implemented on February 1, 1983, and (2) the Production Accounting and Auditing System (PAAS), scheduled to be implemented in fiscal 1985. Because PAAS is in the early stages of development, our review to date has been limited to the AFS.

In April 1982, MMS gave us a copy of the preliminary system design for the AFS. Since then, we have been reviewing it as well as other material from MMS. We visited the MMS Lakewood (Colorado) Accounting Center twice in June 1982 and again in October 1982. We briefed the Associate Director for Royalty Management in August 1982. As a result of our June and July visits to States, Indian tribes, and oil company representatives, we issued a report on September 15, 1982, to the House Committee

on Interior and Insular Affairs. In that report we commented on the States', tribes', and oil companies' concerns about and views on the new system which will collect, account for, report, and disburse Federal royalties. Also, we presented our assessment of the capability of the States' systems to perform the same functions.

The Department is attempting to correct longstanding problems and has emphasized the need for an effective royalty management program. Although we are encouraged by the Department's ongoing efforts, we are concerned that certain problems will not be resolved before the implementation date. Our concerns are:

- The Accounting Principles and Standards Statement does not conform to our requirements and a number of accounting issues raised by the Department in May 1982 have yet to be resolved.
- The system design does not provide reports to satisfy the recurring needs of the States, Indian tribes, and departmental and MMS auditors as recommended by the Commission.
- The system's documentation, currently being developed by a contractor, may not be adequate for MMS and its facility management contractor to operate and maintain the system after the contractor departs.
- The system design does not provide adequate controls over payments to Indians and may cause payment delays.
- The pay and grades of the mail room staff at the Lakewood Accounting Center may not adequately reflect the scope and complexity of the work.
- The roles and responsibilities of a number of functions essential to the successful operation and maintenance of the system have not been adequately defined. These functions are data base administration, security, tape library, production control, and configuration management.
- The risk analysis being performed by the facility management contractor should have been performed prior to the development of the security and contingency plans.
- The physical security of the computer facility needs to be substantially improved.
- Alternate site processing plans have not been established.
- The acceptance testing may identify design problems of such magnitude and number as to preclude meeting the planned February 1, 1983, implementation date.

We discussed our review results with responsible departmental and MMS officials and MMS provided written comments on our draft report. (See app. III.) Actions underway or planned, if aggressively pursued, will to a great extent resolve many of the problems. In the past, limited staff and the constant push to meet various deadlines have precluded MMS from undertaking many actions which it recognized needed to be taken.

While not any one of our concerns would necessarily cause the system to fail, we believe collectively they are serious enough for us to recommend that the Department delay implementation of the AFS until the problems we identified, as well as any others arising from the acceptance test, have been resolved.

MMS's December 21, 1982, letter stated that in the intervening weeks since our visit in October 1982 many actions dealing with our concerns have been taken to reduce the risk of implementing the system on February 1, 1983.

We visited the Lakewood Accounting Center in January 1983 and found our concerns are still valid. On this visit, we also learned that the system was not thoroughly tested by the contractor prior to turning it over to MMS for acceptance testing. A complete iteration of the acceptance test is not expected to take place until later in February. This visit reconfirmed that our recommendation of delaying implementation is valid.

Appendix I discusses our findings and recommendations in detail. Appendix II gives the objectives, scope, and methodology of our review. Comments received from MMS are in appendix III and our disposition of the comments is in appendix IV.

As you know, 31 U.S.C. 720 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations. You must send the statement to the House Committee on Government Operations and the Senate Committee on Governmental Affairs within 60 days of the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made over 60 days after the date of the report.

We are sending copies of this report to the Chairmen of the above-named committees as well as the Chairmen of the House Committee on Interior and Insular Affairs and Senate Committee on Energy and Natural Resources. Also, we are sending copies to the Chairmen of the Subcommittees on Mines and Mining and on Oversight and Investigations of the House Committee on Interior and Insular Affairs as well as other appropriate congressional committees. We are sending copies of this report to the Director, Minerals Management Service, and to your Inspector General.

We are continuing our review of the royalty accounting system development effort and will apprise you of any additional concerns that develop. We are available to discuss these or any other matters related to the development effort if you wish.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "W D Campbell".

W. D. Campbell
Acting Director

FINDINGS AND RECOMMENDATION ON
THE DEPARTMENT OF THE INTERIOR'S

ROYALTY ACCOUNTING SYSTEM DEVELOPMENT EFFORT

Historically, management has not placed a high priority on the collection of oil and gas royalties. Consequently, serious deficiencies in the collection system that were identified over 20 years ago persist today. Thus, large sums may be going uncollected each year.

The Department of the Interior is making a serious effort to correct the longstanding financial management problems that have plagued royalty accounting. A major dimension of the effort to correct these problems is the Minerals Management Service's current effort, with contractor assistance, to design and develop a royalty accounting system. This effort consists of two major phases.

The first phase is the design and implementation of the Auditing and Financial System, which is intended to aid in processing, accounting, and distributing royalty collections. This phase is in the advance stages of development with implementation scheduled to begin February 1, 1983. The second phase is the design and implementation of the Production Accounting and Auditing System which will use reported production information to assess the validity of the royalty collections processed by AFS. This phase is in the very early stages of development. The contractor has completed a preliminary system design document which is being reviewed by departmental and MMS personnel. Because of this early development status, we are addressing only AFS unless otherwise indicated. Further, we deem it important to report on AFS at this time because some of the problems, unless promptly and effectively resolved, can have a serious effect on successful implementation of the system as well as on future PAAS development efforts.

PRINCIPLES AND STANDARDS STATEMENT
AND ACCOUNTING POLICY PROBLEMS
NEED TO BE RESOLVED

The Principles and Standards Statement does not conform to our requirements for such a statement. As currently written, the statement includes a lot of detailed operational criteria and procedures. To expedite our approval of the statement, we have reviewed the Statement and advised MMS as to what portions should be eliminated, consolidated, or rewritten.

Regarding the three accounting policy issues that the Department raised in May 1982, we cannot, based on our present understanding of the issues, support the Department's position. Our current position is based on the fact that departure from our requirements will result in the production of inaccurate accounting information. The three issues pertain to the (1) recording of uncollectibles, (2) recording of estimated payments as liabilities, and (3) application of the accrual basis of accounting.

On December 20, 1982, we received a letter from MMS requesting policy guidance on the three issues. We are reviewing the submission and will provide such guidance to MMS soon.

It is of utmost importance that the three issues be resolved as soon as possible because even if the system is acceptable in all other aspects it cannot be approved unless these issues are resolved.

REPORTS NEEDED BY STATES, INDIANS,
AND AUDITORS MAY NOT BE PROVIDED

The system design does not provide adequate reports to satisfy the recurring information needs of the States, Indian tribes, and departmental and MMS auditors as discussed in our September 15, 1982, report "Overview of Department of the Interior's and Selected States' Royalty Accounting Systems" (GAO/AFMD-82-107).

In addition, witnesses from States and Indian tribes appearing before the Commission on Fiscal Accountability of the Nation's Energy Resources stated that they did not receive adequate information as to the source and basis of royalties they receive. As a result, they cannot be assured the payments are correct.

The Commission recommended the Department design and implement

"* * * a system of sharing with the individual States and Indian tribes on a timely basis all information which the Federal royalty program collects concerning leases within their respective boundaries, including information at the time the checks are distributed to verify the accuracy of the royalty payments and to audit the accounts if necessary."

The system design does not provide for reports to the States and Indian tribes which support and verify the accuracy of the payments to them. Reports provided do not contain product quantity, sales, or other information needed to verify the accuracy of the payments.

In its comments on our earlier draft report MMS told us that effective October 1, 1983, the States and Indian tribes will receive a detailed explanation of the source of any payments provided to them. This information will be provided in aggregate on a lease-level basis. Such reports would doubtless be informative and useful. However, to verify the accuracy of the payments and audit the accounts, information must be reported at the lease subaccount level rather than the lease level.

MMS believes the DATATRIEVE feature of the AFS will facilitate development of needed reports. To produce a report using DATATRIEVE, a data retrieval and report generator package, a programmer or someone knowledgeable in the high-level language must write a program to extract the desired information and arrange it in the desired format. This requires an advanced understanding of automated information systems with special emphasis on data base management systems. Such packages are intended to facilitate production of special request or one-time only reports and analyses. While it is a very useful feature, it is not a substitute for programs designed to develop recurring reports.

Further, MMS considers the problem one that can be resolved after the system is operational and it receives feedback from the States and tribes. We believe high priority and prompt attention should be directed to the problem to ensure that (1) maximum benefits are derived from the system and (2) the Commission's recommendation that the Department design and implement a system of information sharing is promptly fulfilled.

We believe also MMS should take the initiative rather than depend on random feedback. State and tribal officials in some instances may not have a background in automated systems technology which would permit them to understand AFS's potential for production of numerous, varied, and complex recurring reports. Further, we believe officials and staff of entities which deal with the Federal Government sometimes feel intimidated by what they perceive as Federal agencies' awesome power. Accordingly, they aren't as aggressive in expressing their needs as they might otherwise be.

We believe a carefully planned and systematic effort should be made to identify the recurring information needs of the States and the Indian tribes. This should be given high priority and carried out promptly. Such an effort would entail meeting with representatives of each State and tribe, apprising them of the information available from the data base, and then cooperatively designing useful recurring reports. Information needs may vary among the different States and tribes; however, a sophisticated system such as AFS should be responsive to their varying needs.

Also, we are concerned that the design may not be adequately responsive to the auditors' needs for recurring reports. The

audits performed by the Royalty Compliance Division's area offices and the Department's Office of Inspector General are vital and critical components of the royalty management effort. Without such audits, MMS would be totally reliant upon producers' representations as to product quantities sold and sales prices received.

The system design identifies 15 recurring reports to be provided to the Royalty Compliance Division and/or audit field offices. Many are detailed listings ranging from 1,000 to 50,000 pages on the status of transactions for each lease or company. Such reports would be very useful to auditors in researching the status or transaction activity of given leases or companies. However, the design does not include any reports intended to highlight or flag probable productive audit situations. Audit resources are very expensive and managers must be constantly alert for chances to maximize their effectiveness. Manually searching through thousands of pages of detailed listings is not an efficient way to identify candidates for productive audit.

Examples of possible reports which would flag audit candidates are reports of instances where reported sales or product values are less than expected by some predetermined percentage or dollar amount. Another useful report--this for the Inspector General's use in companywide audits--would be a report of companies and their sales or royalties scheduled in descending order of magnitude. Similarly, each of the Royalty Compliance Division area offices could probably use a report showing leases under the cognizance of each area office, scheduled in descending order of magnitude of their sales or royalties.

MMS told us that the Royalty Compliance Division staff was intimately involved in the design of the reports that are being generated by AFS. We continue to believe, however, based on our analysis of the reports, that MMS has a long way to go in achieving the full potential of AFS as a tool for identifying candidates for productive audit.

We believe that MMS should work closely on a continuing basis with its Royalty Compliance Division and Office of Inspector General to design recurring reports which can contribute to the effectiveness of these offices. This cooperative effort is important if maximum benefits are to be derived from the AFS.

SYSTEM DOCUMENTATION MAY NOT BE ADEQUATE

The documentation currently being developed by a subcontractor with assistance from the prime contractor responsible for the design, may not be adequate for MMS to effectively operate and maintain the system. A system, no matter how carefully designed, is of little value if the using organization is unable to use the documentation to operate and maintain the system. The more

complex a system, the more critical the need for adequate documentation. Thus, the need is especially critical for AFS which has over 300 computer programs and uses a data base management system and telecommunications.

Further, MMS will be using a facility management contractor to operate and maintain the system. In the absence of adequate documentation, MMS would have to depend on the prime contractor because others would have difficulty in understanding and operating the system. If the prime contractor should choose to discontinue or not renew the arrangement, the results could be disastrous.

Contributing to the problem is the lack of an approved MMS functional requirements document which should describe what the system is supposed to do in functional terms, that is terms which users (in this case, accountants) can understand. The requirements document should describe such things as source documents or forms, system processes and reports, information flow, and basic internal controls. When approved, the document represents the baseline for subsequent design efforts such as development of program specifications and ADP programs.

The prime contractor, using the functional requirements document which it had prepared and which had not been approved by MMS due to a lack of personnel, proceeded with subsequent development. This development effort is based on a de facto baseline document consisting of the contractor's functional requirements included in the preliminary system design, contractor deliverables in the form of program specifications, walk-through briefing minutes, and a critical design review report.

Further compounding the documentation problem is the fact that the prime contractor is not preparing the final documentation for submission to MMS; a subcontractor has that responsibility. Experience has proven this approach to be unsuccessful. Unless the person performing the development task records the thought processes and logical steps taken to arrive at the solution at the time of the task, confusion, waste, and duplicated effort often occur. In this instance, not only is after-the-fact documentation being prepared, a subcontractor is attempting to compile, write, organize, and deliver the final documentation to MMS based on the baseline documentation that has evolved and through interviews with members of the prime contractor's staff.

MMS is well aware of this problem and has acted to determine if the documentation is acceptable. Earlier this year, critical design review teams of MMS staff performed indepth reviews of the documentation to identify inconsistencies, omission of needed documents or information, and any apparent flaws in the system logic. We examined the teams' reports and were greatly impressed with the

depth of their reviews. Approximately 2,000 inconsistencies were identified.

We believe the critical design review process represents a possible solution to the documentation problem, but only if MMS carefully follows through to ensure that the discrepancies identified are corrected in the final system documentation package.

MMS is committed to avoiding the mistakes of the AFS effort in the follow-on PAAS effort by insisting that the baseline document be carefully critiqued and approved before subsequent developmental stages. We endorse this approach and recommend it be adhered to even if it results in some delays in completing the PAAS documentation and design effort.

ROYALTY PAYMENTS TO INDIANS NOT ADEQUATELY
CONTROLLED AND MAY BE DELAYED

The new system design does not provide adequate controls over payments to Indians. Currently under the Interim Operating System, which AFS will replace, payments are made to Indian allottees using four different methods: (1) payments are made directly to individual Indian allottees by payor companies, (2) the Bureau of Indian Affairs (BIA) makes payments to Indian allottees, (3) payments are made directly to lockboxes at commercial banks contracted by tribes, and (4) BIA makes payments to tribes and they in turn distribute the payments. Now, the majority of the allottees and tribes paid by BIA are being paid by the Anadarko, Oklahoma, area office of BIA. The payments being made by the payor companies are outside the control of the Interim Operating System and MMS cannot determine their accuracy. BIA presently provides the payor companies with recipient and payment information annually.

The Department has recently approved an approach for AFS where payor companies will remit all payments for Indian allottees to MMS. MMS would, in turn, deposit the payments to the credit of BIA in its U.S. Treasury account and forward the payment information in the aggregate by lease to BIA area offices and send journal vouchers to BIA's central accounting office in Albuquerque, New Mexico. BIA would be responsible for reconciling the journal vouchers and payment information. The BIA area offices would disburse all payments to tribes without lockboxes and individual Indian allottees.

On the positive side, this new approach is designed to ensure that the payments are correct and remitted promptly by the payors. The payments, along with their related reports, would be processed through the various controls, edits, and reconciliations within AFS.

However, unlike payments to States, control of payments to tribes and Indian allottees is transferred outside the AFS to BIA's accounting system. In our September 8, 1982, report "Major Improvements Needed In the Bureau of Indian Affairs Accounting System" (GAO/AFMD-82-71), we found that BIA had lost accountability over hundreds of millions of dollars of grant, contract, and trust funds because its automated accounting and finance system produces unreliable information. Under the present system approximately 7,000 individual Indian allottees located in eastern Oklahoma are presently being paid directly by payor companies. Under the new system these allottees will be paid by the BIA Muskogee, Oklahoma, area office. We believe the planned approach of using the Muskogee area office could cause unacceptable delays in payments to individual Indian allottees because it is presently nonautomated and only issues approximately 200 checks per month. BIA plans to install a minicomputer and duplicate the Anadarko area office's accounting system to account and disburse the royalty payments at the Muskogee area office. The Anadarko area office was one of the offices reviewed during our audit of BIA's accounting system. MMS officials told us the approach would not be implemented until the Muskogee area office is equipped, staffed, and trained, and has established and tested procedures for carrying out its role.

BIA is redesigning its accounting system. The redesign is a long range project. We believe that AFS should be enhanced to allow direct payments to Indian allottees and tribes to the extent that such payments are authorized by law. We believe that in such cases better control and accountability could be realized by having one system rather than two collect and disburse the funds. This could be accomplished by having BIA provide MMS with a recipient and payment information file as it did private corporations--but on a monthly basis if necessary. This approach would eliminate intermediate recipients of payments, thereby minimizing delays and the opportunity for diversion of funds, fraudulently or otherwise.

MAIL ROOM POSITION CLASSIFICATIONS
SHOULD BE STUDIED

While the current mail room staff is competent and knowledgeable in their job requirements, we are concerned about whether MMS will be able to hire and retain additional competent staff under the present pay and grade structure when the AFS workload increases and PAAS becomes operational.

Traditionally, mail room personnel are responsible for receiving and distributing incoming mail. In addition, MMS mail room personnel are performing the initial steps in the system's network of internal controls. They are responsible for classifying, calculating the control totals, batching the transactions

prior to data entry in the automated portion of the system, and processing payments received through the check encoder system.

The current volume of transaction activity is about 6 percent of the volume anticipated when AFS becomes fully operational. To ensure that the network of internal controls is not compromised and that competent, qualified personnel can be hired and retained, MMS should review the job classifications of the mail room personnel to be certain that the positions adequately reflect the scope, complexity, and responsibility of the work performed.

SEVERAL KEY FUNCTIONS ARE NOT ESTABLISHED OR ORGANIZED

Roles and responsibilities of key functions vital to successful operation and maintenance of the system have not been adequately defined. These functions are data base administration, security, tape library, production control, and configuration management.

The data base administration function is unique to systems such as AFS which use data base management systems. In earlier, simpler systems, the other functions required limited management attention and were often assigned as additional duties to staff members who could work at them intermittently or as specific problems were identified. However, for large, complex, sophisticated systems such as AFS, this is not possible as each function requires the full-time attention of one or more competent, qualified staff members.

A consensus has evolved in the ADP community that in those cases where data base management systems are used, a data base administrator is required. The administrator's responsibilities include achieving agreement on data definitions, representations, and structures; recovery design and implementation procedures; data base documentation; system performance evaluation; system tuning; safeguarding and controlling data; and new feature evaluations. These tasks need to be specifically defined for the data base administrator to be effective.

The security function is concerned with the protection of the automated system's equipment, data, and programs. It is usually headed by a security officer responsible for continually assessing the adequacy, effectiveness, and appropriateness of the system's physical and programmed security. For a complex system such as AFS, the security officer assigns access codes to user organization staff and, in accord with management's direction, enters instructions to the system to limit access to designated personnel.

The library function is concerned with the maintenance, control, and accountability over the system's tape and disk files. It encompasses numbering and labeling of the tapes and disks for identification, as well as the procedures for assuring that files are issued only to individuals authorized access. The library function is also charged with ensuring that the files are retained for backup and recovery, as well as audit purposes, in accord with a carefully designed file retention schedule. Further, the function ensures that the files are securely stored and protected from damage and destruction.

A great amount of work has yet to be done in the establishment of the library function. We observed that many tapes used in the operation of the current system at the Accounting Center are maintained in unlocked metal cabinets during working hours thereby permitting anyone in the facility access to them.

About 43,000 line items of information are processed monthly by the current system. When the AFS is fully operational, it will process about 750,000 line items per month. With activity of this magnitude, orderly operation of AFS will be impossible without a formal and carefully organized library function, and implementation of the follow-on PAAS will compound the problem.

The production control function for an advanced ADP system must be carefully organized and managed. Production control is concerned with (1) scheduling computer usage to ensure that all jobs are performed when required, (2) controlling accuracy and completeness of both records submitted for processing and reports produced by the computer system, and (3) timing the flow of information entered in the system in order to meet the various cutoffs required to produce reliable and timely reports. Further, production control maintains a detailed schedule of the recipients for all reports, which it uses as a basis for their distribution.

Configuration management as a defined function is a relatively new concept which evolved in the development life cycle of software from the engineering discipline where it was originally used to control the development of equipment. A configuration management system involves continuing assessment of the system's total configuration of equipment and supporting software in an environment of constantly changing technology and user needs. Its purpose is to strive to maintain a configuration which optimizes economy, efficiency of operations, and effectiveness in meeting user needs. It includes (1) quality assurance programs to determine status of work, quality of products being produced, compliance with established standards, and degree to which the products satisfy performance requirements and acceptance criteria and (2) change control procedures to control changes not only in documentation but also software.

Departmental and MMS officials acknowledge that there is much to be done in establishing and organizing the vital functions just discussed. A major problem has been the difficulty in acquiring the competent, qualified data processing professionals needed to staff them. Further, limited staff resources have so far restricted the attention that could be directed to the problem.

Personnel have recently been hired to staff the data base administration, configuration management, and security functions. They are presently learning the system and, in concert with MMS managers defining their roles and responsibilities. For the other functions, little has been done.

We believe MMS must give high priority to establishing the key functions just discussed and defining related roles and responsibilities. Further, the system should not be implemented until this is done; to do otherwise would invite failure.

RISK ANALYSES SHOULD HAVE BEEN
PERFORMED BEFORE PLANS WERE DEVELOPED

MMS did not follow the proper sequence in developing the physical site security and contingency plans. Risk analyses should have been performed prior to the development of the two plans. The facility management contractor who developed the physical site security plan is performing a risk analysis to determine if the approach and methods recommended provide for the greatest reduction in loss expectancy at the least total cost. We do not believe that the party responsible for developing the plan should be performing the analysis. The problem is compounded by the fact the the facility management contractor is also responsible for developing the contingency plan. Based on the preceding, we must assume the facility management contractor will perform a risk analysis of that plan.

We recognize that limited staff resources have kept MMS from performing these important planning functions in-house. We do not mean to suggest that the efforts underway be terminated. However, to ensure that plans developed by the contractor are adequate, departmental and MMS managers should carefully review the risk analysis studies that have been performed and plans that have been developed. Reviewers should determine whether all options have been considered, and whether conclusions and recommendations are logically supported. Office of Management and Budget Circular A-71 and Transmittal Memorandum No. 1 promulgate policy and responsibilities for the development and implementation of computer security programs by executive branch departments and agencies. Also, Federal Information Processing Standards Publications (FIPS PUBS) 31 and 87, published by the National Bureau of Standards, contain guidance on physical security, risk management, and

contingency planning. We believe these materials will help managers review the contractor's products.

PHYSICAL SECURITY OF COMPUTER FACILITY IS INADEQUATE

The current computer facility does not include adequate safeguards to protect the computer and related equipment as well as computer room personnel from fire and other potential hazards.

We were told in discussing the computer facility safeguards with MMS personnel, that the facility's water sprinkler system, is currently inoperative. MMS shut off the system because it felt if the sprinklers began to function, either as a result of fire or accidentally, the facility staff could be electrocuted or seriously injured from electrical shock, and the equipment irreparably damaged. These are, indeed, valid concerns.

To solve the problem, we suggest MMS consider installing a HALON-based system, whereby a fire is extinguished by a concentration of gas. However, even with a HALON system there is still some threat to safety. Accordingly, the staff must be impressed with the importance of evacuating the facility as soon as an alarm sounds.

Irrespective of the method ultimately selected, the Department and MMS must take immediate action to provide adequate fire protection. FIPS PUB 31 contains guidance for assessment of a facility's protection requirements as well as information on possible protection alternatives.

Another physical security problem with the current facility is the location of the computer room against an outside wall. This weakness, coupled with the lack of floor to ceiling walls separating the computer room from the rest of the facility, increases the system's vulnerability to burglars, vandals, and others bent on theft or destruction of equipment and files or disruption of system operations.

MMS advised us that it is seeking an alternative computer facility because it is concerned that the present facility may not be large enough to accommodate the equipment and files of the fully implemented AFS. This space problem will be compounded with the implementation of the follow-on PAAS. In selecting a replacement facility, MMS should be certain that the facility includes adequate provisions to solve its current physical security shortcomings as well as to meet its space requirements.

ESSENTIAL ALTERNATE PROCESSING
SITE HAS NOT BEEN ESTABLISHED

Arrangements have not been made for use of an offsite back-up computer. Such an arrangement is vital to ensuring continuing system operation if the computer facility is destroyed or damaged by fire, flood, or other disaster.

While MMS has entered into an informal backup computer agreement with the U.S. Geological Survey's Office of Earthquake Studies at nearby Golden, Colorado, that agreement has not been finalized.

While this effort is a step in the right direction, MMS must give priority to this effort to ensure that the system has adequate backup capability before it becomes operational. The informal agreement with the Office of Earthquake Studies should be formalized to ensure that both organizations have identified those noncritical operations they must forego to permit continued operation. While MMS has an offsite storage facility, it should establish a program to identify what key documentation should be stored in the facility.

In our report "Most Federal Agencies Have Done Little Planning for ADP Disasters" (AFMD-81-16), we stated that letters of agreement are not adequate as ADP backup plans. We believe this report would be helpful to departmental and MMS personnel in formalizing backup and offsite storage plans.

DESIGN PROBLEMS IDENTIFIED DURING
ACCEPTANCE TESTING MAY DELAY
IMPLEMENTATION

In the process of testing the system prior to implementation (hereafter referred to as acceptance testing), MMS may identify problems of such magnitude and number as to preclude its meeting the planned February 1, 1983, implementation date.

Acceptance testing of AFS is scheduled to be completed by January 31, 1983. The acceptance test plan was developed by an oversight contractor charged with monitoring and reviewing the efforts of the prime contractor. We examined the test plan and believe it is adequate.

The critical design review teams mentioned earlier identified about 2,000 discrepancies in the system documentation. Further, it appears that some of the identified problems suggest design and programming problems directly related to the documentation problem discussed earlier. We are concerned that the problems identified by acceptance testing may mirror, in scope and number, those identified earlier. In such circumstances, it may

not be possible to correct the problems prior to the February 1, 1983, implementation date.

We believe the system should not be implemented until all critical problems identified during acceptance testing as well as those identified earlier, have been corrected. We have observed that implementing and operating systems before critical problems have been corrected can be disruptive to an extent bordering on chaos.

CONCLUSIONS AND RECOMMENDATION

As discussed in the preceding pages, weaknesses in the Auditing and Financial System are serious and extensive. Many of our concerns, if not promptly and effectively addressed, will adversely affect the implementation and operation of the system. If aggressively pursued, actions underway or planned will to a great extent resolve many of these problems--if sufficient time is given to MMS to implement the actions before system implementation and if top managers continue to give the effort the attention it needs. We have found that top managers' attention and support were often the key elements in resolving system design problems before implementation of successful systems.

Accordingly, we recommend that the Department delay implementation of the AFS until the problems we have identified, as well as any others that surface as part of the acceptance test, have been resolved.

AGENCY COMMENTS AND EVALUATION

The MMS commented that since our visit to the Accounting Center in mid-October 1982, many actions have taken place dealing with the problems in our report and therefore it could not agree with our recommendation that system implementation targeted for February 1, 1983, be delayed. MMS stated no fatal errors or design flaws have been encountered and the contractor has been able to correct all major problems identified by the system testing. (See app. III for MMS's comments.) We do not fully agree with the MMS comments which we address in appendix IV.

We believe that in addition to the problems identified by us and the MMS critical design review teams, others will surface during the acceptance testing to be completed January 31, 1983, which cannot be fully resolved prior to the February 1, 1983, implementation date. Experience with other system development

projects has convinced us that problems discovered during acceptance testing result in serious operational problems unless they are corrected prior to implementation.

OBJECTIVES, SCOPE, AND METHODOLOGY

With the exception of Government corporations and certain quasi-governmental entities, all executive agencies are required by the Accounting and Auditing Act of 1950 to adopt accounting and internal control systems that conform to the principles and standards prescribed by the Comptroller General. The act also requires such systems to be approved by the Comptroller General.

The primary objective of our ongoing review of the Royalty Accounting System is to determine whether the system currently being developed and documented meets our prescribed requirements.

We are conducting our ongoing review at the Minerals Management Service Headquarters in Washington and at the Service's Lakewood Accounting Center in Lakewood, Colorado.

Up to the present time, our review has been limited to the review and analysis of the documentation related to the proposed system. This documentation included

- the preliminary system design package,
- the critical design review reports,
- the system acceptance test plan, and
- other related system documentation.

We have also reviewed pertinent laws, regulations, policies, and procedures. We interviewed Department of the Interior officials responsible for the planning, design, and implementation of the new accounting system and those responsible for the accounting and auditing functions. We also paid close attention to the proposed system's ability to properly account for and collect royalty payments.

Our review was performed in accordance with generally accepted Government audit standards.



United States Department of the Interior

MINERALS MANAGEMENT SERVICE
RESTON, VA. 22091IN REPLY REFER TO:
MMS-Mail Stop-660

DEC 21 1982

Mr. Wilbur D. Campbell
Acting Director, Accounting and
Financial Management Division
U.S. General Accounting Office
Washington, D.C. 20548

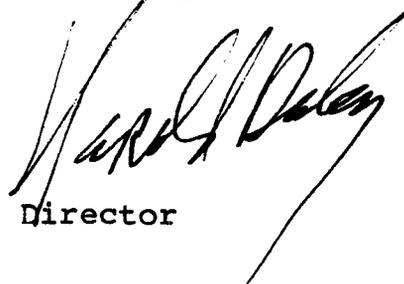
Dear Mr. Campbell:

Enclosed are the Minerals Management Service comments on the General Accounting Office draft report entitled, "Minerals Management Services Royalty Accounting System Development Effort."

In the intervening weeks since your visit of October 18, 1982, many actions dealing with items mentioned in the draft report have been taken which reduces the risk of proceeding with our current schedule of having the Auditing and Financial System become operational on February 1, 1983. Therefore, we cannot agree with your suggestion that systems implementation be delayed.

We hope you will find these comments helpful in preparing a final report.

Sincerely,


Director

Enclosure

Comments on Draft General Accounting Office (GAO) Report,
"Minerals Management Service Royalty Accounting System
Development Efforts"

The following comments are addressed to each of the principal sections included in the draft GAO report.

Principles and Standards Statement

There has been a considerable amount of confusion and misunderstanding over this issue. Following a meeting with GAO in May 1982, we were informed that GAO felt that the principles and standards developed for the National Parks Service (NPS) accounting system could serve as a model for the principles and standards for the Auditing and Financial System (AFS). Price Waterhouse followed the format and content of the NPS principles and standards in developing the draft which was provided to GAO for review. In a meeting held with GAO in October 1982, we were informed that the principles and standards statement contained too much detail, even though it followed the model which GAO itself had provided us. We have just received, within the last week, the edited comments which GAO has made on the draft of the principles and standards prepared by Price Waterhouse. A redraft based on this advice is now being prepared by Price Waterhouse and will be available for review by GAO shortly after the first of the year.

A letter to Associate Director Virginia Robinson requesting policy guidance on the three issues mentioned in the draft report was sent to GAO on December 8, 1982. The Minerals Management Service (MMS) will reflect whatever policy guidance is provided by GAO on these three issues in the final draft of the AFS principles and standards. (See GAO Note 1, p. 22.)

Reports Needed by States, Indians, and Auditors

The major issues raised by GAO under this heading has been resolved as a result of the recent reorganization approved by the Secretary which transfers responsibility for disbursement of Federal mineral royalties to the Royalty Management Program. Effective October 1, 1983, the States and Indian tribes will receive a detailed explanation of the source of any payments provided to them. This information will be provided on a lease-level basis. If current legislation pending in Congress passes in the interim providing for monthly payments to the States, these reports will be provided on a monthly basis.

As to the report format itself, we feel it is too early to develop a pre-programmed report format until we have had some experience with the States and tribes as to the types of information they want from AFS. The DATATRIEVE feature of the AFS will allow us to generate reports in a variety of formats. Only after several months operating experience and feedback from States and tribes as to the extent and type of information they want on a lease-by-lease basis, do we intend to undertake reports enhancement which will develop a regularly generated report.

As to the reports for auditors, the Royalty Compliance Division staff was intimately involved in the design of the reports that are being generated by AFS. They are satisfied with these reports and feel it meets their needs. Further, Interior's Office of Inspector General will review the system's audit manual and related documentation. We feel that the AFS will meet the information needs of all departmental audit efforts involved in mineral leasing. (See GAO Note 2, p. 22.)

Systems Documentation May Not be Adequate

MMS does not intend to accept the system from the contractor until all final documentation satisfies MMS needs and documentation standards. While this may delay formal acceptance of the system by as much as 30 days, we feel that the contractor has an obligation under the contract to make any changes in documentation requested by MMS. (See GAO Note 3, p. 22.)

Royalty Payments to Individual Indians

The draft report states, "MMS would, in turn, deposit the payments to the credit of the Bureau of Indian Affairs (BIA) and forward appropriate recipient and payment information to the BIA Muskogee, Oklahoma, office." This statement is incorrect. Muskogee is only one of several BIA area offices which is involved in the Indian allottee payment process. As you may be aware, there are actually three types of allottees: those that receive payment directly from the payor companies; those who receive payment from BIA; and those who are paid by the tribe. The payment process differs in each case. At present, only those allottees paid by BIA and the tribe are converted over to the new system. At the present time, therefore, the majority of the workload is actually in the Anadarko area office of BIA.

No transfer of responsibility for direct pay allottees has been made. This transfer of responsibility is presently scheduled for April 1983, but will not take place until MMS and BIA are satisfied that the shift from industry payment to BIA payment of individual Indian allottees can be done without significant disturbance to the system.

The draft report recommends that "The AFS, upon receipt of payments, should report such information to the individual Indians." This is statutorily impossible. MMS does not have the necessary lease-by-lease information to provide this data to the Indians. Only BIA, as part of its trust responsibility for the Indians, has by statute, access to, and responsibility for, maintaining this data.

We believe that GAO is putting MMS in a "Catch 22" situation on this issue. For years, GAO has argued that the lack of internal controls within the old Royalty Accounting System left it open to widespread potential for fraud and mismanagement. Now GAO seems to be recommending a major exclusion to the new AFS which would allow the existing direct payment of Indian allottees to continue. We feel this is inconsistent with the internal controls and principles and standards proposed for the AFS and with previous recommendations made over the years by the GAO. (See GAO Note 4, p. 22.)

Mailroom Position Classification

This issue has already been studied and promotions of mailroom personnel have been initiated and approved where possible. Again, there is a "Catch 22" situation inherent in this recommendation. Upward classification of positions in the mailroom could only be accomplished by creating accounting technician positions for which the extremely capable employees in our mailroom at present would be ineligible. We would, therefore, be creating a situation which would actually hurt the people we would be trying to help. (See GAO Note 5, p. 23.)

Several Key Functions are not Established or Organized

The positions of data base administrator, security officer, and configuration management specialist are all filled and the personnel on board.

The functions of tape library and production control are both being performed by the operational and maintenance contractor, International Business Services (IBS). The data base administrator, the security officer, and the configuration manager are all heavily involved in the AFS acceptance test, learning the intricacies of the new system.

As to the production control function, we are proposing a reorganization of the Accounting Operations Division which would create a new branch for systems production and administration. This branch would be responsible to the Chief of the Accounting Operations Division for scheduling production functions and working closely with the Systems Development and Research Branch on overall systems administration. (See GAO Note 6, p. 23.)

Contingency Plan

A copy of the draft contingency plan is available for GAO review.

(See GAO Note 7, p. 23.)

Performance of Risk Analyses

We do not feel that the issue of who performs the risk analysis is as critical as GAO purports in its report. A risk analysis was prepared by IBS. However, it was reviewed by MITRE Corporation which is our systems integration contractor, as well as by MMS staff. To a great degree, it makes more sense to us to have the risk analysis performed by those who are most intimately familiar with and involved with the potential risks of the system than by a disinterested third party who may only be aware of the peripheral aspects of some of the risks involved.

(See GAO Note 8, p. 23.)

Physical Security of the Computer Center

We agree with this recommendation in part. The Computer Center has to be enlarged to accommodate additional equipment being acquired to operate the Production Accounting and Auditing System (PAAS). Significant improvements in physical security will be made as a result of that expansion. However, we would point out that the computer facility is located in a building on a totally secure Federal compound, with 24 hour a day Federal Protective Service guards. We believe this increases the security even if the physical facility itself is not as secure as we would like to have it. We all intend to have a high level task force to study security in the new center before construction begins.

The installation of a HALON system was budgeted in our FY 1981 budget. However, because of the construction of the Computer Center (without floor-to-ceiling partitions), installation of the system would prove a health hazard to employees in the environment. Therefore, the decision has been made not to proceed with its installation until expansion of the Computer Center now being designed has been completed.

(See GAO Note 9, p. 24.)

Offsite Storage

An offsite storage facility, Building 53 on the Federal Center, is operational. Tapes are being stored in a secured vault in Building 53. (See GAO Note 10, p. 24.)

Design Problems Identified During Acceptance Testing May Delay Implementation

The acceptance test has now been under way for 2 1/2 weeks. While a number of "bugs" have been found in the coding and programming, no fatal errors or design flaws have been encountered. The contractor has been able to correct all problems identified by the Acceptance Test Team, for the most part, within 24 hours of notification.

While we cannot, of course, guarantee that a major design flaw will not be encountered during acceptance testing, MMS strongly feels that everything that can be done has been done to prevent this type of problem from occurring during the period from the completion of the critical design review to the beginning of acceptance testing.

However, MMS is committed to not accepting the system until it is proven to be fully operational in all ways, and that the final documentation provided by the contractor meets all standards required.

Other Items

Finally, there are several other factual errors in the text of the draft report:

1. The Commission on Fiscal Accountability of the Nation's Energy Resources was not a Presidential Commission. The Commission was appointed by the Secretary of Interior. (See GAO Note 11, p. 24.)
2. PAAS is now scheduled to be fully operational in FY 1985 (November 30, 1984), not FY 1984. (See GAO Note 12, p. 24.)
3. We feel that the organization of the report could be revised. The summation of the findings in the draft letter, as well as in the report itself, does not seem to prioritize either the seriousness or the stature of individual findings and recommendations. Under the present format, position classification in the mailroom receives the same exposure as problems with the system's principles and standards. A regrouping of conclusions and recommendations into critical and noncritical categories would be helpful in strengthening the report's impact.

GAO NOTES

1. We agreed completely with the MMS comment that there has been a considerable amount of confusion and misunderstanding over this issue. As early as November 1980, we discussed with the Geological Survey (the agency responsible for royalty collections at that time), the need for the principles and standards statement to be updated prior to any design work. Since that time, there has been a constant series of efforts to publish such a statement.

When we gave the National Park Service approved statement of principles and standards to MMS, we cautioned that the MMS system was much narrower in scope and that many portions of the Service's statement would not be applicable. In spite of this guidance, MMS provided us a draft statement which was as voluminous as the Service's statement and contained far too much operational criteria and too many procedures. We told MMS that as soon as we receive the revised statement, we will review it to determine if it meets our requirements.

On December 20, 1982, we received the December 8, 1982, letter requesting policy guidance on the three outstanding accounting issues. We are currently reviewing the submission and will be providing such guidance to MMS soon.

2. Under the reorganization alluded to, MMS will disburse directly to the States their share of royalties collected by MMS from producers. Prior to the reorganization, MMS deposited the States' share to the credit of the Bureau of Land Management. The Bureau, in turn, disbursed the funds to the States. In our earlier draft report, we recommended that MMS send reports in support of the payments directly to the States rather than through the Bureau. Such reports would ensure that the funds collected have not been diverted, fraudulently or otherwise, between collection and the time the Bureau disburses them to the States. As MMS suggests in its response, as a result of the reorganization, our recommendation is moot. This is only one of the issues raised under this heading; the major focus under this heading is on the adequacy of reports.

3. The final documentation package should reflect what, how, when, where, and by whom the systems functions are performed at the time of implementation. A system consists of hardware, software, written procedures, and people. Hardware and people come and go, but software and documentation are the lifeblood of a system and guarantee its continuity.

4. See discussion on page 6 of appendix I.

5. We were somewhat confused by MMS's written comments and by what MMS told us when the comments were provided to us on December 21, 1982.

In its written comment, MMS stated that upward classification of mailroom positions could be accomplished only by creating accounting technician positions for which the current employees would be ineligible. This, they feel, would be counter to its efforts to help the current mailroom personnel. During our December 21 meeting, MMS told us that plans were underway to segregate the mailroom and accounting-related activities and that progress had been made in securing a job classification which would permit additional advancement by the current employees.

While we understand MMS's concern for its current employees, we believe it is of utmost importance that MMS recognize the nature of the work and continue the effort to segregate the duties and obtain a more descriptive classification in order to ensure that competent, qualified personnel are available to adequately perform the accounting-related duties when AFS and PAAS are fully operational.

6. See discussion on page 8 of appendix I.

7. A draft contingency plan has been produced and was delivered on December 21, 1982. We quickly reviewed the draft plan and noticed that it lacks specifics and that an alternate site has not been formally selected nor are there procedures for testing the system's processing capabilities. A meaningful contingency plan, developed to maintain reasonable continuity of data processing support when normal automatic data processing operations are disrupted, is also a key element in an organization's network of internal controls. (See discussions on pp. 11-13 of app. I.)

8. It is not just who performed the risk analysis that concerns us but also when it was performed. MMS did not follow the normal process of conducting risk analyses prior to the development of the physical site security and contingency plans. Basically, a risk analysis involves (1) assessing potential losses to the facility and its users from possible destructive and threatening events, (2) assessing the probability of occurrence of such events, and (3) selecting appropriate protective or remedial measures. In conjunction with the risk analysis of the physical site, a facility security study should be performed. It involves an indepth study of the existing facility and protective measures, and identification of specific changes or additional measures that need to be addressed in the plan to bring the facility up to the desired level of security.

9. We do not agree with the initial paragraph of this comment which states that the computer facility is located on a totally secured Federal compound. During our visits, we entered the compound and the Accounting Center without being subject to any security check. Also, during our last visit, we saw a list of personnel authorized to enter the secured computer room, but found the door unsecured.

Concerning the second paragraph, we understand the MMS concern with the potential health hazard associated with the use of HALON. We believe that the preparation of a well defined evacuation plan and stressing to the employees the importance of following that plan in the event of a fire, as well as extending the walls from floor to ceiling will significantly reduce the potential harm to the center's employees.

Coupling this inaction to provide some sort of fire protection with the lack of adequate backup computer capabilities is inviting serious operational problems if a fire should occur. To assist in the selection of a fire protection safeguard, we again suggest using FIPS PUB 31 for guidance.

10. The draft contingency plan appears to provide for offsite storage of data and software files, but our report goes beyond discussing the establishment of an offsite storage facility for data files. (See p. 11 of app. I.)

11. See discussion on page 1 of letter.

12. See discussion on page 1 of letter.