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COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-197882

March 4, 1980

The Honorable Edward P. Boland  
Chairman, Subcommittee on HUD--  
Independent Agencies  
Committee on Appropriations  
House of Representatives

HSE00305



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Dear Mr. Chairman:

Subject: Delays in Implementing the Department of  
Housing and Urban Development's Accounting  
System for its Mortgage Insurance  
Program (FGMSD-80-37)

On October 11, 1979, you asked the General Accounting Office to review the Department of Housing and Urban Development's Mortgage Insurance Accounting System (HUDMIAS) 1/ currently under development to support the Department's multibillion dollar mortgage insurance program. This letter conveys the results of our review which was structured toward obtaining information on

- reasons for slippages in the system's implementation,
- possible declining benefit/cost ratio resulting from implementation delays, and
- management efforts to ensure the system's implementation as scheduled.

In summary, the new accounting system is essential to improve HUD's mortgage insurance activities. The system's development has been plagued with management problems that have contributed to increased development costs in excess of \$23 million over the \$4.6 million originally estimated and more than 4 years delay in implementation. Nonetheless, implementation within the current schedule may still provide opportunities for a benefit/cost ratio higher than previously reported. The Department has installed controls to ensure

1/Formerly referred to by HUD and GAO as HUDMAP.

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that the current schedule is met; however, other controls are needed, such as more frequent formal evaluations of and reports on the system's development progress and costs. Details of the problems and our conclusions and recommendations follow.

ESSENTIALITY OF THE PROJECT

In 1958, the first computer system for mortgage insurance accounting was introduced and by 1964, most of the basic processes in HUD's accounting system were computerized. However, we have reported on several occasions, and HUD has agreed, that the current system does not effectively support the mortgage insurance activities and we have concluded that expeditious development of HUDMIAS is essential.

HUD's current system consists of 17 subsystems that handle approximately

- 5 million insured mortgages,
- 1 million title I loans,
- 30,000 sales annually,
- 300,000 home repairs annually, and
- \$520 million in insurance premiums annually.

Even though many modifications have been made to the system, the Department and GAO have reported that it is considered less than effective in supporting mortgage insurance accounting activities. For example, the subsystems handle millions of changes annually; however, because each subsystem operates independently, a change in one subsystem requires changes in the others.

In December 1974, we began reporting on HUD's accounting system problems and we have commented on the system several times since. Our latest comments were made in our January 23, 1980, testimony on HUD's accounting for Secretary-held multifamily mortgages before the Subcommittee on HUD--Independent Agencies, Senate Appropriations Committee. Our first report noted that the Department had experienced considerable difficulty for several years in promptly closing the FHA insurance operations books and preparing the annual financial statements. We pointed out that the delays had made it impossible to issue our report to the Congress on the insurance operations and financial conditions of FHA by the date specified in the Government Corporation Control Act. We also stated that the problems had become progressively worse and attributed them to

- a cumbersome accounting system which required several manual entries to record a relatively simple transaction,
- data required to maintain and/or update the insurance accounting records was not promptly provided by HUD's automated data processing system, and
- computer system internal controls were not used adequately.

In our 1974 report we recommended that HUD study the accounting system to develop and implement procedures to simplify it. Consequently, in February 1975, a HUD study team recommended a new data system that would integrate its mortgage insurance accounting subsystems. The objectives of this new system are to provide

- an accessible, current, complete, and accurate financial data base;
- an efficient accounting operation;
- improved cash flow;
- improved financial analysis and reporting capability; and
- an effective and efficient data entry process.

The primary users of the new system's data will be the Assistant Secretary for Administration and the Assistant Secretary for Housing (Federal Housing Commissioner). The Assistant Secretary for Administration will use the data to fulfill accounting requirements and to provide more effective techniques and procedures to accomplish fiscal servicing. The Assistant Secretary for Housing will use the data to perform mortgage insurance functions promptly.

#### REASONS FOR PAST SCHEDULE SLIPPAGE

In February 1975, HUD planned HUDMIAS' full implementation for June 1978. This plan has been revised several times, and currently full implementation is scheduled for July 1982. Although the 4-year slippage can be attributed to several conditions, we believe the principal ones are insufficient planning and inadequate management attention which were prevalent in the early stage of the system's development.

Insufficient planning

HUDMIAS' implementation date was established before reliable information was available on the development cost, magnitude, complexity, or needed resources. In our guidance to Federal agencies on developing management information systems, 1/ we emphasized that inadequate planning could lead to schedule slippage and increased costs.

This guidance points out the need for effective planning. It emphasizes that agencies should begin early to plan for specific steps required to accomplish the system's objectives, identify needed resources, and develop schedules for completion. The GAO guidance also cautions that if too little time is devoted to planning, essential details will be overlooked, leading to undesirable conditions such as costly changes in the system's design and delays in implementation.

On November 8, 1979, HUD's Assistant Secretary for Administration testified about HUDMIAS' development before the House Subcommittee on Manpower and Housing, Committee on Government Operations. He acknowledged that insufficient planning in the early stage of HUDMIAS' development had led to several revisions to the system's development schedule and costs. During our review, we noted instances in HUDMIAS' development where HUD had failed to perform two of the more important planning tasks--problem definition and consideration of all alternative solutions to the problem.

Problem definition includes determining the scope of the system needed. Until such a determination is made, a system design contract should not be signed. We observed that HUD awarded contracts, valued at over \$500,000, to provide technical service for developing the conceptual design, without knowing the requirements of the system. As a result, the contracts were vague and specified only that the contractor provide little more than a specified number of hours. The contracts resulted in a conceptual design and, subsequently, a general design which did not satisfy HUD's mortgage accounting needs. The system development director told us that the contracts were awarded so that available funds could be obligated before fiscal yearend--June 30, 1975.

The task of considering alternative solutions to the defined problem provides a means of systematically identifying the design features and an approach that satisfies the agency's needs at the lowest cost. Our evaluations disclosed

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1/"FMIS--Lessons Learned About Acquiring Financial Management and Other Information Systems by the Comptroller General of the United States," Aug. 1976.

that during the early planning for the new system, HUD did not consider an alternative that could have satisfied its mortgage insurance accounting requirements at lower cost. The Department decided on an automated system that would store all data on-line for immediate access and would be dedicated solely to mortgage insurance accounting. However, about a year later, after encountering development problems, HUD conducted a study that disclosed a system that would store data off-line in a memory-type bank and could also satisfy the agency's needs at a lower cost. Although this alternative was adopted, both HUD and the contractor had already spent considerable money and labor designing the on-line system. Moreover, an undetermined but significant amount of additional HUD's and contractor's resources had to be used to make the changes. According to an agency official, about 3 months of the contractor's resources had to be diverted to redesigning the new alternatives.

As another example of insufficient planning, HUD awarded a contract that included developing the functional system design without assurance that the hardware/software would be available when needed. The Director told us that the contract was awarded in anticipation that these items would be identified by a later specified date. However, the hardware/software was not identified as planned. This resulted in contractor personnel, already onboard to develop the functional system design, being retained for months without performing the task.

#### Inadequate management actions

HUD's new accounting system is being developed under a design approach which consists of three phases--the conceptual design, the general design, and the detailed design. This approach is most desirable for developing a system because it permits agency review at the completion of each phase. However, as pointed out in our guidance to agencies, a complex system with large development efforts may require review during and after major tasks within each phase. As discussed below, this was not done in the early stage of this system's development.

The conceptual design phase, which was completed in December 1975, was never reviewed by HUD to ascertain that it met the Department's requirements. In fact, such a review was not conducted until the general design was completed in March 1977. The review disclosed problems that resulted in the latest implementation slippage. According to agency officials, these problems could have been identified earlier, had a technical review been conducted sooner. If the system's design problems had been determined earlier, substantial time, money, and possibly complex efforts to correct the problems could have been saved.

We also noted that in the early stage of the system's development, management had not been adequately involved in providing policy guidance. In July 1976, the Assistant Secretary for Administration formed a steering committee to assist him in

- developing policy guidance regarding the system's development,
- reviewing the status of development on an ongoing basis, and
- reviewing and approving benefit/cost analysis.

However, this committee met only twice, and we found no indication that it met any of its objectives.

#### BENEFIT/COST RATIO FROM NEW SYSTEM

A benefit/cost ratio is normally used to show whether a proposed investment will be justified on an economic basis. HUD prepared several benefit/cost analyses which demonstrated that the new system was economically justified. Each analysis showed a declining ratio but they all showed that the new system was economically justified. However, as pointed out below, the analyses do not accurately reflect the economics of the system because they excluded some costs and some benefits that should have been included. We believe that if all development costs and benefits are considered, the new system will provide opportunities for an even greater return rate than reflected in HUD's latest benefit/cost analysis.

HUD has presented its benefit/cost ratios to the Congress on several occasions. The latest analysis recognized about a \$22 million increase in development costs over the initial analysis; and, the ratio had significantly declined. For example, the initial analysis showed an estimated development cost of \$4.6 million and a ratio of 2.05:1 while the latest analysis reflected the estimated development costs of about \$27 million and a ratio of 1.27:1. The initial analysis considered costs in the areas of contract design and development, Federal employee's salaries and benefits, and system testing. The latest analysis considered other applicable development costs that should have been included in the initial analysis, such as costs for system handbooks, training, and installation. The omitted costs account for about \$5 million or 24 percent of the reported \$22 million increase.

While HUD's latest analysis considered most of the system's development costs, it did not consider costs for facility rental and supplies which amounted to over a million dollars. In addition, the costs considered in each analysis

were not consistently computed. For example, one analysis erroneously computed Federal employees' fringe benefits at 47 percent of basic salary cost whereas another analysis accurately computed fringe benefits at 26.3 percent. This further distorted HUD's computed ratios.

HUD officials acknowledged that all applicable costs were not included in their benefit/cost analyses. Because of time limitations specified for completing our review, we did not attempt to compute the costs that should have been included in each of HUD's benefit/cost analyses. Moreover, such a task would have been extremely time-consuming because HUD had not developed systematic procedures for accumulating system development costs.

While the costs were moderately understated in HUD's latest benefit/cost analysis, the benefits were substantially understated. The analyses always considered between \$22 and \$36 million in benefits that would accrue over the system's estimated 8-year life. The benefits included (1) personnel cost reductions--savings connected with better program management, (2) interest reductions on borrowings through quicker deposits of proceeds from property sales, and (3) tax penalties eliminated through timely tax payments. Missing from these benefits, however, were other measurable savings that could be attributed to the system. For example, in our September 1977 report to the Congress (FGMSD-77-33), we pointed out that HUD could save the Government about \$16.5 million annually in interest cost, if it changes its mortgage insurance premium collections from annually to monthly. We believe this new system will provide HUD the opportunity to adopt this recommendation.

As in the case of costs, we did not attempt to identify and estimate all the benefits that could possibly be attributed to the new system. However, it is apparent that the omitted benefits would be much greater than the omitted costs and the benefit/cost ratios would be greater than those currently being reported by HUD.

MANAGEMENT ACTIONS TO PREVENT  
FURTHER IMPLEMENTATION DELAYS

Since 1977, HUD's top management has been aggressively involved in the development of the mortgage insurance accounting system. Top management has taken several actions that should improve HUDMIAS' chance of being implemented as currently scheduled.

Between June 1978 and February 1979, HUD conducted an extensive review to identify the system's development problems and to specify needed corrective actions. It also

prepared a new plan with milestones for developing the system and provided adequate resources to implement the new plan. Additionally, the Assistant Secretary for Administration took several actions to control system development, including the establishment of monthly reporting of the status of each milestone, and the reestablishment of the system's development steering committee. The committee's new objectives are to

- provide top level management expertise (for review and oversight) in key functional areas of the system's development,
- insure that significant functional areas of the Office of Administration are not overlooked, and
- provide the broadest possible range of available management advisory and consultative services to the Assistant Secretary as a basis for decisionmaking on future direction of the system development project.

#### OTHER ACTIONS COULD IMPROVE CONTROLS

Although HUD has taken actions to improve its controls over HUDMIAS' development, in the event that future system design changes are required, the current controls do not provide for formalized reporting on the system's progress, costs, and alternatives considered. For reasons discussed below, formalized reporting in these areas would greatly enhance management's control over the system's development.

Between March and September 1980, the system's development will go through the manual process analyses, which include detailed procedures on the human factor and how these procedures integrate with the computer functions, completion of functional requirements specification, and overall ADP computer system design. Because problems encountered in one of these elements could adversely affect succeeding elements, the system's development project director told us that the elements should be developed sequentially. However, due to a tight system development schedule, HUD has elected to perform these tasks concurrently. The project director told us that he is aware that there is substantial risk in this approach, but that HUD is willing to take the risk. The deputy director told us that if HUDMIAS' development does not get through this critical period on schedule, the system's implementation date may again slip.

We realize that HUD is making concerted efforts to develop this new system according to the current schedule. However, for reasons stated above, we are seriously concerned about HUD

performing tasks concurrently that should be done sequentially-- especially in light of HUDMIAS past developmental problems, some of which were associated with high risk conditions.

As previously mentioned, HUD requires periodic reporting on developmental progress; this reporting has been done mostly verbally through briefings from individuals responsible for the tasks. HUD has no formalized controls to verify the technical accuracy of this reporting. Such a reporting approach will not provide the best possible data on progress during this critical period of system development.

We also noted that HUD does not accumulate system development costs below the division level. This inhibits HUD's management from knowing HUDMIAS' actual costs and requires managers to make critical decisions and report to the Congress based on estimates which are always subjective. We believe actual costs could and should be accumulated. This would provide a better basis for HUD's managers and the Congress to make decisions about HUDMIAS.

In the past, HUD has not required the documentation of alternatives considered when design features had to be changed. It is quite possible that future design changes may be required and different alternatives or solutions considered. Since management is required to ensure that the agency gets the best possible return on its investment, future design changes should be justified to management and documented to show the basis for the alternative selected.

#### CONCLUSIONS AND RECOMMENDATIONS

As discussed in the preceding pages, HUDMIAS is essential for HUD to correct longstanding and persistent problems with its mortgage insurance accounting system. However, the system's development has been plagued with problems that could have been minimized through more effective management controls.

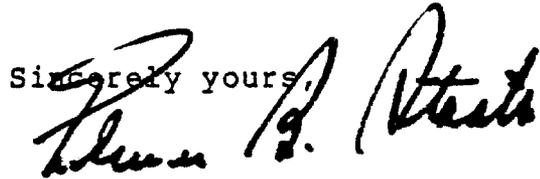
HUD recognizes the need for better management controls and has taken positive action in this regard. HUD's action clearly indicates that greater emphasis is being placed on needed improvements in the system's development. However, additional actions could be taken to further enhance the chances of HUDMIAS' implementation within the current milestones. To do this, we recommend that the Secretary of HUD:

- Require adequate studies of future design tasks to fully establish their magnitude and complexity, and specify that any future contracts for such tasks contain a detailed description of the task to be performed.

- Instruct the project managers to consider all feasible alternatives when making any future design changes and document the basis for alternatives selected.
- Have the system's design elements integrated and tested sequentially, as appropriate, to ensure that unforeseen problems are identified and corrected as quickly as possible.
- Formalize a system for accumulating the system's development costs required for management purposes and ensure that the system contains appropriate controls to provide accurate accumulation of all relevant costs.

As agreed with your office, we did not obtain agency comments. Your office requested that we make no further distribution of this report prior to the Committee hearings at which this report will be used. These hearings are now scheduled for May 15, 1980.

Sincerely yours,



Comptroller General  
of the United States