



United States  
General Accounting Office  
Washington, D.C. 20548

Accounting and Information  
Management Division

B-261117

May 23, 1995

Mr. Kenneth J. Winter  
Deputy Chief Financial Officer  
National Aeronautics and  
Space Administration

Dear Mr. Winter:

This letter responds to your March 21, 1995, request for an interpretation of the restriction in Title 6, "Pay, Leave, and Allowances," of GAO's Policy and Procedures Manual for Guidance of Federal Agencies against employees recording and maintaining their own time and attendance (T&A) data. As described in your letter, the National Aeronautics and Space Administration (NASA) is in the process of modifying its T&A procedures in response to the National Performance Review initiatives to streamline administrative operations and reduce federal costs. This modification is part of a larger effort to design and implement a new automated payroll system at NASA. We support initiatives to create a government that works better and costs less. At the same time, we believe that agencies have the responsibility to protect the government's interest.

Several years ago, Marshall Space Flight Center and Langley Research Center separately requested waivers of the Title 6 requirement of recording unscheduled leave taken by employees on hard copy documents. Both centers were granted temporary waivers<sup>1</sup> pending the implementation of a new NASA-wide T&A system. Since your proposal of a new system covers the recording of all leave taken by employees, this response supersedes those temporary waivers.

To more fully understand your request, we contacted your staff and discussed the proposal in more detail. However, we did not test your current system, and consequently, our response only addresses your proposal conceptually and does

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<sup>1</sup>Letters dated September 30, 1992 (B-114365) and September 25, 1989.

not address whether your present system can accommodate the proposal.

We are currently reviewing the requirements in Title 6 with a view toward allowing self-maintenance of T&A data where internal controls assure accuracy.<sup>2</sup> We identified two concerns regarding your proposal and offer three control procedures to alleviate the concerns. Based on our understanding of your proposal, we do not object to its implementation provided that the three controls we suggest are effectively implemented.

#### NASA'S PROPOSAL

The proposed new procedures and automated system, when fully implemented, would require (1) employees to enter their T&A data electronically at the end of the pay period and (2) supervisors to approve the T&A data electronically. Supervisors would enter employees' T&A data in cases of unscheduled absences when payroll data must be submitted at the end of a pay period. Your staff stated that NASA is studying implementation details for the required electronic signatures and has not yet selected the detailed method to use.

NASA employees would continue to work regular, flex, or compressed schedules. However, the proposal calls for exception-based reporting of T&A data. Employees would submit a permanent work schedule which would be approved by their supervisors and filed by the employees. The approved scheduled workdays and the number of hours per day would be entered in the automated T&A system. Your staff told us that variances of 15 minutes or more from that schedule will require an entry to record actual arrival and departure times.

Under the proposed system, as under the current procedures, supervisors would be responsible for ensuring that employees are working when scheduled. Your staff said that if supervisors' work schedules differ from those of their staffs, they are responsible for using other techniques, such as determining the reasonableness of work output for time spent or having other supervisors observe the presence of employees.

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<sup>2</sup>In the near future, we intend to update selected aspects of Title 6, including the prohibition on self-maintenance of T&A data.

Your staff stated that once the new system is fully implemented, all leave balances would be (1) maintained electronically (for adding earned leave) and (2) only adjusted by the payroll staff. Your staff further explained that planned leave of over 3 days still must be documented on Standard Form 71, "Application for Leave," which is approved by the employees' supervisors and retained by the employees. Planned leave of 3 days or less and unplanned leave will be documented by recording those exceptions to the preapproved schedule on the electronic T&A forms and as otherwise may be required (such as a physician's note for sick leave exceeding 3 days).

GAO'S ASSESSMENT  
OF THE PROPOSAL

Regarding T&A procedures, your request raises the internal control issue of whether it is acceptable for employees to record their own T&A data. Also, we wish to highlight the criteria for creating valid automated signatures and ensuring data integrity when using automated signatures.

Employees Recording  
Their Own T&A Data

The primary objective of T&A systems is to ensure that time worked and employee absences are accurately recorded and reported for purposes of computing pay, leave, and allowances. In the absence of compensating controls, the Title 6 restrictions on employees' self-maintenance of T&A documents are intended to prevent opportunities for errors or irregularities, thereby helping to ensure that accurate T&A data are recorded and reported.

Your staff indicated that the basic responsibility of the supervisor to monitor the presence and absence of staff, as exists under the current system, would be the primary control to ensure that accurate T&A data are recorded. However, employee recording of T&A data poses greater risks under the proposed exception-based system than under your present system because the timekeeper no longer would record employees' work time. We believe that this is especially true as new procedures are first being followed. For example, exceptions to a preapproved standard work schedule may occur and go unrecorded for various reasons, ultimately resulting in errors or irregularities.

When employees maintain their own T&A data without a timekeeper's involvement, supervisors who verify and approve the data would need to pay closer attention to staff arrival

and departure times to ensure that all exceptions (under the exception-based system you propose) are recorded accurately and promptly. Also, if a supervisor currently obtains assurance of employees' work time through assessment of work output or through other means, he or she would need to pay closer attention to the fact that such assessments or other actions will help provide the basis for approval of T&A data since timekeepers would no longer record T&A data. We believe supervisors should be (1) required to verify that employees record exceptions to the preapproved work schedule as soon as reasonably possible either before (in cases where exceptions are known in advance) or after they occurred and (2) reminded of the need for closer monitoring, especially during the first few months of implementation of the proposed system.

#### Automated Signatures

As we understand your proposal, the exact techniques and procedures to implement the automated signatures are still under consideration by NASA. Nevertheless, your letter stated that once supervisors have signed T&A reports and forwarded them to the payroll office, employees will not have access to them. The primary objective of all signatures in T&A systems is to ensure integrity of data by helping to guard against errors and irregularities. Title 6 requires that automated signatures be made by entering designated codes into the automated system under safeguards to prevent unauthorized entry.

To prevent unauthorized entry, the automated signature must be (1) unique to the signer, (2) under the signer's sole control, and (3) capable of being verified.<sup>3</sup> In addition, the automated signature must ensure data integrity. Because of the nature of electronic documents, it is difficult to ascertain whether there has been tampering unless the signature of the electronic document is linked to the data in the document in such a way that the signature will be invalidated whenever any data are changed.

The National Institute of Standards and Technology (NIST)<sup>4</sup> has established procedures for the evaluation and approval of

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<sup>3</sup>See 71 Comp. Gen. 109 (1991).

<sup>4</sup>Under the requirements of the Computer Security Act, NIST is responsible for establishing standards for federal computer systems that process sensitive but unclassified information.

certain automated signature techniques<sup>5</sup> to ensure the integrity of data and compliance with the three criteria. We believe the signatures should contain those necessary control features and should also use algorithms and techniques approved by NIST.<sup>6</sup>

Certain Procedures  
Would Alleviate Internal  
Control Concerns

Improvements to replace or streamline employee T&A systems should be made only within a framework of adequate, cost-effective controls that reasonably ensure that pay, leave, and allowance transactions are properly recorded and approved, and that sufficient records of these transactions are maintained. Although Title 6 allows flexibility to permit agencies to implement payment systems best suited to their needs, the preceding discussion suggests two potential problems that could arise under your proposal.

To address these potential problems, and to minimize the risk of errors and irregularities, your proposal should ensure that:

- Supervisors are reminded of their responsibility to more closely monitor staff's work time. (This reminder can be provided several ways, for example, through modifying existing training or providing formal notification.)
- Supervisors are required to verify exceptions to the standard schedule to ensure that employees are recording the exceptions promptly.
- The automated signature generation and validation process, upon full implementation of the new system, complies with the NIST standard and satisfies the previously mentioned criteria for supervisor signatures.

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Our position was discussed with Messrs. Varholy and DenWiddie of your staff. I hope our comments are helpful as you look for ways to streamline your administrative processes and reduce the cost of the government. If you have any questions

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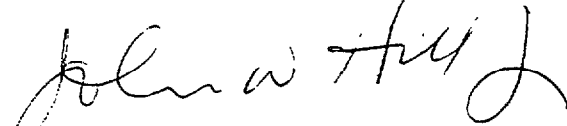
<sup>5</sup>These procedures are contained in the Federal Information Processing Standard.

<sup>6</sup>RCAS Authentication (GAO/AFMD-93-70R, May 4, 1993).

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or would like to discuss these matters further, please contact Bruce Michelson, Assistant Director, at (202) 512-9366.

Sincerely yours,

A handwritten signature in cursive script that reads "John W. Hill, Jr." The signature is written in dark ink and is positioned above the typed name.

John W. Hill, Jr.  
Director, Financial Management  
Policies and Issues

(922217)

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