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Fact Sheet for the Chairman,
Committee on Government Operations,
House of Representatives

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COMPUTERS

Information on the Patent and Trademark Office Automation Program

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

December 20, 1985

INFORMATION MANAGEMENT
& TECHNOLOGY DIVISION

B-217448

The Honorable Jack Brooks
Chairman, Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

In response to your December 6, 1985, request, we are providing information on the status of the patent automation program at the Department of Commerce's Patent and Trademark Office (PTO). This fact sheet is our second written product on PTO's automation program; our first focused on the office's trademark automation effort.[1] Our review of PTO's patent automation program is ongoing, and we plan to provide additional information on this subject in a subsequent report.

In December 1982, in response to Section 9 of Public Law 96-517, PTO submitted an automation master plan to Congress on automating patent and trademark operations. Through fiscal year 1985, PTO estimated that it spent over $65 million for automation. Most of these expenditures were for its patent automation program. This system is not yet operational, but portions of it are scheduled for testing in 1986.

On the basis of your request and subsequent discussions with your office, we examined management issues relating to the automation of PTO's patent operations. Specifically, we focused on PTO's and Commerce's planning, contracting, and scheduling. To obtain information on these areas, we interviewed PTO, Commerce, General Services Administration, and Office of Management and Budget officials. We also analyzed planning and contracting documents, such as PTO's automation master plan, and reviewed applicable laws and regulations. As agreed with your office, we completed our review of PTO's trademark automation efforts before starting this review at PTO in Arlington, Virginia, in May 1985.

In analyzing the planning and contracting areas, we focused on federal guidance on space management planning and the type of contract to be used. The guidance specified that a space

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[1]See: Patent and Trademark Office Needs to Better Manage Automation of Its Trademark Operations (GAO/IMTEC-85-8, dated April 19, 1985).

management analysis should be conducted before automatic data processing (ADP) systems are acquired, and cautioned federal agencies against using lengthy cost-plus-fixed-fee contracts. We found that PTO

--did not conduct a space management analysis before major acquisition decisions were made,

--entered an 18-year, cost-plus-fixed-fee contract for its multimillion dollar automated patent system, and

--is more than 1 year behind its original schedule for system development.

(The attachment provides additional information on PTO's patent automation efforts.) These areas regarding patent automation are similiar to those highlighted in our April 19, 1985, report on PTO's trademark automation effort. In that report, we found that PTO had not thoroughly planned for automation, had not followed proper contracting procedures, and had not fully tested the trademark system before accepting it from the contractor.

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We did not discuss this fact sheet with PTO, Commerce, General Services Administration, Office of Management and Budget, or contractor officials; nor did we request official agency or contractor comments on a draft of this document. As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this fact sheet until 30 days after its issue date. We will then send copies to the Secretary of Commerce, the Commissioner of the Patent and Trademark Office, Director of the Office of Management and Budget, Administrator of the General Services Administration, and other interested parties, and will make copies available to others upon request.

Should you desire additional information on our work, please contact Mr. Mark Heatwole, Group Director, on 275-4659.

Sincerely yours,

Mellroy D. (Joe) Quasney
Associate Director

FACT SHEET CONCERNING THE PATENT AND TRADEMARK OFFICE'S AUTOMATION OF PATENT OPERATIONS

PTO's mission is to promote the national economy by administering the provisions of the patent and trademark laws of the United States. Patent laws encourage technological advancement by providing incentives to invent, invest in, and disclose new technology. To carry out its mission, PTO processes and examines over 100,000 patent applications annually. This processing requires careful research of PTO's patent files, which include over 27 million patent-related documents. PTO's patent files consist of loosely assembled paper to facilitate searching.

In December 1982, in response to Section 9 of Public Law 96-517, PTO submitted an automation master plan to the Congress. According to the plan, the continued growth of paper files is the major problem PTO faces in carrying out its mission effectively. It stated that as the information base increases, the resources necessary to maintain it in a usable form will also increase. The plan also indicated that file integrity is degrading steadily because of lost or misfiled documents and that up to 7 percent of the millions of documents on file are missing at any point in time. The plan envisioned a "paperless" office by 1990, with all aspects of PTO's operations being automated at a cost between $720 and $811 million. PTO estimated that it spent over $65 million for automation through fiscal year 1985.

PTO's PATENT AUTOMATION PROJECT

One of PTO's major initial steps in developing the patent automation project was its approval of a preliminary functional requirements analysis in February 1983. In August 1983, Commerce submitted an agency procurement request to the General Services Administration for the automated patent system. This request anticipated that the contract type would be cost reimbursement with some form of incentive. The General Services Administration subsequently approved the request and issued a delegation of procurement authority. In October 1983, PTO issued a request for proposals for its automated patent system. Two contractors responded to this request, and in April 1984, PTO awarded an 18-year, $289-million, cost-plus-fixed-fee contract to Planning Research Corporation, in McLean, Virginia, to design, develop, and implement an automated patent system.

As of December 1985, PTO had procured several of the hardware components for the automated patent system through Planning Research Corporation. For example, PTO, through Planning Research Corporation, procured two large computers and 75 workstations. In addition, Planning Research Corporation's principal subcontractor, Chemical Abstracts Service, in Columbus, Ohio, is developing and testing the system's software. The system is not operational, but the first evaluation of the proposed automated system is scheduled for January 1986, when part of the search system is to be tested.

Several PTO and Commerce units are involved in managing PTO's automation program. PTO's Administrator for Automation and his staff have direct management responsibility for the program. The Administrator reports to PTO's Assistant Commissioner for Finance and Planning, who reports to the agency head, the PTO Commissioner. The Commerce Office of Procurement Operations and PTO's automation staff administer PTO's patent system contract. In addition, Commerce's Assistant Secretary for Administration has overall responsibility for all departmental information resources management activities, including those at PTO.

SPACE MANAGEMENT PLANNING IS NOT FINISHED

Federal Property Management Regulation, Subchapter F, Part 101-35 required that agencies prepare a comprehensive requirements analysis before acquiring ADP systems.[1] At a minimum, the analysis must consider critical space management factors, such as heat dissipation, air flow, and temperature range. Although PTO considered performing a space management analysis in 1983, it has yet to complete this task. According to PTO officials, potential space problems have contributed to PTO's decision to reconfigure its system to initially provide fewer workstations than planned.

In a November 1983 memorandum to the Administrator for Automation, PTO's Office of General Services stressed the importance of space considerations, stating that:

> "A myriad of procurement and space regulations coupled with the nuances of dealing with GSA and Charles E. Smith companies [building owner and manager] oftentimes require specific approval, extensive lead times and/or particular acquisition methods. If these requirements are not taken into consideration during planning stages, implementation of proposed plans may be thwarted or seriously delayed."

In June 1984, another PTO memorandum called for immediate action to determine whether the capacity of existing air-conditioning systems could handle the increased cooling requirements of the planned system. PTO later requested that the building manager prepare a cost estimate for this study. In late 1984, the building manager reported that a complete engineering study of PTO buildings could be conducted for $180,000. PTO officials explained that the space management analysis was not done at that time because the Office of Automation had not anticipated the high cost of the study and did not have available funds.

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[1]Federal Property Management Regulation was the applicable regulation when PTO awarded the contract to Planning Research Corporation in April 1984.

In May 1985, a year after the contract with Planning Research Corporation was signed, PTO recognized that the building renovation costs and schedule slippage caused by the workstation power and cooling requirements could constitute a serious problem. At the same time the PTO Commissioner reordered the priorities of implementing the complete automated patent system to emphasize those features that PTO considered the most direct steps toward improving the quality of issued patents--PTO's primary automation goal. These factors led to a change in the PTO automation strategy.

PTO's current automation strategy involves installing workstations in groups of 22 to 28, known as clusters, rather than providing individual workstations as originally envisioned. PTO officials anticipate that the cluster arrangement will require less building renovation than the previous plan for the full deployment of workstations. However, PTO still plans to upgrade its system to one workstation per examiner by 1991.

In September 1985, PTO finally began its space management analysis process by requesting an architectural-engineering design study to prepare the PTO buildings for installation of equipment for the automated patent system. This study is estimated to cost $200,000 and will take several months to complete.

PTO's 18-YEAR, COST-PLUS-FIXED-FEE CONTRACT

The Federal Procurement Regulation cautioned against lengthy cost-plus-fixed-fee contracts because they provide minimum incentives to the contractor to effectively control cost.[2] On April 12, 1984, PTO entered into a $289-million, 18-year, cost-plus-fixed-fee contract for the design, development, and implementation of its automated patent system. Under this cost-plus-fixed-fee contract, PTO reimburses the Planning Research Corporation for all costs of designing, developing, implementing, and maintaining the system, and pays the contractor a predetermined fixed fee of $13.6 million. Payments are being made in monthly installments based on reported incurred costs. As of September 30, 1985, PTO had paid the contractor $22.8 million.

Federal Procurement Regulation Subpart 1-3.4 provided direction on the types of contracts agencies should award. These regulations indicated that, relative to other types of contracts, such as fixed-price or cost-plus-incentive-fee contracts, cost-plus-fixed-fee contracts "provide...the contractor with only a minimum incentive for effective control of costs" and that "the contractor's cost responsibility is...minimal." Subpart 1-3.8 of the regulations further stated that "for a single contract running for a lengthy term...the repetitive or unduly protracted use of

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[2]In April 1984, when PTO's automated patent system contract was signed, the Federal Procurement Regulation was in effect.

cost-reimbursement type...is to be avoided where experience has provided a basis for firmer pricing which will promote efficient performance and will place a more reasonable degree of risk on the contractor."

General Services Administration guidance (GSA Bulletin FPMR F-131) on selecting the contract type for ADP procurements also cautioned against using cost-plus-fixed-fee contracts, particularly for system implementation. The bulletin stated that:

> "To the extent possible, agencies should ensure that the major portion of their overall systems engineering budgets are awarded on the basis of fixed-price contracts for specified fixed products. If requirements for the final system or a major portion of it are not well enough defined to be contracted for on a fixed-price basis, the agency should consider awarding a smaller cost-reimbursement contract for requirements definition so that a subsequent fixed-price type arrangement can be employed....Only in unusual situations should more than half of the overall systems engineering budget be contracted for on a cost-reimbursement basis. When used, however, a cost-plus-incentive-fee (CPIF) or cost-plus-award-fee (CPAF) type contract should be considered."

In October 1983, PTO issued a request for proposals for its automated patent system. Two contractors responded to this request. On April 12, 1984, PTO awarded an 18-year, $289-million, cost-plus-fixed-fee contract to Planning Research Corporation. The contract included $124.9 million for hardware, $20.1 million for software, $82.3 million for maintenance, and $13.6 million as a fixed fee. Other costs totaling $48.1 million, such as direct labor and fringe benefits of $25.9 million and labor overhead of $9.7 million, were also included.

Under the contract, Planning Research Corporation will provide overall systems integration, develop portions of the software, acquire the commercially available hardware and software components, and maintain the system over its 18-year life. Planning Research Corporation's principal subcontractor, Chemical Abstracts Service, will provide licensed software, software modifications, and other developed software.

Planning Research Corporation's accounting system

In addition to contract type, Federal Procurement Regulation Subpart 1-3.4 required that agencies consider the adequacy of a contractor's accounting systems when making contract awards. According to this federal regulation, the contractor's cost accounting system must be adequate, and the government must provide appropriate surveillance to "give reasonable assurance that inefficient or wasteful methods are not being used."

A Defense Contract Audit Agency review[3] of Planning Research Corporation's contract proposal concluded that the proposal was acceptable for negotiation purposes. However, recent independent reports identified problems with the Planning Research Corporation's accounting systems. A January 1985, PTO-requested review by the Department of the Navy's Naval Electronic System Command, Cost Estimating and Analysis Office reported such problems as (1) the contractor's inability to evaluate the percentage of completion for incomplete tasks, (2) the absence of contractor cost controls on budget overruns, and (3) the absence of an assigned contractor employee to manage the contractor's principal subcontrator from a cost perspective. Commerce's Office of the Inspector General outlined similar concerns to PTO in March 1985. In addition, in October 1985, the Defense Contract Audit Agency informed Commerce that the contractor was not in compliance with certain cost accounting standards required by the contract and by federal regulations.

Option for an on-site contract administrator team

Although the Planning Research Corporation contract allows the government to establish an on-site team for contractor administration and oversight, Commerce and PTO have not elected to exercise this option. In August 1983, Commerce's Office of the Inspector General recommended that PTO establish an on-site team with "quality assurance, financial management, and procurement expertise." Even though PTO's Assistant Commissioner for Finance and Planning agreed with this recommendation, the recommendation has not been acted upon. According to the Administrator for Automation, PTO staff were not required to be on site at Planning Research Corporation, and he did not consider it critical enough to construct such a team. Commerce and other PTO officials also explained that the agency did not have sufficient staff to have an on-site team.

PTO AUTOMATION BEHIND SCHEDULE

PTO's 1982 automation master plan projected that portions of the automated patent system would be installed by the end of 1984. This schedule has slipped. Similarly, the contractual requirement for completing the system's design also slipped.

Initially, PTO planned to implement its 1982 automation master plan in three stages. During stage one (1983-84), PTO planned to develop and implement the system's operating capabilities (such as patent searching and office automation) in one patent examining group. Upon successful completion of this test, PTO planned to deploy the automated system throughout the remaining patent examining groups during stage two (1985-87). During the final

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[3]Defense Contract Audit Agency Audit Report Number 6231-4P210025-1045, dated March 16, 1984.

stage (1988-90), PTO planned to enhance the system with such items as expanded telecommunications capabilities. In addition, stage three called for a paperless public search room. By the end of 1990, PTO planned to have 3,200 workstations in use by both the public and virtually all of its employees.

PTO's updated 1985 master plan recognizes that significant portions of the automation effort will be delayed until the late 1980s. For example, the update shows that patent searching (a portion of the stage 1 implementation) will not be completed until December 1986--almost 2 years behind schedule. In addition, PTO has significantly changed its implementation strategy, thus delaying completion of many tasks until late 1991. For example, the original stage-two (1985-87) deployment of the operating capabilities to the remaining patent groups is not scheduled to begin until October 1987.

To achieve its goals, PTO, in its 1984 automated patent system contract, established milestones and completion dates for various aspects of the automated patent system. As one of the first tasks, the contract required the contractor to complete the system's design by September 11, 1984. As of May 1985, the system design was not completed. In December 1985, however, the PTO Administrator for Automation stated that the system design is now complete.

In the updated 1985 master plan, PTO explained that the schedule slippage occurred because major acquisitions for the system required more time than originally anticipated. PTO contends, however, that since all but one of the major acquisitions have been completed, future automation tasks will be more predictable and controllable.

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