

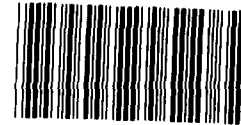
GAO

Report to the Chairman, Subcommittee  
on Oversight and Investigation,  
Committee on Energy and Commerce,  
House of Representatives

September 1992

SECURITIES AND  
EXCHANGE  
COMMISSION

Effective Development  
of the EDGAR System  
Requires Top  
Management Attention



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**Information Management and  
Technology Division**

B-222177

September 30, 1992

The Honorable John D. Dingell  
Chairman, Subcommittee on Oversight and Investigations  
Committee on Energy and Commerce  
House of Representatives

Dear Mr. Chairman:

This report responds to your request for information on the status of the Securities and Exchange Commission's (SEC) efforts to develop the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. EDGAR is intended to automate the filing, analysis, and dissemination of information filed with the SEC by entities seeking to raise capital. As arranged with your office, our review focused on the cost increases and schedule delays occurring since the EDGAR systems development contract was awarded to BDM International, Inc., in January 1989. Our objectives were to determine the extent and causes of any cost growth and schedule delays, and evaluate Commission efforts to institute corrective action. This report documents and extends information provided at a June 30, 1992, briefing to your office.

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**Results in Brief**

EDGAR software development was to be essentially complete by late 1990, and the total cost of the EDGAR contract was \$51.5 million. Currently, the project is 3 years behind schedule and nearly \$20 million over its original cost estimate, due mainly to continual increases in the number of requirements that users would like the system to meet. By February 1992, the requirements had climbed from the original 350 to nearly 1,000. They could increase even more, resulting in additional delay and cost.

The problem began when SEC accepted incomplete requirements documents from the contractor, who SEC tasked to define user requirements and provide hardware and software to meet them. As development proceeded, SEC staff continually added or changed requirements, increasing the time and cost of developing the system. SEC did not exercise top management oversight to deal with this growth. The EDGAR executive steering committee, established to provide oversight and resolve major legal, policy, and procedural issues affecting the system's development, never met after the contract was awarded. In addition, the project director believed that he lacked clear authority to control the growth in requirements and get users to reach closure on defining their

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total system needs. In March 1992, SEC's executive director established a change control board to review and approve functional changes to EDGAR. However, the board lacks representation from key users of EDGAR, calling into question its ability to resolve the user requirements issue.

SEC intends to establish a high-level executive committee to oversee the development of EDGAR and other information technology projects within the agency. But further actions to improve EDGAR are needed. SEC is still faced with the task of obtaining and prioritizing user needs and system requirements, establishing problem tracking and resolution methods, and setting realistic project milestones.

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## Background

Federal securities laws require certain entities seeking to raise money from the public, or whose securities are traded publicly, to file certain disclosure documents, such as prospectuses and financial statements, with the Securities and Exchange Commission. Since the early 1980s, the Commission has been interested in automating the filing, acceptance, dissemination, and analysis of the millions of pages of information filed annually. At that time, serious concerns had been raised about the Commission's ability to cope with ever-increasing amounts of paper which, in 1982, totaled 5.4 million pages.<sup>1</sup>

To test its automated filing system concept, SEC initiated a 2-year EDGAR pilot program in April 1984. The pilot test successfully proved the feasibility of developing an electronic filing system. Legislation, enacted in 1987, authorized further development and operation of the EDGAR system.<sup>2</sup> Procurement problems delayed award of the development contract until January 1989. At that time, the contract was awarded to BDM International for \$51.5 million. The schedule called for 18 to 24 months to substantially develop the operational system. In addition, EDGAR legislation required SEC to report EDGAR's progress to the Congress every 6 months until December 1990, when EDGAR was expected to be substantially complete. SEC's December 1990 report was the last report submitted to the Congress under the legislation. However, on September 3, 1992, SEC voluntarily submitted an updated status report as of March 31, 1992, because of the delays in implementing the EDGAR system.

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<sup>1</sup>Today, twice as much paper makes its way to the Commission every year. According to SEC officials, the annual total volume of filings received exceeds 10 million pages.

<sup>2</sup>Securities and Exchange Commission Authorization Act of 1987 (P. L. 100-181).

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Intended users of the EDGAR system fall into three categories: (1) filers of information to the SEC, (2) SEC analysts and attorneys who need to retrieve and manipulate the information filed, and (3) investors.

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## Cost Overruns and Schedule Delays

SEC's effort to develop the EDGAR system has been marked by significant cost overruns and schedule delays. The value of the EDGAR contract has increased from \$51.5 million at contract award in January 1989 to \$70.2 million as of June 30, 1992. According to the EDGAR project director, contract costs could reach \$78.3 million by 1997—a 52-percent increase over the original value. The executive director added that the \$78.3 million figure was the outside limit on contract costs and that he believed recent actions to curb EDGAR's growth would result in a lesser final amount.

As shown in figure 1, the schedule for substantial completion of the EDGAR system has been delayed 3 years from its original 1990 target date; the milestone dates for SEC rulemaking have likewise been delayed several years.<sup>3</sup> Similarly, the phase-in of the first group of mandated filers, originally scheduled for late 1990, is now planned for mid-1993. Complete phase-in of all filers has also been delayed 3 years, and is now planned for mid-1996.

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<sup>3</sup>SEC must publish draft and final rules governing the implementation of electronic filing of financial information.

Figure 1: Comparison of Original and Current Development Milestones for SEC's EDGAR System

Milestones	1989	1990	1991	1992	1993	1994	1995	1996
Substantial system development completed		△			▲			
EDGAR rules published for comment	△			▲				
Final EDGAR rules published		△			▲			
Phase-in of first 3,500 mandated filers begins		△			▲			
Phase-in of all 14,300 filers completed					△			▲

△ Milestone per contract - January 1989  
 △ Milestone per status report to Congress - June 1989  
 ▲ Current milestone - July/August 1992

## Cost Increases and Schedule Delays Caused by Escalation of System Requirements

A system's functions are defined by requirements documents, which provides a blueprint for those who build it. Under SEC's approach to developing EDGAR, the contractor—BDM—is required to develop and describe the system's user requirements and provide the hardware and software necessary to meet those needs.

The system requirements document delivered by BDM on August 23, 1989, was incomplete. For example, an analysis prepared by the SEC Inspector General concluded that BDM's description of EDGAR's system requirements lacked a description of the system inputs, outputs, and data characteristics.<sup>4</sup> Another document submitted by the contractor lacked key system performance requirements, such as system response time.

<sup>4</sup>Survey of the Office of EDGAR Management, Audit Report No. 141, March 1990.

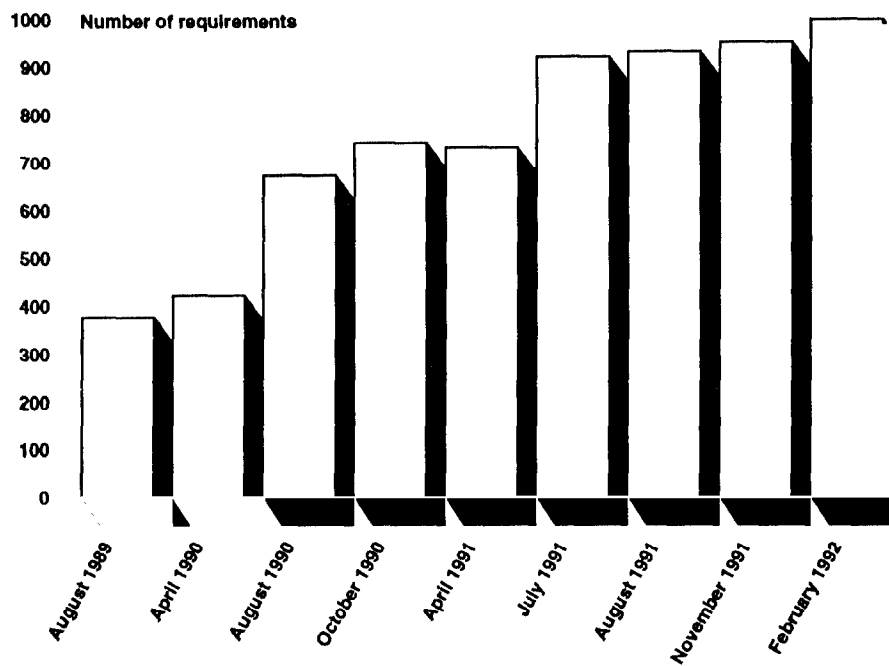
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SEC program officials agreed with the Inspector General's analysis that the contractor's description of the system was incomplete.

Although the SEC knew the requirements documents were incomplete, they accepted the contractor's documents as meeting the requirements of the contract. Instead of working with BDM to complete the system requirements, the EDGAR project director permitted the contractor to continue. (An analogy would be beginning to construct a building before blueprints are completed.) According to the EDGAR project director, stopping the project in order to complete the system requirements did not seem the most cost-effective way to proceed. Consequently, he accepted BDM's documents on the basis of his judgment that specifying some of the requirements at a later date would not affect the cost of developing the system. No SEC analysis was performed to support this decision. The postponement of requirements definition created the conditions that led to the spiralling growth in EDGAR requirements and subsequent schedule delays.

As development proceeded, additional requirements were identified, increasing the time and cost of developing and changing the system. As shown in figure 2, the spiral began in August 1989. By October 1990, the total number of requirements doubled, from approximately 350 to more than 700. More were added in April, July, August, and November of 1991. By February 1992 EDGAR's requirements had grown nearly threefold, to 999. SEC project officials confirmed that 62 of these requirements modified EDGARLink—the software package that filers use to format, edit, and send required documents to SEC. The cost of these changes, which were made to satisfy users' needs, totaled \$593,446. In addition, other costs of approximately \$617,630 were incurred for changes to the primary EDGAR system, which also required changes to EDGARLink. EDGAR officials confirmed that another 69 changes were added at a cost of \$470,840, to enhance the software that enables EDGAR to communicate with other SEC systems.

**Figure 2: Analysis of EDGAR System Requirements Growth**



The number of EDGAR requirements could increase even further depending, for example, on the nature of the comments the Commission receives on its draft EDGAR rules and EDGAR procedures. These draft rules and procedures were published for comment in August 1992. Until public comments are received and analyzed, SEC will not be in a position to determine the final requirements and their implications for EDGAR's hardware and software.

## SEC Lacks a Mechanism for Controlling the Growth of System Requirements

From 1989 through 1991, SEC had no active top management mechanism for overseeing EDGAR, including controlling the growth of EDGAR's system requirements. SEC's executive steering committee has not met since December 1988. This committee was established and chaired by the prior SEC Chairman to resolve major legal, policy, and procedural issues affecting EDGAR's development. In essence, during the 3 years between December 1988 and December 1991, the Office of EDGAR Management had total responsibility for the project.



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According to the EDGAR project director, reaching closure on defining the total needs of the SEC users of the EDGAR system was difficult because he lacked the needed authority: the SEC users were his peers. It was therefore necessary to reach agreement on system requirements by consensus. This approach increased schedule delays and cost. In December 1989 he asked the current SEC Chairman to clarify his role and authority. According to the executive director, the SEC Chairman did not respond to the project director because he saw no reason to change the project director's responsibilities at that time. As a result, without the requested clarification, the EDGAR project director continued attempting to resolve competing interests within SEC by negotiation and consensus. In July 1991, the project director again asked the Chairman to clarify his role. According to the project director, he made several unsuccessful attempts to schedule meetings with the Chairman.

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## SEC's Corrective Actions May Not Resolve EDGAR's Problems

Our 1989 symposium on government's technology challenge pointed out that support from top management that forges partnerships with system users and developers is essential for effective systems management and development.<sup>5</sup> Successful organizations have a mechanism such as an executive steering committee to guide systems development. These committees generally meet regularly and have a written charter and operating procedures to clarify their roles and responsibilities in identifying and prioritizing system requirements, developing realistic project schedules, making decisions at key milestones in the development of systems, and tracking and resolving problems. SEC's executive steering committee did not meet after December 1988, and in essence was disbanded.

In the summer of 1991, the Chairman commissioned the National Institute of Standards and Technology to study EDGAR's development. In late 1991, after receiving the Institute's draft report, SEC's executive director assumed responsibility for EDGAR's development, required the EDGAR project director to report to him, and established the position of chief information officer. The position was filled in August 1992. In addition, in March 1992 the executive director established a change control board, which he chairs, consisting of two additional senior program officials who review and approve proposed functional and technical changes to EDGAR. However, as of August 1992, SEC's change control board lacked some of the essential elements of an executive steering committee. The absence of

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<sup>5</sup>Meeting the Government's Technology Challenge: Results of a GAO Symposium (GAO/IMTEC-90-23, Feb. 1990).

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these elements could contribute to uncertainty about the board's role and responsibilities within SEC.

In April 1992 the executive director decided to freeze changes to system requirements as of July 1992. In August 1992 the executive director changed his mind on the basis of the recommendation of a task force he established to review the current functionality of EDGAR. The task force recommended freezing EDGAR at the April 1993 version of the system, which is expected to provide more functionality to SEC's internal users. Prior to implementing the April 1993 version, the board plans to sort out EDGAR's final requirements and decide whether the April 1993 version will be the final version of the system.

The executive director explained that he took these actions to control the cost of EDGAR. These actions have the potential to help SEC better manage EDGAR's development, but we have some concerns over their effectiveness in meeting the needs of all users and in controlling EDGAR's spiralling requirements. As recorded in the board's August 6, 1992, minutes, "a fundamental flaw in the EDGAR task force review of the project was that users were not consulted in the process."

Further, the change control board may not be an effective mechanism for analyzing and prioritizing changes to EDGAR because it lacks representation from key internal users of EDGAR. The board's membership does not include current and future users of EDGAR from the Office of General Counsel; the Division of Enforcement; the Division of Market Regulation; the Office of Economic Analysis; or the Office of Filings, Information, and Consumer Services. The Office of Filings is the office that currently receives, distributes, and disseminates the paper filings that EDGAR will receive electronically. In addition, there is no voting representation from key technical units: the EDGAR project office, Office of User Support Services, and Office of Automated Data Processing Services. Although representatives of these units serve as advisers to the board, they have been invited to only one board meeting. Input from these technical units would help facilitate the board's technical review of proposed additions or changes to the system. In addition, our review of the minutes of board meetings shows that the board met only three times between March 27 and September 10, 1992—during which time system requirements continued to grow.

## Need for Congressional Committees to Receive Timely Status Reports

EDGAR legislation required SEC to report EDGAR's progress to the Congress every 6 months until December 1990, when EDGAR was expected to be substantially complete. SEC's December 1990 report was the last report submitted to the Congress under this legislation. However, SEC voluntarily prepared an updated status report as of March 31, 1992, which was not submitted to the Congress until September 3, 1992. The executive director explained that a draft status report was prepared in March but that it took several months to clear the report through the SEC's four commissioners and the SEC Chairman. During this period changes have continued: a chief information officer was hired, the change control board began meeting, and the system was frozen. As such, the report submitted to the Congress in September is already outdated. According to the executive director, the EDGAR status report must go through the same process as other SEC rules that affect SEC filers.

## Conclusions

The SEC is still struggling today with requirements for a system that was conceived over 10 years ago. The absence of an effective mechanism for analyzing and prioritizing the system requirements for EDGAR has resulted in their uncontrolled growth.

Although the actions recently taken by SEC's executive director may help, it is uncertain whether these actions will effectively control requirements. For example, the position of chief information officer has only recently been filled; neither he nor key users of EDGAR, whose input is essential in defining EDGAR's requirements, are members of the change control board. The executive director explained that although the chief information officer and other key users are not voting members of the board, several have been designated as board advisers, who are invited to board meetings when needed. Our review of the board minutes shows that only one of the three meetings of the change control board included advisers. In addition, there is no representation from several important user groups.

## Recommendations to the Chairman, Securities and Exchange Commission

To help ensure that the executive director's actions will be effective in controlling EDGAR's development, we recommend that the Chairman, Securities and Exchange Commission, require the executive director to

- obtain and prioritize users' needs and system requirements;
- set realistic project schedules and decision milestones; and
- establish problem tracking and resolution methods.

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To accomplish these actions, the Chairman should consider use of a top management steering committee chaired by the SEC Chairman or the executive director, and composed of key top management and technical officials involved in EDGAR. If used, such a committee should have a charter defining responsibility and authority and meet on a regular basis until the phase-in of mandatory filers is complete. The SEC Chairman might consider modifying the change control board to incorporate the characteristics of a top management steering committee.

In addition, the agency should resume sending biannual reports on EDGAR's status to the appropriate congressional committees until EDGAR is implemented. The Chairman should also require an internal review of SEC's process for approving the EDGAR status reports to determine how to expedite report submission to the Congress.

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## Scope and Methodology

We obtained and analyzed EDGAR documents and reports identifying (1) the current contract costs and projections for the life of the contract, (2) the proposed and actual schedule for system development and implementation, and (3) SEC's overall management of the EDGAR project. In addition, we reviewed organizational changes made by SEC in 1991 and 1992 to improve EDGAR management.

We met with EDGAR project staff, the project director, the contracting officer, and the contracting officer's technical representative. We met with representatives of SEC's internal users from the Division of Corporation Finance; the Division of Investment Management; and the Office of Filings, Information, and Consumer Services. In addition, we met with the executive director.

We attended an SEC briefing about EDGAR, which was also attended by contractor personnel, and attended SEC's filer conference on August 5, 1992.

We analyzed project and SEC documentation regarding EDGAR, including the existing system life-cycle documents, contract documents, and contractor and Office of EDGAR Management correspondence. We reviewed the EDGAR contract modifications and assessed SEC's management of these modifications.

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We conducted our review in accordance with generally accepted government auditing standards, from March through September 1992, at SEC's headquarters office in Washington, D.C., and at the SEC operations center in Alexandria, Virginia.

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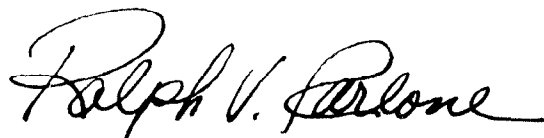
## Agency Comments and Our Evaluation

Senior officials of SEC's Office of the Executive Director agreed with our findings and recommendations. The executive director stated that the change control board will become a high-level executive committee with a written charter that specifies its role regarding all information technology projects within SEC, including the EDGAR project. In addition, the chief information officer plans to form a user advisory committee to support the board. Plans are also being made to form subcommittees that will report to the user advisory committee. One subcommittee will be responsible for evaluating EDGAR change requests using criteria for determining the criticality of proposed changes and assessing their impact on aspects such as system security and burden on filers. While these steps may correct many of the causes for this project going off-track, it is too soon to determine whether the proposed actions will adequately lead to the completion of EDGAR and meet the needs of all users. For example, the impact major system users will have on executive-level decisions on EDGAR's functionality is still uncertain.

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As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 2 days from the date of this letter. We will then send copies to the Chairman, Securities and Exchange Commission; the Director, Office of Management and Budget; and interested congressional committees. Copies will also be made available to others upon request. This report was prepared under the direction of Howard G. Rhile, Director, General Government Information Systems, who can be reached at (202) 512-6418. Other major contributors are listed in appendix I.

Sincerely yours,



Ralph V. Carlone  
Assistant Comptroller General

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