United States Government Accountability Office

Report to the Ranking Member Subcommittee on Government Operations and Border Management Committee on Homeland Security and Governmental Affairs, U.S. Senate

OIL AND GAS

Interior Urgently Needs Leadership and Oversight to Address IT System Development Failure

Why GAO Did This Study

The mission of the Department of the Interior's BLM's oil and gas program is to protect human health and the environment and ensure a fair return from energy production on federal lands. To help manage permitting, inspection, and enforcement for oil and gas activities, an updated IT system became operational in 2021.

In September 2020, GAO identified this effort to modernize as one of the 16 most critical information technology acquisitions across the federal government.

GAO was asked to review Interior and BLM's efforts to modernize. This report examines the extent to which (1) the modernization project had met user needs and cost, schedule, and performance goals; (2) BLM had approved project baselines; and (3) Interior has effectively overseen the project.

GAO reviewed agency documents and interviewed officials who use the system and were involved in developing it. GAO also reviewed leading practices for major IT modernization initiatives.

What GAO Recommends

GAO is making three recommendations to Interior and BLM, including developing a policy for project baselines, and strengthening leadership and oversight for the effort to replace the system. Interior partially concurred with one recommendation, concurred with the other two, and agreed to implement all of GAO's recommendations.

September 2024

OIL AND GAS

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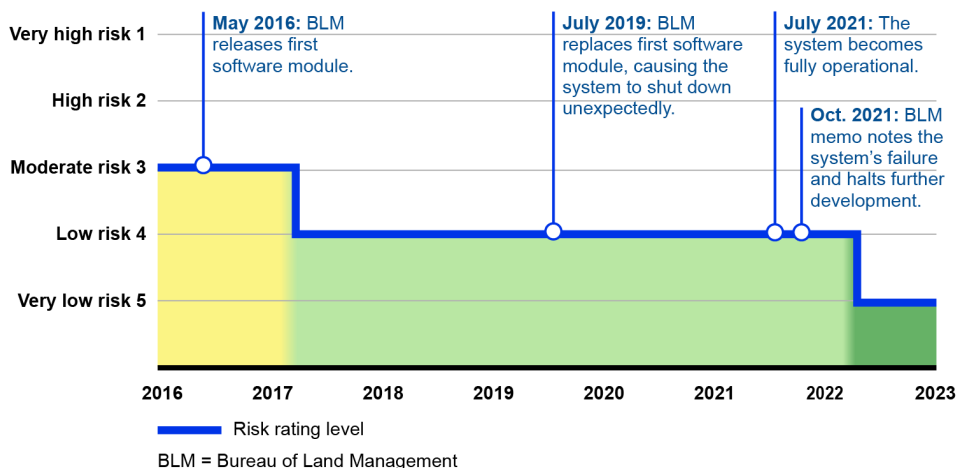
What GAO Found

The Bureau of Land Management (BLM) initiated an effort in 2013 to modernize its data system for tracking oil and gas activities on federal and tribal trust lands. After fully deploying this system, known as the Automated Fluid Minerals Support System 2, BLM declared it a failure in 2021.

- While BLM anticipated the modernization would increase productivity, it found that the new system required an additional 564,770 hours of labor to complete tasks in 2021 alone, costing over $19 million in lost productivity.
- The extent of the system's problems was so severe that Interior could not use the new system as the system of record for oil and gas activities, relying instead on paper records. According to BLM, the system remains operational but has continued to have significant reliability and data integrity issues.
- BLM found that the system cost at least $40 million—triple BLM's original estimate—and was fully deployed 4 years later than planned.

Although project baselines are important management tools to control cost, schedule, and performance, BLM did not have an approved baseline for the system until over 2 years into the effort. Contrary to federal requirements, Interior does not have a policy governing baselines and their review. Without such a policy, Interior risks other IT projects proceeding without control of cost and schedule.

Another key factor contributing to the system failing was the lack of effective leadership and oversight. Interior officials who oversee IT projects stated they were not aware of the system's failure until GAO raised it to their attention. After being notified of the failure, Interior has continued to publicly report that the system is a very low-risk investment. However, serious problems have continued since its deployment in 2021. As a result, BLM has started a new initiative intended to replace the system. Effective Interior leadership and oversight are essential to preventing a repeat of the problems that have plagued the system.

Automated Fluid Minerals Support System 2 Events Compared with Interior's Risk Ratings

BLM = Bureau of Land Management

Source: GAO analysis of the Department of the Interior's Chief Information Officer's risk ratings. | GAO-24-107223

United States Government Accountability Office

Contents

Abbreviations

AFMSS	Automated Fluid Minerals Support System
ALMRS	Automated Land and Mineral Record System
BLM	Bureau of Land Management
CIO	Chief Information Officer
CPIC	Capital Planning and Investment Control
FITARA	Federal Information Technology Acquisition Reform Act
Interior	The Department of the Interior
IT	information technology
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act of 1969
OMB	Office of Management and Budget

September 10, 2024

The Honorable James Lankford
Ranking Member
Subcommittee on Government Operations and Border Management
Committee on Homeland Security and Governmental Affairs
United States Senate

Dear Senator Lankford:

To protect human health and the environment and ensure the American people get a fair return from energy production on federal and tribal trust lands, the Department of the Interior's (Interior) Bureau of Land Management (BLM) relies on its Automated Fluid Minerals Support System (AFMSS). BLM uses the system to maintain information on oil and gas activities on federal and tribal trust lands.[1] In 2012, at the direction of the Secretary of the Interior, BLM started modernizing AFMSS. The agency refers to this effort as "AFMSS 2." In September 2020, we identified AFMSS 2 as one of the 16 most critical information technology (IT) acquisitions across the federal government.[2]

BLM finished fully deploying AFMSS 2 in July 2021. Three months later, BLM leadership issued a memo entitled *Options for Management of AFMSS 2: Failed Automated Fluid Minerals Support System and Associated Challenges* directing the agency to seek a replacement system.[3] The memo noted that AFMSS 2 had incessant system failures and persistent functionality problems and that BLM was unable to correct increasing and recurring problems identified by users. In its budget request for fiscal year 2025, BLM requested at least $11 million to develop a system to replace AFMSS 2. The agency plans to continue using AFMSS 2 until it is replaced.

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[1]"Tribal trust lands" in this context include lands owned by the federal government and held in trust for a Tribe or tribal citizens, who are the beneficial owners, and land owned by a Tribe or tribal citizens but with restrictions against alienation or encumbrance.

[2]GAO, *Information Technology: Key Attributes of Essential Federal Mission-Critical Acquisitions*, GAO-20-249SP (Washington, D.C.: Sept. 8, 2020).

[3]Bureau of Land Management, *Options for Management of AFMSS 2: Failed Automated Fluid Minerals Support System and Associated Challenges*, Memorandum from the BLM Assistant Director of Energy, Minerals and Realty Management to the BLM Deputy Director of Operations (signed Oct. 21, 2021).

You asked us to review Interior and BLM's efforts to modernize IT systems used to manage and oversee oil and gas activities on leased federal lands and waters. This report examines the extent to which (1) AFMSS 2's development met BLM's cost, schedule, and performance goals such as user needs; (2) BLM had approved project baselines in place for AFMSS 2; and (3) Interior and BLM have effectively overseen the AFMSS 2 project.

To examine the extent to which AFMSS 2's development met BLM's cost, schedule, and performance goals, we compared BLM's goals as described in AFMSS 2 project documentation with actual cost, schedule, and performance results reported by BLM. We did not independently verify BLM's actual cost, schedule, or performance results in part because of limitations in the documentation maintained by BLM. We took several steps to assess the reasonableness of BLM-reported results, including reviewing available documentation and interviewing knowledgeable officials. We also corroborated results with other sources where possible, including through interviews with more than 40 AFMSS 2 users across a nongeneralizable sample of five BLM field offices.[4] We note limitations of BLM's reported results where appropriate.

To examine the extent to which BLM had approved baselines in place, we examined available baseline documentation and policies regarding baselines. We compared these to baseline requirements in BLM's *Capital Planning and Investment Control Handbook*,[5] and from the Office of Management and Budget (OMB) within the Executive Office of the President, including its *Information Technology Investment Baseline Management Policy*.[6]

To examine the extent to which Interior and BLM have effectively led and overseen AFMSS 2, we analyzed BLM and Interior project

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[4]We selected these five field offices to obtain a range of views geographically and across offices managing both larger and smaller volumes of oil and gas activity. Because we selected a nonprobability sample of field offices, their views are not generalizable but provide illustrative examples of the views of such field office staff. Thirty-two BLM offices, primarily located in the Mountain West, perform the majority of BLM's responsibilities related to managing oil and gas resources on federal and tribal lands.

[5]Bureau of Land Management, *Information Technology Capital Planning and Investment Control (CPIC) Handbook,* H-1265-1 (Dec. 29, 2016). The 2016 CPIC Handbook superseded the agency's August 2009 CPIC Handbook.

[6]Office of Management and Budget, *Information Technology Investment Baseline Management Policy*, M-10-27 (Washington, D.C.: June 28, 2010).

documentation. We reviewed leading practices as identified in our prior work for major IT modernization initiatives, including practices related to leadership and oversight of the system modernizations.[7] We compared Interior and BLM documentation to leading practices. Also, for context, we reviewed BLM's history of IT data system development.

We also interviewed BLM and Interior officials and contractor staff about the AFMSS 2 development effort, its results, and project oversight.

We conducted this performance audit from December 2023 to September 2024 in accordance with generally accepted government standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Interior and BLM's Oil and Gas Responsibilities and Its AFMSS 2 Data System

The Department of the Interior is responsible for managing much of the nation's vast natural resources. Its 13 agencies implement an array of programs intended to protect these resources for future generations while also allowing certain uses of them, such as oil and gas development and recreation. Interior's BLM manages the federal government's onshore oil and gas program with the goals of facilitating safe and responsible energy development while providing a fair return for the American people. This includes overseeing oil and gas operations and production on most lands and minerals owned by Tribes and their citizens and held in trust by the U.S. government or subject to federal restrictions on alienation.

To support its responsibilities, BLM uses AFMSS 2 to facilitate the collection, management, and sharing of permits, reports, and field inspection and enforcement data related to managing oil and gas activities across the federal government. BLM staff who use AFMSS 2 include inspectors, adjudicators, petroleum engineers, geologists, natural resource specialists, and managers responsible for approving and overseeing oil and gas development. Oil and gas operators also use

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[7]GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, GAO-04-394G (Washington, D.C.: Mar. 1, 2004) and *Information Technology: Critical Factors Underlying Successful Major Acquisitions*, GAO-12-7 (Washington, D.C.: Oct. 21, 2011).

AFMSS 2 to apply for drilling permits, upload documents, and provide activity updates.[8]

AFMSS—the precursor to AFMSS 2—was originally developed in the 1990s. The AFMSS 2 development effort was carried out by contractors under the direction of a BLM federal project director, with oversight to be provided by BLM and Interior.

Interior Chief Information Officer Roles and Responsibilities

Over the years, Congress has enacted various laws intended to improve the government's management of IT. For example, the Clinger-Cohen Act of 1996 required agency heads to lead reforms that would help control system development risks, better manage technology spending, and achieve measurable improvements in agency performance, as well as to designate Chief Information Officers (CIO) who would provide advice and assistance with these efforts.[9] Further, federal IT acquisition reform legislation (commonly referred to as the Federal Information Technology Acquisition Reform Act, or FITARA), which was enacted in December 2014, strengthened the role of covered agency CIOs in managing IT.[10]

These and other laws also assigned OMB and its director key roles in helping agencies effectively manage IT. Under such authorities, OMB has issued guidance to agencies on many IT management areas, including guidance on agency CIO IT management and information security responsibilities, such as *Management and Oversight of Federal Information Technology, Memorandum* M-15-14, and revisions to Circular No. A-130, *Managing Information as a Strategic Resource*.[11]

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[8]In 2023, BLM reported that about 3,000 individuals were actively using AFMSS 2, including about 800 BLM users, about 250 federal employees from other agencies, and about 2,000 nongovernment users from the oil and gas industry.

[9]National Defense Authorization Act (NDAA) for Fiscal Year 1996, Pub. L. No. 104-106, div. E, tit. LI, subtit. C, §§ 5122, 5123, 5125, 110 Stat. 186, 683–86 (1996) (codified as amended at 40 U.S.C. §§ 11312, 11313, 11315). Div. E of the FY 1996 NDAA is the Information Technology Management Reform Act of 1996, also commonly known as the Clinger-Cohen Act of 1996. *See also* 44 U.S.C. § 3506(a), (h).

[10]Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113-291, §§ 831-37, 128 Stat. 3292, 3438-50 (2014).

[11]Office of Management and Budget, *Management and Oversight of Federal Information Technology*, Memorandum M-15-14 (Washington, D.C.: June 10, 2015), and Office of Management and Budget, Circular No. A-130, *Managing Information as a Strategic Resource* (Washington, D.C.: July 28, 2016).

GAO-24-107223 Oil and Gas

More recently, on May 15, 2018, the President signed Executive Order 13833, *Enhancing the Effectiveness of Agency Chief Information Officers*.[12] This order, which applied to all agencies covered by the Chief Financial Officers Act of 1990, apart from the Department of Defense and any agency considered to be an independent regulatory agency, strengthened the role of agency CIOs.[13] It did so by, among other things, requiring heads of agencies to take all necessary and appropriate action to ensure that agency CIOs (1) report directly to their agency head; (2) serve as their agency head's primary IT strategic advisor; and (3) have a significant role in all management, governance, and oversight processes related to IT.

We also have long been proponents of having strong CIOs in place to lead federal agencies' management of IT. For example, we have issued several reports on IT management best practices as well as federal agency CIO roles, responsibilities, authorities, and challenges.[14] In addition, in September 2016, the Comptroller General convened a forum in which current and past CIOs explored challenges and opportunities for CIOs to improve federal IT acquisitions and operations.[15]

In accordance with these laws and policies, Interior's CIO is responsible for overseeing processes for managing IT investments throughout Interior. Interior's CIO is responsible for implementing and enforcing applicable government-wide and department IT management principles, standards, and guidelines; and monitoring the performance of IT

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[12]Executive Order No. 13833 of May 15, 2018, "Enhancing the Effectiveness of Agency Chief Information Officers," 83 Fed. Reg. 23345 (pub'd May 18, 2018).

[13]Section 205 of the Chief Financial Officers Act of 1990, as amended, lists 24 federal entities as covered agencies. 31 U.S.C. § 901(b). "Independent regulatory agencies" are defined for this purpose by 44 U.S.C. § 3502(5).

[14]See, for example, GAO, *Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology*, GAO/AIMD-94-115 (Washington, D.C.: May 1, 1994); *Information Technology Investment: Agencies Can Improve Performance, Reduce Costs, and Minimize Risks*, GAO/AIMD-96-64 (Washington, D.C.: Sept. 30, 1996); *Federal Chief Information Officers: Responsibilities, Reporting Relationships, Tenure, and Challenges*, GAO-04-823 (Washington, D.C.: July 21, 2004); *Federal Chief Information Officers: Opportunities Exist to Improve Role in Information Technology Management*, GAO-11-634 (Washington, D.C.: Sept. 15, 2011); and *Federal Chief Information Officers: Critical Actions Needed to Address Shortcomings and Challenges in Implementing Responsibilities*, GAO-18-93 (Washington, D.C.: Aug. 2, 2018).

[15]GAO, *Information Technology: Opportunities for Improving Acquisitions and Operations*, GAO-17-251SP (Washington, D.C.: Apr. 11, 2017).

programs and advising the department head whether to continue, modify, or terminate such programs.[16] For example, for AFMSS 2 and other major IT acquisitions,[17] Interior's CIO has the responsibility to review and approve contracts prior to award.[18]

According to Interior data, the department has invested increasing amounts in its IT systems. In fiscal year 2021, Interior's IT investment spending was $1.5 billion, $183 million of which was for development. In fiscal year 2024, this investment increased to $2.0 billion overall, of which $363 million was for development. For fiscal year 2025, Interior's request is similar to 2024 levels—$2.0 billion overall, of which $356 million would be for development.

High-Risk Areas: Interior's Management of Oil and Gas Resources and Federal IT Acquisitions

In 2011, we placed *Management of Federal Oil and Gas Resources* on our High Risk List of federal programs and operations vulnerable to waste, fraud, abuse, or mismanagement, or in need of transformation.[19] We have found that Interior lacks reasonable assurance that it is collecting its fair share of revenue from oil and gas produced on federal lands and waters. In our 2023 update, we highlighted the role of capacity issues to address identified weaknesses, including the need to address deficiencies in oil and gas IT systems. To enhance its oversight of oil and gas development on federal lands and waters, Interior needs to accurately determine and collect such royalties.

In 2015, we also placed *Improving the Management of IT Acquisitions and Operations*, which includes Interior, on our High Risk List.[20] The executive branch has undertaken numerous initiatives to better manage

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[16]*See* 40 U.S.C. § 11315(b),(c).

[17]According to OMB, a major IT investment is one that requires special management attention because of its importance to the mission or function to the government; has significant program or policy implications; has high executive visibility; has high development, operating, or maintenance costs; has an unusual funding mechanism; or is otherwise defined as major by the agency's capital planning and investment control process. Office of Management and Budget, *Circular A-11, §55*. Interior identified AFMSS 2 as a major IT investment.

[18]*See* 40 U.S.C. § 11319(b)(1)(C).

[19]GAO, *High-Risk Series: An Update*, GAO-11-278 (Washington, D.C.: Feb. 16, 2011). We most recently updated our High Risk List in April 2023. See GAO-23-106203.

[20]GAO, *High-Risk Series: An Update*, GAO-15-290 (Washington, D.C.: Feb. 11, 2015).

the more than $100 billion that is annually invested in IT.[21] However, we have found that federal IT investments too frequently fail to deliver capabilities in a timely manner or incur cost overruns and schedule slippages while contributing little to mission-related outcomes. These investments often suffer from a lack of disciplined and effective management, such as project planning, requirements definition, and program oversight and governance.

Prior Challenges Related to BLM and Interior's IT Development Processes

Interior and BLM have a long history of IT development challenges. From the mid-1980s through 1999, BLM attempted to develop a data system called the Automated Land and Mineral Record System (ALMRS) to assist with permitting and other tasks, some of which are currently performed by AFMSS 2. In 1998, after obligating about $411 million to develop and deploy ALMRS, users found several problems, including that ALMRS did not support BLM's work, was too complex, and significantly impeded worker productivity. Shortly thereafter, BLM determined ALMRS was not ready to be deployed and terminated it in 1999.[22]

In February 2000, we reported that the absence of adequate investment management processes and practices at BLM was a significant factor contributing to the failure of ALMRS.[23] Accordingly, we recommended that the Secretary of the Interior direct BLM to take certain actions to help it strengthen its investment management process, which the agency implemented.

In 2003, we issued two reports examining BLM and Interior's IT investment management processes. We found that BLM had made progress in establishing its IT investment management capabilities in the years since we had reported that the lack of such capabilities had largely contributed to the ALMRS failure.[24] As we recommended, BLM developed

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[21]GAO, *High-Risk Series: Efforts Made to Achieve Progress Need to Be Maintained and Expanded to Fully Address All Areas,* GAO-23-106203 (Washington, D.C.: Apr. 20, 2023).

[22]We reported on these issues in a series of reports including: *Land Management Systems: Progress and Risks in Developing BLM's Land and Mineral Record System*, GAO/AIMD-95-180 (Washington, D.C.: Aug. 31, 1995); *Land Management Systems: Major Software Development Does Not Meet BLM's Business Needs*, GAO/T-AIMD-99-102 (Washington, D.C.: Mar. 4, 1999).

[23]GAO, *Land Management Systems: Status of BLM's Actions to Improve Information Technology Management*, GAO/AIMD-00-67 (Washington, D.C.: Feb. 24, 2000).

[24]GAO, *Bureau of Land Management: Plan Needed to Sustain Progress in Establishing IT Investment Management Capabilities*, GAO-03-1025 (Washington, D.C.: Sept. 12, 2003).

a plan to guide further improvement efforts to address six areas of weakness identified in our report.

Regarding Interior, we found that the department lacked most of the fundamental IT investment management practices necessary to effectively and efficiently manage IT resources.[25] For example, while Interior had issued guidance that described its approach to IT investment management, it had implemented few of the processes described in its own guide. As we recommended, Interior's CIO developed a plan aimed at addressing the 13 weaknesses we reported on, including a timetable and specific milestones for implementation of appropriate investment management processes at all levels of the department.

More recently, we reported on Interior's management of key data systems and some aspects of AFMSS 2's development. In March 2020 we reviewed BLM's oil and gas permit review process, and found that BLM did not follow leading IT practices in developing and implementing the new module for applications for permits to drill.[26] In 2021, we reviewed key data systems Interior uses to oversee oil and gas development, examining challenges Interior faced in using these systems, and Interior's implementation of leading practices in developing requirements for replacement systems.[27] We made a total of nine recommendations to Interior and BLM in these two reports, and as of April 2024, five have been implemented and four remain open.

AFMSS 2 Development Cost More, Took Longer, and Did Not Meet All of BLM's Goals

The development of AFMSS 2 was more expensive and took longer than planned, and, though the system delivered some new functionalities, it did not meet all of BLM's goals and performs worse than the legacy system in several ways.

[25]GAO, *Information Technology: Departmental Leadership Crucial to Success of Investment Reforms at Interior*, GAO-03-1028 (Washington, D.C.: Sept. 12, 2003).

[26]GAO, *Oil and Gas Permitting: Actions Needed to Improve BLM's Review Process and Data System*, GAO-20-329 (Washington, D.C.: Mar. 30, 2020).
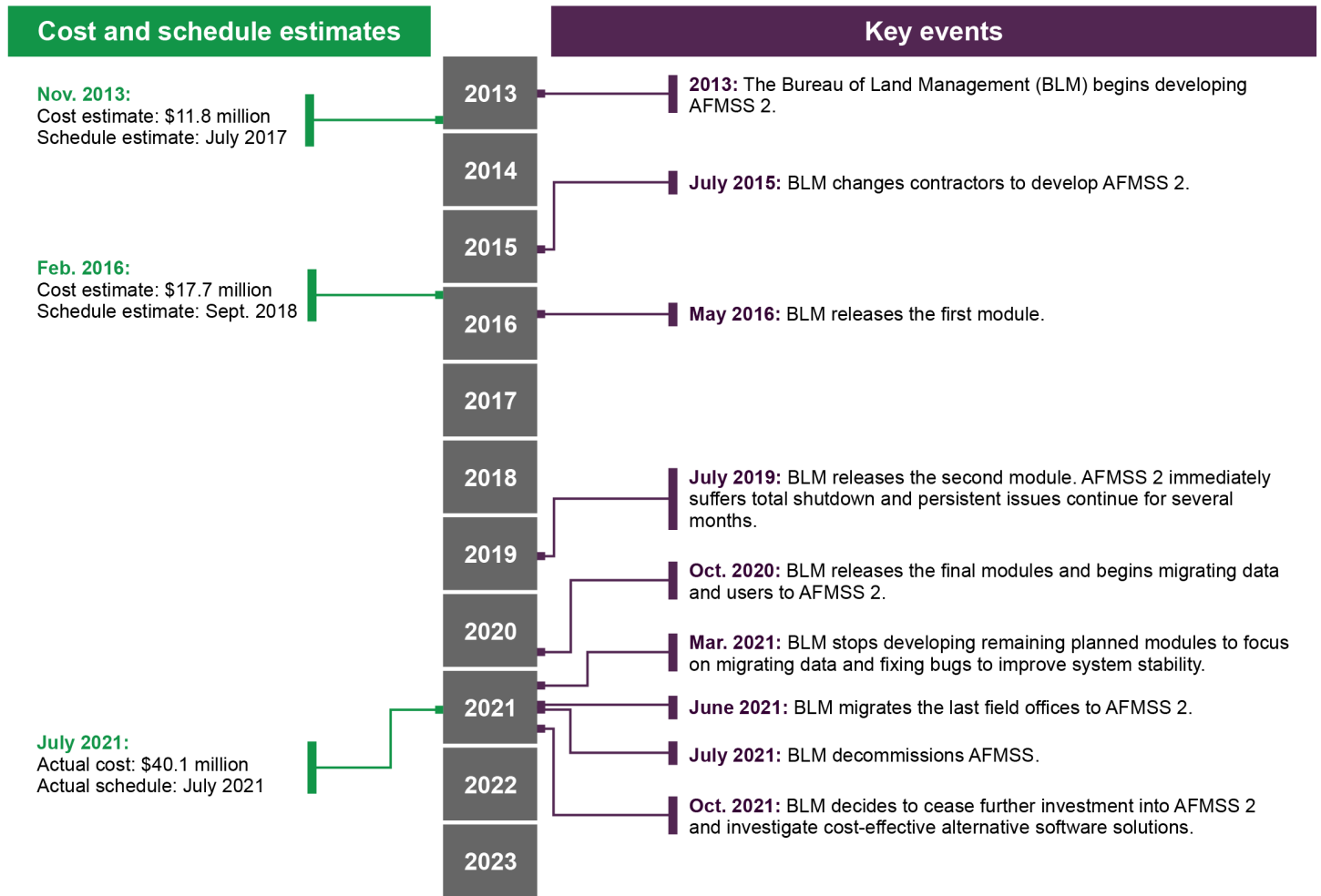
[27]GAO, *Oil and Gas: Interior Should Strengthen Management of Key Data Systems Used to Oversee Development on Federal Lands*, GAO-21-209 (Washington, D.C.: May 27, 2021).

GAO-24-107223 Oil and Gas

AFMSS 2 Cost and Schedule Overruns

According to BLM documentation, the agency experienced significant cost and schedule overruns developing AFMSS 2, which led it to defer or remove expected functionality. In 2013, BLM began developing AFMSS 2 with the intention of modernizing databases and automating processes and workflows. At that time, BLM estimated AFMSS 2 would cost approximately $12 million to develop and take 4 years to fully deploy in July 2017, according to a 2021 post-implementation review the agency conducted.[28] However, actual AFMSS 2 development costs were approximately $40 million, more than triple BLM's original estimate, according to agency documents. BLM took 4 years longer than planned, double its original estimate, to fully deploy AFMSS 2 and decommission AFMSS in July 2021. Figure 1 illustrates key events and the evolution of cost and schedule estimates for developing AFMSS 2.

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[28]Bureau of Land Management, *Post-Implementation Review For Automated Fluid Minerals Support System, Version 1.00*, (Denver, CO: Sept. 29, 2021). ASRC Federal, *AFMSS Analysis: Technical Analysis Report*, prepared for the Bureau of Land Management (Reston, VA: Sept. 16, 2022).

Figure 1: Key Events and Evolution of Cost and Schedule Estimates for the Automated Fluid Minerals Support System 2 (AFMSS 2), 2013–2023

Cost and schedule estimates

Nov. 2013:
Cost estimate: $11.8 million
Schedule estimate: July 2017

Feb. 2016:
Cost estimate: $17.7 million
Schedule estimate: Sept. 2018

July 2021:
Actual cost: $40.1 million
Actual schedule: July 2021

Key events

2013: The Bureau of Land Management (BLM) begins developing AFMSS 2.

July 2015: BLM changes contractors to develop AFMSS 2.

May 2016: BLM releases the first module.

July 2019: BLM releases the second module. AFMSS 2 immediately suffers total shutdown and persistent issues continue for several months.

Oct. 2020: BLM releases the final modules and begins migrating data and users to AFMSS 2.

Mar. 2021: BLM stops developing remaining planned modules to focus on migrating data and fixing bugs to improve system stability.

June 2021: BLM migrates the last field offices to AFMSS 2.

July 2021: BLM decommissions AFMSS.

Oct. 2021: BLM decides to cease further investment into AFMSS 2 and investigate cost-effective alternative software solutions.

Source: Department of the Interior and BLM documents. | GAO-24-107223

AFMSS 2 Did Not Meet All of BLM's Goals

AFMSS 2 delivered some, but not all, of the functionality BLM originally set out to achieve, and did not meet several other of BLM's goals. BLM identified qualitative and quantitative performance goals for AFMSS 2 and documented them in 2019. After AFMSS 2 was deployed, the agency

analyzed whether the system met its goals and delivered expected results as part of its post-implementation review in 2021 (see table 1).[29]

Table 1: Bureau of Land Management Identified and Evaluated Performance Goals for the Automated Fluid Minerals Support System 2 (AFMSS 2), as of September 2021

AFMSS 2 performance goals	September 2021 performance goal status
Qualitative performance goals	
Ability to meet National Environmental Policy Act requirements	●
Ability to meet security requirements	●
Consistency across BLM field offices	●
Enforces data quality	●
Improved data quality	●
Ability to meet regulatory requirements	◐
All oil and gas operator submissions online	◐
Automated workflows built into system	◐
Complete developments within target time frames	◐
Data model Professional Petroleum Data Management compliant[a]	◐
Information sharing with other Interior agencies	◐
Integrated geospatial	◐
Mobile inspection applications on Windows tablets	◐
Uses industry standard data exchanges	◐
Uses more modern tools	◐
Includes geophysical and reservoir management modules	○
Interfaces with other applications	○
Quantitative performance goals	
2,000 active users	●
98 percent system availability	●
80 percent satisfied users	○
60,000 total applications processed for permits to drill, sundries, and inspection transactions	◐

Legend:
● = met performance goal
◐ = partially met performance goal
○ = did not meet performance goal

Source: Bureau of Land Management documents. | GAO-24-107223

Note: The Bureau of Land Management identified qualitative and quantitative performance goals for AFMSS 2 and documented them in 2019. After AFMSS 2 was deployed, the agency analyzed whether the system met its goals and delivered expected results as part of its post-implementation review in 2021.

[29]Bureau of Land Management, *Post-Implementation Review.*

AFMSS 2 Performance Goals Considered Met

According to BLM's 2021 post-implementation review,[30] AFMSS 2 met selected performance goals, including:

- allowing electronic tracking and recording of drilling permits and inspection and enforcement data,

- complying with security requirements and with the National Environmental Policy Act of 1969,[31] and

- meeting goals for system availability.

AFMSS 2 Performance Goals Considered Partially Met

Within the modules that were deployed, AFMSS 2 lacked certain functionality, according to BLM's 2021 post-implementation review.[32] For example, BLM built automated workflows and online form submission capabilities into AFMSS 2, but system defects prevented workflows from running smoothly and caseworkers from completing submissions online, according to a BLM document. AFMSS 2 users also reported they could not always change oil and gas well statuses, update points of contact and well information, or properly save data and remarks, which negatively affects their ability to complete tasks. Further, though data from the original AFMSS system were transferred to AFMSS 2, some information was not transferred. For example, some well and operator information is missing, which causes users to search multiple other databases to find the missing information and piece it together.

AFMSS 2 Performance Goals Considered Not Met

AFMSS 2 did not meet other important performance goals, according to BLM's 2021 post-implementation review.[33] First, BLM developed and deployed some of the planned AFMSS 2 modules. AFMSS 2 was

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[30]Bureau of Land Management, *Post-Implementation Review.*

[31]Pub. L. No. 91-190, 83 Stat. 852 (1970) (codified as amended at 42 U.S.C. §§ 4321–4370h). AFMSS 2 includes data fields to collect and store National Environmental Policy Act of 1969 (NEPA) data and attachments allowing users to query data needed to comply with NEPA requirements when processing actions. NEPA requires federal agencies to assess and disclose the potential significant environmental impacts of and alternatives to a proposed major federal action before making a final decision. *See* 42 U.S.C. § 4332(2)(C).

[32]Bureau of Land Management, *Post-Implementation Review.*

[33]Bureau of Land Management, *Post-Implementation Review.*

intended to have geothermal and oil and gas facility measurement modules, but BLM reduced the project's scope and eliminated these.

Second, within the modules that were deployed, system defects remained a major challenge that negatively affected performance, data integrity, and overall user satisfaction with the system, according to BLM's 2021 post-implementation review. User satisfaction with AFMSS 2 has dropped below BLM's 80 percent satisfaction performance goal since its deployment in July 2021. The legacy AFMSS had generally met this performance goal, whereas the modernized AFMSS 2 has not. For example, of the BLM users that responded to BLM's annual surveys, 30 percent in fiscal year 2024 were satisfied with AFMSS 2 capabilities, according to BLM's operational analysis report.[34] The reports state many users were unsatisfied with AFMSS 2 due to its lack of functionality, system instability, and data issues.

According to BLM's 2021 post-implementation review, users reported it takes longer to complete routine tasks in AFMSS 2 than it did using the previous system, because of system instability and data issues. BLM surveyed four field offices that process a large volume of oil and gas activity, and these offices reported increases in the time required to process specific actions. For example, the number of hours to process applications for permits to drill increased 49 percent, sundries increased 68 percent, and inspections increased 72 percent in 2021 compared to processing times under the previous system.[35] Based on this, BLM extrapolated that this increase in processing time led to a total of an additional 564,770 hours of agency labor to process these actions nationwide in 2021—equal to about 272 years of work by a full-time employee.

In its business case for developing AFMSS 2, BLM stated that it expected increased productivity and cost savings. However, BLM estimated that AFMSS 2 cost the agency over $19 million per year in lost productivity in 2021. BLM has not conducted a follow-up survey since 2021, so it is unclear to what extent AFMSS 2 continues to reduce productivity and

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[34]AFMSS surveys have had a low response rate of between 11 percent and 29 percent. For example, in fiscal year 2024, 799 internal BLM users were surveyed, and 156 users (19.5 percent) responded. Since BLM's performance goal relies on a survey with low response rates, the satisfaction reported by respondents may be different than overall satisfaction of all AFMSS users.

[35]Specifically, BLM examined a portion of fiscal year 2021 from October 2020 through August 2021.

increase costs. Based on our interviews with BLM users, it appears that some users have found ways to use AFMSS 2 more efficiently and have developed some workarounds. However, users we interviewed generally reported to us that the system continues to diminish their efficiency compared with before its rollout.

BLM users we interviewed told us that a number of factors contribute to decreased efficiency, including system performance. System defects cause information such as drilling permit applications, inspection reports, and information on wells to be hidden from users or not saved properly. In addition, AFMSS 2 experiences frequent performance slowdowns, according to BLM officials and documents. For example, users demonstrated to us that AFMSS 2 often displays a computer icon some call the "spinning flower of death," which signals that the AFMSS 2 system is processing slowly. They also demonstrated that frequent error messages can interrupt their work (see fig. 2).

Figure 2: Screenshot of the Automated Fluid Minerals Support System 2 Warning of Software Functionality Problem
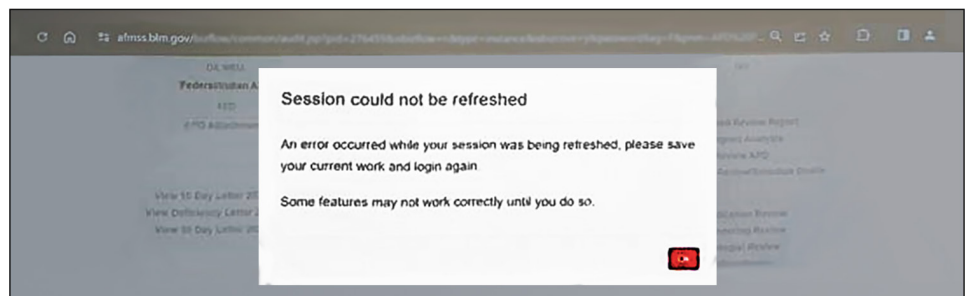
Source: GAO. | GAO-24-107223

Data integrity and reliability problems with AFMSS 2 continue to affect BLM's ability to use AFMSS 2 as the system of record and to ensure environmentally responsible development of energy and minerals on public lands. Users are required to keep and maintain paper records to ensure accurate AFMSS 2 reports, because AFMSS 2 data are missing or include errors that must be manually entered or fixed in the system. Moreover, in 2020, BLM stated that AFMSS 2 was not BLM's system of record partly due to these data integrity issues. As a result, BLM did not use AFMSS 2 as the system of record for oil and gas activities, instead deciding to rely on paper and other records.

These reliability issues with AFMSS 2 persist. In February 2024, BLM issued guidance to agency offices for reviewing whether bonds for oil and gas operations were adequate to ensure that funds were available to meet lease obligations, including plugging wells and reclamation, if the lessee or operator is unable to do so. The guidance advised BLM offices that AFMSS 2 may have data issues that affect this work until the system is stabilized, and to contact BLM headquarters to resolve specific challenges.[36]

Interior and BLM Did Not Always Have Approved Project Baselines for AFMSS 2

At different points in the development process, BLM did not have approved baselines in place for AFMSS 2. Effectively managing projects entails, among other things, pulling together essential cost, schedule, and performance goals—known as a baseline—in a meaningful, coherent fashion so that managers have an accurate view of the project's development status. We have reported that developing reliable cost estimates is crucial for realistic planning, budgeting and management, and that project baselines are important project management elements.[37]

When BLM initiated development of AFMSS 2 in 2013, the agency entered into contracts and expended funds for the project without first having established an approved project baseline. According to documentation from Interior's CIO, that office first approved an AFMSS 2 baseline in February 2016, at which point BLM had spent over 2 years and at least $8 million on the effort. Similarly, halfway through fiscal year 2021, Interior's CIO approved a re-baseline to add funds retroactively to the program for fiscal years 2020 and for the remainder of 2021. On these two occasions, BLM sought approval for AFMSS 2 project baselines after funds had already been spent and schedule elapsed.

BLM officials told us that the AFMSS 2 baseline was first approved by BLM's investment review board in 2013 and provided the minutes of board meetings in which AFMSS 2 was discussed. BLM also provided a spreadsheet with schedule and cost figures, which may have reflected BLM's plans at one point in time. However, these were not approved by Interior's CIO, and BLM could not provide documentation showing that any specific baseline had been approved. Moreover, the spreadsheet

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[36]Bureau of Land Management, *Oil and Gas Bonds Adequacy Reviews, Instruction Memorandum 2024-014* (Washington, D.C.: Feb. 7, 2024).

[37]GAO, *Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs*, GAO-20-195G (Washington, D.C.: March 2020).

includes information about costs and development efforts beginning in 2011, 2 years before BLM initiated AFMSS 2.

More recently, Interior and BLM have requested funding for a project to replace AFMSS 2 without first approving a schedule for the project, even though OMB requires that agencies approve baselines before requesting funds for major projects such as AFMSS 2.[38] Having a full baseline in place at the outset is important so that decision-makers know the full implications of their decisions—IT development projects can be multi-year efforts that span multiple budget cycles. Interior's fiscal year 2025 budget request of $356 million in development funding includes $11.9 million to develop the replacement system for AFMSS 2. BLM officials told us that their funding request was based on the estimated funding they expected to receive, and that the agency had not completed a baseline for the project.

Interior's weak internal controls for IT baselines and ineffective control activities contributed to the instances of AFMSS 2 proceeding without a baseline in place. For example, weaknesses in Interior's internal controls were highlighted when AFMSS 2 proceeded without approved baselines, even though Interior had an IT baseline policy prior to 2022 that clearly required major IT investments and their associated IT components to obtain CIO approval of their baselines prior to initiation.[39] While Interior's CIO also had a series of internal control points such as investment review boards and periodic agency IT portfolio reviews, weaknesses in these controls did not enable Interior to identify and remedy instances of noncompliance during the AFMSS 2 project. That AFMSS 2 began without an approved baseline and was subsequently twice re-baselined after the fact points to weaknesses in Interior's control activities.

Interior rescinded its baseline policy in 2022 and has not yet replaced it. Interior's CIO officials told us that since 2022 they have issued annual guidance in lieu of establishing baseline policy in accordance with OMB requirements, and plan to issue a new baseline policy before October 2024. Interior's CIO issued annual portfolio management guidance that includes some baseline policy in January 2024. Interior's CIO officials told

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[38]Office of Management and Budget, *Preparation, Submission, and Execution of the Budget Circular*, OMB Circular No. A-11 (Washington, D.C.: Aug. 11, 2023), section 55.3(b).

[39]Department of the Interior, Office of the Chief Information Officer, *Information Technology Investment Performance Measurement Baseline Management Policy*, OCIO Directive 2012-006 (Washington, D.C.: March 30, 2012).

us that their approach has been to provide general, less detailed baseline guidance, and allow BLM and other Interior bureaus to issue more detailed standards. Officials stated that Interior is actively managing baselines and they believe annual guidance documents issued by Interior's CIO meet most OMB requirements for baseline policy. However, the January 2024 annual guidance document does not specify how and when to approve baselines for new IT projects, or what details new baselines should contain.[40]

OMB requires that agencies establish policies to require baselines for IT development, including identifying who should approve baselines, what detailed information baselines should include, and how baselines should be reviewed.[41] OMB guidance also directs agencies to approve baselines before funding projects and to develop baselines using detailed work breakdown structures. According to *Standards for Internal Control in the Federal Government*, agencies should implement control activities through policies, and design control activities to achieve objectives.[42]

Without putting in place an IT investment baseline management policy that meets OMB requirements, and strengthening its internal controls to ensure its baseline policies are implemented, Interior risks that the AFMSS 2 replacement and other major IT projects may proceed without approved baselines. Approved, sufficiently detailed baselines are needed for agency management to measure progress, maintain accountability, and control costs. If Interior and BLM were to consistently use approved, detailed baselines to manage IT projects, they may be able to identify and resolve problems earlier. This could contribute to preventing the kinds of cost and schedule overruns observed with AFMSS 2 and save costs.

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[40]Department of the Interior, Office of the Chief Information Officer, *Annual IT Portfolio Management Requirements*. (Washington, D.C.: January 2024).

[41]Office of Management and Budget, *Information Technology Investment Baseline Management Policy*, M-10-27 (Washington, D.C.: June 28, 2010).

[42]GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014). See Principle 10, "Design Control Activities," and Principle 12, "Implement Control Activities."

Interior and BLM Did Not Provide Effective Leadership and Oversight of the AFMSS 2 Project

Interior and BLM's ineffective leadership and oversight of the AFMSS 2 project contributed to AFMSS 2's failure. We identified two ways Interior and BLM lacked leadership and oversight. In particular, Interior's CIO did not have a clear picture of AFMSS 2's performance. Interior's CIO officials told us that they were not aware of AFMSS 2's failure until we brought it to their attention. OMB guidance states that department CIOs are generally responsible for tracking and reporting on the status of major IT development projects.[43] Interior's CIO has publicly reported that AFMSS 2 is high performing and low risk, even as BLM declared AFMSS 2 a failure and halted its development (see fig. 3).[44]

Figure 3: Timeline of Automated Fluid Minerals Support System 2 (AFMSS 2) Significant Events Compared to Department of the Interior's Office of Chief Information Officer Project Risk Ratings, 2016–2024
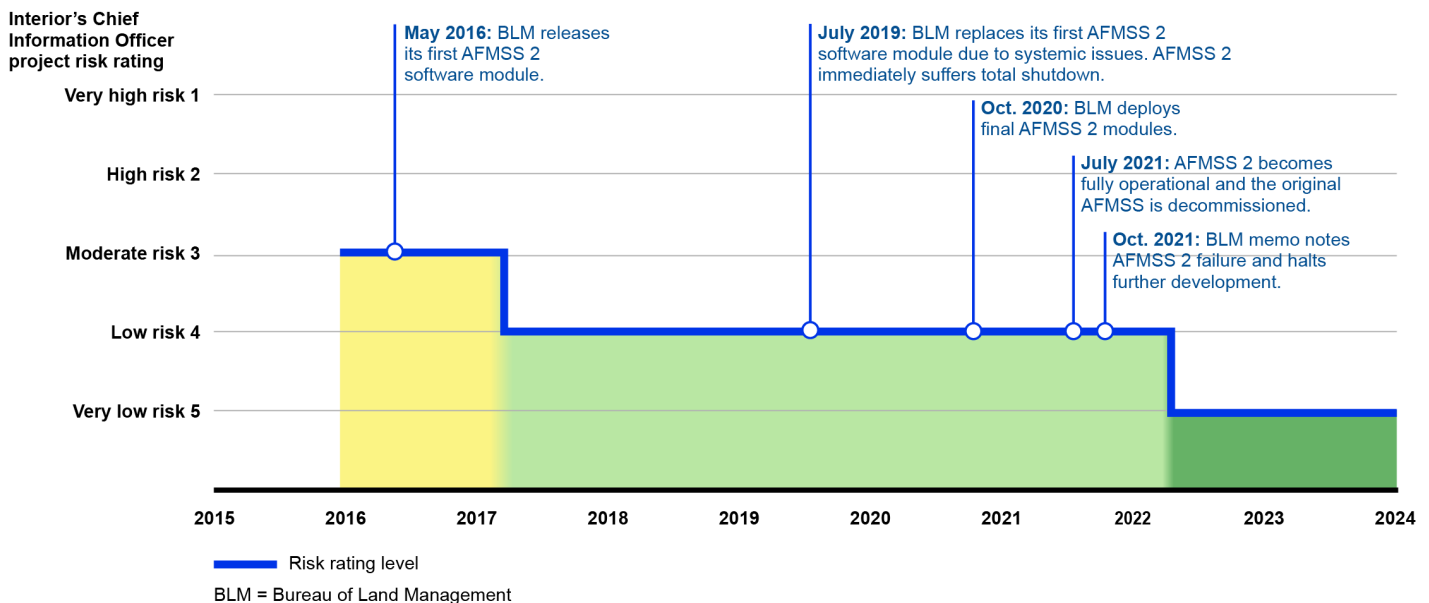
Source: GAO analysis of the Department of the Interior's Chief Information Officer's risk ratings. | GAO-24-107223

[43]OMB guidance states that agencies shall ensure that CIOs approve the IT components of any plans while assigning ultimate responsibility for IT policy to agency heads. Office of Management and Budget, Circular No. A-130, *Managing Information as a Strategic Resource* (Washington, D.C.: July 28, 2016), 5.

[44]In 2009, OMB deployed a public website known as the IT Dashboard (at ITDashboard.gov). As part of this effort, agencies are required to follow guidance directing federal agencies to report, via the IT Dashboard, the performance of their IT investments. According to OMB, this information is intended to provide a near real-time perspective of the performance of these investments, as well as a historical perspective. Further, the public display of these data is intended to allow OMB, other oversight bodies, and the public to hold the government agencies accountable for results and progress.

GAO-24-107223 Oil and Gas

Interior's CIO officials told us that they depend on BLM for project performance information because they are not able to easily access key project information held by the constituent agencies.

In addition, Interior and BLM lacked effective leadership and oversight because they repeatedly did not address important divergences from policy. For example, as discussed above, BLM did not have an approved baseline at various times during the development effort. These facts raise concerns about information sharing and the maturity of Interior and BLM's investment management processes. Without a clear picture of AFMSS 2's performance, Interior's CIO did not act when major problems with AFMSS 2 development emerged.

Moreover, Interior and BLM did not comprehensively examine the root causes of AFMSS 2's failure and did not establish a corrective action plan to address those root causes, though these are required by OMB and BLM policy.[45] A root cause analysis identifies multiple interacting causes that together produce an effect, according to our 2022 report on key practices to address high-risk areas.[46] The goal of a root cause analysis is to identify as many causes as possible, at whatever level of depth is necessary, to increase the chances of solving an underlying problem rather than treating a symptom. Once the causes are identified, a corrective action plan can be formulated to address them and make progress toward resolution.

In 2021 and 2022, BLM conducted two main assessments evaluating the performance of the AFMSS 2 system and the development process— BLM's September 2021 post-implementation review and a 2022 technical analysis developed by a contractor.[47] These assessments found that the

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[45]OMB guidance describes requirements for corrective action plans; see Office of Management and Budget, *Circular No. A-123, Management's Responsibility for Enterprise Risk Management and Internal Control* (Washington D.C.: July 15, 2016), §V.(B). In addition, BLM requires a corrective action plan if a project's cost and schedule exceed a 10 percent threshold; see Bureau of Land Management, *Capital Planning and Investment Control (CPIC) Handbook*, H-1265-1 (Dec. 29, 2016), §4.3.

[46]GAO, *High-Risk Series: Key Practices to Successfully Address High-Risk Areas and Remove Them from the List*, GAO-22-105184 (Washington, D.C.: Mar. 3, 2022).

[47]Bureau of Land Management, *Post-Implementation Review.* ASRC Federal, *AFMSS Analysis: Technical Analysis Report*, prepared for the Bureau of Land Management (Reston, VA: Sept. 16, 2022).

AFMSS 2 project encountered various problems, some of which identify issues related to IT leadership and governance.

For example, they found that AFMSS 2 used a problematic underlying software platform. BLM officials told us this was the most important problem the agency faced regarding AFMSS 2.[48] This software platform was not designed to handle the demands placed upon it as the system was widely rolled out, according to BLM officials and documents. BLM contract documents show that BLM initially selected this software platform as the project was being planned in 2012. Contract documents also indicate that, when BLM changed contractors, it required its new contractor to use the problematic software platform. BLM officials told us that they recognize that selecting the software platform was an error.

BLM's assessments do not constitute a comprehensive root cause analysis or a corrective action plan. First, for some of the identified problems, the assessments did not identify root causes that led to them. For example, as discussed above, the assessments state that a selected software platform was a major cause of AFMSS 2's problems. These reviews recommended that BLM adopt a different platform such as those used in other parts of the agency. However, these reviews did not specify the root causes that contributed to BLM's early selection of, and continued reliance on, the problematic software platform.

In addition, BLM's assessments do not contain a corrective action plan and so do not detail any specific, management-approved actions that should be taken to address root causes. Interior and BLM officials told us they instead plan to review and incorporate lessons learned using their existing processes as they plan to replace AFMSS 2 in the future.

The lack of awareness of AFMSS 2's failures and corrective actions taken despite multiple warning signs demonstrates the need for more concerted leadership and oversight of the system's modernization. Our prior work has identified leading practices in executive-level IT governance and critical factors underlying major IT acquisitions that, if implemented effectively, increase the likelihood of success for modernization efforts such as AFMSS 2.[49]

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[48]A software platform is a software architecture that acts as foundation or base upon which other applications, such as AFMSS 2, can be operated.

[49] GAO-04-394G, GAO-12-7.

With respect to executive-level IT governance, effectively controlling and reviewing IT investments involves, among other things, (1) comparing actual performance against cost and schedule estimates; and (2) assessing whether projects are meeting expectations against developmental milestones using predefined criteria and decision gates, and taking corrective actions when expectations are not being met.[50]

Regarding acquiring major IT acquisitions, nine common factors are critical to the success of such efforts:[51]

- program officials are actively engaged with stakeholders;

- program staff have the necessary knowledge and skills;

- senior department and agency executives support the programs;

- end users and stakeholders are involved in the development of requirements;

- end users participate in testing of system functionality prior to formal end user acceptance testing;

- government and contractor staff are stable and consistent;

- program staff prioritize requirements;

- program officials maintain regular communication with the prime contractor; and

- programs receive sufficient funding.

Interior and BLM could better ensure efforts to replace AFMSS 2 are successful by developing and implementing a plan to implement these leading practices and critical factors, including by clarifying policy and guidance to make sure future IT development efforts undertake root cause analysis and corrective action plans. By implementing leading practices, Interior and BLM would be in better positions to identify

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[50]Our work assessed best practices used in industry, academia, and government to develop the IT Investment Management Framework to provide a method for evaluating and assessing how well an agency is selecting and managing its IT resources. These include the following best practices: (1) instituting investment boards, (2) selecting IT investments, (3) controlling IT investments, and (4) reviewing IT investments after deployment.

[51]We use the term leading practices to refer to the leading practices discussed above as well as these common factors critical to success.

whether IT projects are meeting expectations and take corrective actions to address underlying causes when they are not.

Conclusions

AFMSS 2 plays a vital part in Interior's oversight of oil and gas development on federal and tribal trust lands. Therefore, the decreased productivity and user frustration stemming from its poor functionality may have outsized impacts on Interior's ability to protect human health and the environment and ensure the American people receive a fair return from oil and gas production on federal lands. While Interior and BLM met or partially met some project goals to develop the AFMSS 2 system, the agency spent almost a decade and $40 million to deliver a product that many users are unsatisfied with, that costs tens of millions a year in decreased productivity, and that is inferior in several other ways to the system it aimed to modernize.

Interior and BLM's lack of an approved baseline during much of the AFMSS 2 project highlights a weakness in Interior's internal controls. OMB guidance requires agencies to have policies ensuring that approved baselines are in place for IT acquisitions. While Interior did have a policy prior to 2022 that clearly required major IT investments to have approved baselines, the agency did not have internal controls in place to ensure its baseline policies are implemented. As a result, BLM proceeded with AFMSS 2 without an approved cost, schedule, and performance baseline. In addition, contrary to OMB requirements, Interior rescinded its baseline policy in 2022 and therefore currently does not have a policy governing baselines and their approval. Without such a policy, and internal controls to ensure that its policy is followed, Interior risks other IT projects—such as BLM's planned replacement of AFMSS 2—proceeding without control of cost and schedule.

In addition, a lack of effective leadership and oversight was a key factor contributing to Interior and BLM's AFMSS 2 project failure. For example, Interior officials who oversee IT projects told us they were not aware of the system's failure in 2021 until we raised it to their attention. Interior continued to publicly report that AFMSS 2 was a very low risk investment, until and beyond the point when BLM declared the project a failure. Without leadership and oversight, Interior and BLM cannot provide assurance that funds for future IT investments will be expended in the most cost-effective way and support, rather than detract from, mission needs.

Interior and BLM intend to develop a replacement to AFMSS 2 and have other IT modernization efforts underway or in early planning stages. It is

therefore critical to have leadership and oversight in place to guide these efforts. By implementing leading practices in executive-level IT governance and critical factors underlying major IT acquisitions, Interior and BLM could help prevent future cost and schedule overruns. In doing so, Interior and BLM would be better able to prevent additional cost and schedule overruns and deliver products that improve BLM's productivity in its efforts to protect human health and the environment and ensure a fair return from energy production on federal lands. Preventing a small portion of the costs and productivity losses observed with AFMSS 2 would result in millions of dollars of savings over several years.

Recommendations for Executive Action

We are making the following recommendations to Interior and BLM:

The Secretary of the Interior should direct Interior's CIO to ensure its new IT investment baseline management policy meets OMB requirements and strengthens internal controls to ensure baselines are approved by appropriate milestones. (Recommendation 1)

The Secretary of the Interior should direct Interior's CIO to strengthen IT leadership and oversight by implementing leading practices in executive-level IT governance for major IT investments including the AFMSS 2 replacement. (Recommendation 2)

The Director of BLM should document concurrence from Interior's CIO that BLM is implementing policies and procedures for developing IT systems, including the AFMSS 2 replacement, that are in alignment with the CIO's direction. Such policies and procedures should include that root cause analyses and corrective action plans are completed for projects that exceed established cost, schedule, and performance thresholds. (Recommendation 3)

Agency Comments

We provided a draft of this report to Interior for review and comment. Interior provided written comments, reproduced in appendix I. Interior partially concurred with our recommendation for Interior to ensure its new baseline management policy meets OMB requirements and to strengthen its internal controls. Interior stated, as we noted in our report, that it had a baseline management policy in place during AFMSS 2's development, which Interior rescinded in 2022. As we noted in our report, the fact that BLM did not follow Interior's baseline management policy prior to 2022 highlights weaknesses in Interior's internal controls. Interior agreed to meet OMB requirements in its new policy and to strengthen internal controls. Interior agreed with our other two recommendations and agreed to take actions to implement them.

We are sending copies of this report to the appropriate congressional committees; the Secretary of the Interior; and other interested parties. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-3841 or ruscof@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix II.

Sincerely,

Frank Rusco
Director, Natural Resources and Environment

Appendix I: Comments from the Department of the Interior

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

August 26, 2024

Mr. Frank Rusco
Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Rusco:

Thank you for providing the U.S. Department of the Interior (Department, Interior) the opportunity to review and comment on the draft Government Accountability Office (GAO) report titled, *Oil and Gas: Interior Urgently Needs Leadership and Oversight to Address IT System Development Failure* (GAO-24-107223). We appreciate GAO's review of Interior's and the Bureau of Land Management's (BLM, Bureau) efforts to modernize, approve project baselines, and effectively oversee the modernization project of the Automated Fluid Minerals Support System (AFMSS) 2.

The GAO issued three recommendations, two to the Office of the Chief Information Officer (OCIO) and one to the BLM to address its findings. The Department partially concurs with recommendation 1 and concurs with the recommendations 2 and 3.

Recommendation 1: The Secretary of the Interior should direct Interior's CIO to ensure its new information technology investment baseline management policy meets OMB requirements and strengthens internal controls to ensure baselines are approved by appropriate milestones.

Response: Partially Concur. The OCIO had a baseline management policy in place during the period in which the AFMSS was being modernized and it was rescinded after AFMSS modernization completion. The previous baseline management policies aligned with Office of Management and Budget (OMB) requirements at that time. The OCIO is currently updating the information technology (IT) baseline policy and agrees with the GAO recommendation to strengthen internal controls to ensure baselines are approved by the appropriate milestones. The updated policy will also continue, as in the prior policy, to meet OMB and other policy requirements.

Recommendation 2: The Secretary of the Interior should direct Interior's CIO to strengthen IT leadership and oversight by implementing leading practices in executive-level IT governance for major IT investments including the AFMSS 2 replacement.

Response: Concur. The CIO will leverage the action from recommendation 1 to strengthen IT leadership and oversight, including strengthening existing practices and establishing new practices for executive-level IT governance for major IT investments.

Recommendation 3: The Director of BLM should document concurrence from Interior's CIO that the agency is implementing policies and procedures for developing IT systems, including the AFMSS 2 replacement, that are in alignment with the CIO's direction. Such policies and procedures should include that root cause analyses and corrective action plans are completed for projects that exceed established cost, schedule, and performance thresholds.

Response: Concur. BLM will conform with policies and procedures put in place by the CIO and obtain documented concurrence from the CIO that BLM's implementation is consistent with the CIO's direction including root cause analysis, corrective action plans for projects that exceed cost, schedule, or performance thresholds.

Response: As part of the Department's implementation review, the OCIO will confirm BLM's corrective actions taken to implement recommendation 3 to include BLM's comments provided below:

- BLM recognized the need for changes and has already taken the following actions to strengthen overall bureau-wide controls referenced in this report:
  o Performed an organizational realignment to create one Information Management and Technology Directorate within Bureau headquarters. This is designed to increase accountability, strengthen oversight and authority over Bureau IT investments, as well as foster improved communication and collaboration for future software development.
  o Onboarded a permanent senior executive Associate Chief Information Officer (ACIO) to provide senior leadership and authority for Bureau-wide information management and technology. The ACIO serves as a full member of the Bureau's Executive Leadership Team.
  o Established regular portfolio reviews with the Department's OCIO to discuss status, challenges, and collaborate on areas of improvement for Bureau IT investments and initiatives.
  o Developed and maintained a live online risk register to get more up-to-date information on the risks of national applications.

- The BLM is following the Capital Planning and Investment Control (CPIC) Handbook and has taken the following actions specific to AFMSS future modernization to strengthen controls referenced in this report:
  o Performed a post-implementation review for AFMSS 2 in 2021.
  o Perform annual Operational Analysis to evaluate how well AFMSS meets program and customer needs.
  o Completed a Technical Analysis in 2022 to document stability options, future state visions, and lessons learned to apply to future implementations to address underperforming aspects of the system.
  o Followed the CPIC Handbook, starting with the Pre-Select activities to explore modernization options, and provided a Mission Needs Statement and Technical Analysis summary to the Information Technology Investment Board (ITIB).
  o Received ITIB approval to move to the CPIC Select phase and performed an Analysis of Alternatives for approaches to address AFMSS deficiencies.
  o Awaiting final ITIB approval to move to the control phase, pending additional information on cost, schedule, scope, technical stack, and release plan.

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- More broadly, the BLM has undertaken the following additional actions to strengthen controls, including but not limited to:

  o Use of the Department's Corrective Action Report template for investments with established cost, schedule, and performance variances greater than 10 percent of their approved baselines. This includes root cause analysis, such as reason for variance, impacts, mitigation and action.
  o Update BLM's CPIC Handbook to ensure that it incorporates all current Office of Management and Budget's CPIC requirements (last update made in 2016).
  o Reestablish a Portfolio Review Committee (formally Rating and Rankings) that reports to BLM's ITIB on the status and health of national applications.
  o Establish an Enterprise Solutions Committee that reports to BLM's ITIB to improve evaluation of proposed technologies and approaches for IT investments.
  o Conform with all processes and requirements established by the Interior's OCIO to improve oversight and compliance of IT investments.
  o Document and implement a standard framework and procedures for the development of Bureau IT Systems.

If you have any questions or need additional information, please contact the Office of Financial Management, Audit Management Division at DOI_PFM_AM@ios.doi.gov.

Sincerely,

DARREN ASH
Digitally signed by DARREN ASH
Date: 2024.08.26 14:39:31 -04'00'

Darren B. Ash
Chief Information Officer
Office of Chief Information Officer

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Appendix II: GAO Contact and Staff Acknowledgements

GAO Contact	Frank Rusco at (202) 512-3841 or RuscoF@gao.gov
Staff Acknowledgements	In addition to the contact named above, Quindi Franco (Assistant Director), Lee Carroll (Analyst in Charge), Holly Halifax, Alexis Hartranft, Gwen Kirby, Joshua Leiling, Dan C. Royer, and Robert Treadwell made key contributions to this report. Also contributing to this report were William Gerard, Cindy Gilbert, Jason Lee, Joseph Maher, Susan Murphy, and Jerome Sandau.

Related GAO Products

High-Risk Series: Efforts Made to Achieve Progress Need to Be Maintained and Expanded to Fully Address All Areas, GAO-23-106203 (Washington, D.C.: Apr. 20, 2023).

Oil and Gas: Interior Should Strengthen Management of Key Data Systems Used to Oversee Development on Federal Lands, GAO-21-209 (Washington, D.C.: May 27, 2021).

Oil and Gas Permitting: Actions Needed to Improve BLM's Review Process and Data System, GAO-20-329 (Washington, D.C.: Mar. 30, 2020).

Information Technology: Key Attributes of Essential Federal Mission-Critical Acquisitions, GAO-20-249SP (Washington, D.C.: Sept. 8, 2020).

Federal Chief Information Officers: Critical Actions Needed to Address Shortcomings and Challenges in Implementing Responsibilities, GAO-18-93 (Washington, D.C.: Aug. 2, 2018).

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