



U.S. DEPARTMENT OF COMMERCE
Office of Inspector General



***NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION***

***Poor Management Oversight and Ineffective
Incentives Leave NPOESS Program Well
Over Budget and Behind Schedule***

Audit Report No. OIG -17794-6-0001/May 2006

Public Release

Office of Inspector General



UNITED STATES DEPARTMENT OF COMMERCE
The Inspector General
Washington, D.C. 20230

MAY - 8 2006

MEMORANDUM FOR: David A. Sampson
Deputy Secretary of Commerce

Conrad C. Lautenbacher, Jr.
Under Secretary of Commerce for Oceans and Atmosphere and
NOAA Administrator

FROM: Johnnie E. Frazier

SUBJECT: *Poor Management Oversight and Ineffective Incentives
Leave NPOESS Program Well Over Budget
and Behind Schedule*
Audit Report No. OIG-17794-6-0001/2006

Attached is the final report on our audit of select aspects of the National Polar-orbiting Operational Environmental Satellite System (NPOESS). The objectives of our audit were to determine (1) how problems with the NPOESS program are identified and communicated by the contractor to the Integrated Program Office (IPO), and by the IPO to NOAA management, and (2) whether award fees to the contractor are being administered effectively. Because of the criticality of the Visible Infrared/imager Radiometer Suite (VIIRS) sensor and the problems experienced with its development, our review focused on VIIRS issues as they affect NPOESS.

We found that the VIIRS problems were communicated by the prime contractor and VIIRS subcontractor to the IPO and by the IPO, in turn, to the program's Executive Committee (EXCOM), but the EXCOM did not effectively challenge the optimistic assessments of their impact. We also found that the current award fee structure does not foster excellent performance as was intended, with the result that the contractor is receiving excessive award fees for a problem-plagued program. To address these areas, we recommend that NOAA work with EXCOM to (1) obtain and review regular, independent evaluations of the status of NPOESS that thoroughly assess progress toward completing high-risk or otherwise critical tasks, (2) revise the award fee plan to specify effective incentives for achieving program goals, and (3) segregate responsibilities for program management and fee determination. The Executive Summary begins on page i, and recommendations appear on pages 12 and 23.

We appreciate the level of attention and careful consideration that you and your staff took to address our findings and recommendations. In accordance with DAO 213-5, please provide us with the audit action plan for our review and concurrence addressing all of the report recommendations within 60 days of this memorandum. If you would like to discuss the contents of the report, please contact me at (202) 482-4661, or have your staff contact Allison Lerner, Counsel to the Inspector General, at (202) 482-5992 or Judith Gordon, Assistant Inspector General for Systems Evaluation, at (202) 482-6186.



Attachment

cc: Mack Cato, Director, Audit, Internal Control, and Information Management Office

CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	i
INTRODUCTION	1
OBJECTIVES, SCOPE, AND METHODOLOGY	7
FINDINGS AND RECOMMENDATIONS.....	8
I. EXCOM DID NOT EFFECTIVELY CHALLENGE OPTIMISTIC ASSESSMENTS OF THE IMPACT OF VIIRS PROBLEMS ON NPOESS	8
Recommendation	12
II. CONTRACTOR RECEIVED EXCESSIVE AWARD FEES FOR A PROBLEM- PLAGUED PROGRAM.....	17
Recommendations.....	24

APPENDIXES

- Appendix I: Excerpts from Monthly Reports to EXCOM
Describing VIIRS Related Issues
- Appendix II: Glossary
- Appendix III: Departmental Response
- Appendix IV: NOAA's Response

EXECUTIVE SUMMARY

In 1994, by Presidential Decision Directive, the National Oceanic and Atmospheric Administration (NOAA) merged its Polar Operational Environmental Satellite (POES) Program with the Department of Defense's (DoD) Defense Meteorological Satellite Program to produce the National Polar-orbiting Operational Environmental Satellite System (NPOESS). NPOESS was envisioned as a single state-of-the-art environmental and climate monitoring system that would reduce duplication and significantly cut the cost of satellite operations engaged in obtaining critical meteorological data. Early estimates for NPOESS put life-cycle costs at \$6.5 billion and set a deadline of March 2008 for the first satellite launch.

The merger assigned shared management to NOAA and Defense, along with NASA, whose experience with its own earth observing satellites is expected to improve NPOESS capabilities. The three agencies formed an Integrated Program Office (IPO) within NOAA to manage NPOESS and specified their individual responsibilities in a memorandum of agreement (MOA): NOAA is charged with overall management of the converged system and provided the system program director, who reports to the NOAA Administrator through the NOAA Assistant Administrator for the National Environmental Satellite, Data and Information Service (AA/NESDIS); DoD is the lead on acquisition matters; and NASA is the lead for promoting transition to new technologies. Because of the importance of NPOESS to national and global climate monitoring capabilities, overall program guidance was assigned to an executive committee (EXCOM) made up of top leadership from each agency: the Under Secretary of Commerce for Oceans and Atmosphere, the Under Secretary of Defense for Acquisition and Technology, and the NASA Deputy Administrator. Though not stipulated in the MOA, the agencies formed a steering committee to provide additional executive leadership: committee members include the assistant administrator for NESDIS and his counterparts at DoD and NASA, each of whom reports to the EXCOM member for their agency.

NPOESS acquisition plans call for, among other things, procurement of six satellites and development of seven instruments, including the Visible/Infrared Imager Radiometer Suite (VIIRS)¹—one of four sensors considered critical to the program.

In August 2002, the IPO, using DoD's contracting authority, awarded a single satellite integration contract worth \$4.5 billion to a prime contractor, incorporating previously-awarded sensor contracts as subcontracts to the prime. The prime contract included an award fee incentive arrangement to encourage outstanding performance, making it possible for the contractor to earn up to 20 percent of total estimated costs. It set three fee types for the first phase of the contract:

- Base fees are a guaranteed 2 percent of estimated costs, paid to the contractor automatically each billing period. The total base fee pool is \$57,190,785.
- Award fees—capped at 13 percent of estimated contract cost or \$369,294,988—are tied to the government's assessment of the contractor's performance in three broad areas: management, technical, and cost.

¹ VIIRS collects visible/infrared imagery and radiometric data. Data types include atmospheric, clouds, earth radiation budget, clear-air land/water surfaces, sea surface temperature, ocean color, and low light visible imagery.

- Mission success fees—capped at 5 percent of estimated contract cost or \$136,817,498—are tied to the contractor’s performance in meeting seven program milestones (called “events”).

Criteria for the latter two fees are largely subjective. The plan also allows for unearned award and mission fees from one billing period to be transferred to subsequent periods, giving the contractor additional opportunities to earn them.

NPOESS Cost Overruns Cause Nunn-McCurdy Breach

The Nunn-McCurdy provision of the FY 1982 National Defense Authorization Act requires the Secretary of Defense to notify Congress when unit costs for a major acquisition program such as NPOESS grow by 15 percent² over original baseline estimates. Should costs grow by 25 percent, the act requires the Secretary of Defense to certify in writing that the program is essential to national security, more cost-effective alternatives do not exist, the new cost estimate is reasonable, and a management structure is in place to adequately manage and control unit costs. Failure to provide this certification would terminate DoD’s involvement in the program. Such a termination would have a devastating impact given that DoD provides half the program’s funding.

On September 28, 2005, program officials notified Congress that NPOESS costs had grown by at least 15 percent, largely because of problems with VIIRS. In November 2005, the Government Accountability Office (GAO) informed Congress that life-cycle cost estimates for NPOESS are likely to grow to \$9.7 billion, and the launch of the first NPOESS satellite is at least 17 months behind schedule.³ That same month, an estimate prepared for NPOESS by DoD’s Cost Analysis Improvement Group showed that cost growth had exceeded 25 percent, triggering the Nunn-McCurdy certification requirement.

At the time the Nunn-McCurdy breach was identified, NPOESS was more than \$3 billion over budget and well behind schedule, yet the contractor had received more than \$123 million—84 percent—of available incentive payments. Our review uncovered two overarching management and contract weaknesses that contributed to the unchecked cost and schedule overruns.

EXCOM Did Not Effectively Challenge Optimistic Assessments of the Impact of VIIRS Problems on NPOESS

The information that the problems with the VIIRS sensor would delay the NPOESS launch took observers of the program by surprise. We began our audit in part because of our own concerns and those expressed by members of Congress and OMB staff that the IPO either did not identify VIIRS problems or, if identified, did not bring them to the attention of EXCOM or other senior management. In fact, the opposite was true. Although we found that information sharing was not effective between the contractor, the VIIRS subcontractor, and the IPO at the outset of the

² 10 U.S.C § 2433.

³ U.S. Government Accountability Office, November 2005. *Polar-Orbiting Environmental Satellites—Technical Problems, Cost Increases, and Schedule Delays Trigger Need for Difficult Trade-off Decisions*, GAO-06-249T. Washington, D.C: GAO.

program, as VIIRS problems persisted, the IPO and prime contractor took steps to improve communication, as well as increase their oversight of the VIIRS subcontractor. Beginning in December 2002, the IPO submitted monthly status reports to EXCOM that consistently described in explicit detail the growing costs and delays attributable to VIIRS development and delivery. Yet until March 2005 the program director maintained that these problems would be solved within available funding reserves and the overall NPOESS schedule. All the while, earned value measures—which reflect program cost and schedule status against goals—were deteriorating and funding reserves were being consumed at an unsustainable rate: by August 2004, 92 percent of the contractor’s reserve (\$135 million out of \$147 million) had been spent or allocated.

Despite mounting evidence of the seriousness of the VIIRS problems, EXCOM did not effectively challenge the director’s optimistic assessments, and from May 2003 through December 2004, convened only twice to consider the program’s status. Finally, in 2005, after the IPO reported that VIIRS problems would indeed delay the first satellite launch, EXCOM began meeting more often to investigate problems and their impact. Unfortunately, by then it was too late to turn the program around: EXCOM’s long-term inattention had, in effect, postponed critical evaluations and decisions needed to replan the program’s faltering elements and contain cost and schedule overruns. (See page 8.)

After the Nunn-McCurdy review is complete and assuming the program is certified, EXCOM must provide vigilant oversight to ensure NPOESS stays on track. The Commerce Deputy Secretary should ensure that the Under Secretary for Oceans and Atmosphere in his role on the EXCOM works with the other members of the EXCOM to obtain regular, independent evaluations of the status of NPOESS, with a special focus on thoroughly assessing progress toward completing high-risk or otherwise critical tasks. (See page 12.)

Contractor Received Excessive Award Fees for a Problem-Plagued Program.

Award fees are supposed to motivate a contractor to strive for excellence in such performance areas as quality, timeliness, technical ingenuity, and cost-effective management. The NPOESS experience, however, clearly shows that this incentive structure does not always result in the intended caliber of performance. Despite ongoing, significant delays and cost overruns, the prime contractor received close to the maximum fee amounts for the first five billing periods—an average 90 percent of available incentive payments. At the end of period 4, for example, earned value measures showed the Space Segment of the program, which includes the critical VIIRS component, running 8 percent behind schedule and 16 percent over budget. VIIRS itself was 12 percent behind schedule and approximately 30 percent over budget. Nevertheless, the contractor received 92 percent of available award fees. By the end of period 5, the Space Segment was 9 percent behind schedule and 23 percent over budget, and the contractor even warned that it was unlikely to meet the dates for critical design review and first launch. Yet it received 82 percent of available award fees. It was only in period 6—which covered the 6 months prior to the Nunn-McCurdy breach—that the contractor’s performance was rated “unsatisfactory.” Even so, the prime received 48 percent of the potential fee amount—\$10.7 million. (See page 17.)

These payments appear excessive and reflect an award fee plan whose evaluation criteria do not sufficiently focus on the completion of the most critical or high-risk tasks. It allows incentive payments for poor performance and, by rolling over unearned fee amounts from one period to another, gives the contractor multiple opportunities to earn incentive dollars. In addition, the potential fee pool of 20 percent is atypical: less than 1 percent of DoD award fee contracts recently reviewed by GAO provided award fees in excess of 15 percent of estimated costs. Finally, the plan gives total authority for setting fee amounts to a “fee determining official” who in the case of NPOESS, is also the program director. This individual’s objectivity in assessing the contractor may well be compromised by his responsibility as program director for NPOESS’s day-to-day management and his stake in the program’s success. The fee payments for periods two through five made by the fee determining official routinely exceeded the recommendations made by the NPOESS award fee review board. It should be noted that GAO’s review of Defense contracts pointed out that DoD’s fee determining officials typically oversee a portfolio of related programs but do not directly manage them. (See page 20.)

The Deputy Secretary should ensure that the Under Secretary for Oceans and Atmosphere in his role as a member of the EXCOM works with the other members of the EXCOM to (1) Critically review and revise the NPOESS award fee plan, and (2) Assign responsibility for determining fee awards to an official who does not directly manage the NPOESS program. (See page 24.)

In his written response to our draft report, the Deputy Secretary noted how important both he and the Secretary of Commerce consider the NPOESS program to the Department’s mission to the nation. He indicated that since becoming aware of the issues associated with NPOESS last year, he has received monthly updates from NOAA and has met with the chief executive officers and other senior executives of the prime contractor and the VIIRS subcontractor. The Deputy Secretary stated that he takes the report’s findings and recommendations seriously, along with those he expects will result from the Nunn-McCurdy certification process. Once that process is complete, he indicated that he will work with the Under Secretary for Oceans and Atmosphere and the EXCOM partners at DoD and NASA to ensure that the intent of both our recommendations and those of the Nunn-McCurdy process are reflected in the management, oversight, and execution of the NPOESS program. The Deputy Secretary’s response is included as an appendix to this report.

In his written response to our draft report, the Under Secretary for Oceans and Atmosphere generally agreed with the intent of our recommendations but also stated that the draft report does not (1) adequately acknowledge the complexity of the NPOESS program; (2) represent the ongoing level of direct involvement by the EXCOM in oversight of the IPO and NPOESS program, (3) fully characterize the award fee structure of the NPOESS contract, and (4) adequately recognize the DoD role in administration of the NPOESS contract.

EXCOM Did Not Effectively Challenge Optimistic Assessments of the Impact of VIIRS Problems on NPOESS.

Summary of NOAA's Response

NOAA emphasized that NPOESS is one of the most complex environmental satellite programs ever undertaken and noted that few programs have carried out a total system development of this nature. NOAA argued that throughout its existence, EXCOM has been concerned with the overall direction of NPOESS, given its technical complexity and aggressive schedule. NOAA stated that EXCOM continued to provide direction to the IPO concerning budget and schedule assumptions, as well as program progress, and EXCOM members held private discussions with senior NPOESS contractor executives regarding their concerns. NOAA described additional actions taken by EXCOM including tasking several independent reviews (five reviews since 2004 were cited in NOAA's response), and proposing an independent management structure called a Program Executive Office (PEO) to oversee the IPO. NOAA also noted that the program was funded and structured at a level expected to provide a 50 percent probability of success.

In response to our recommendation to obtain regular independent reviews of NPOESS, NOAA said that EXCOM has been actively and directly involved in the oversight and management of NPOESS, including proposing a PEO responsible for conducting ongoing independent analysis and reviews of the NPOESS program. NOAA also stated that the tri-agency partners are already conducting monthly reviews, and will conduct major independent reviews related to the major milestones of the program. Noting that the Nunn-McCurdy process will determine the future management structure, NOAA stated that it is committed to building on its already effective working relationship with the other EXCOM members to ensure effective management and oversight of NPOESS.

OIG Comments

NPOESS is clearly an extraordinarily complex program. NOAA, OIG, and all interested parties agree on this. But it is precisely because of this complexity that we would have expected much closer and documented oversight by EXCOM. Because NPOESS was budgeted for a 50 percent probability of success, the need for close and continuous oversight was all the more critical. While budgeting at this level suggests NPOESS had an equal chance of being either under or over budget, a May 2003 report by a joint task force of the Defense Science Board and Air Force Scientific Advisory Board points out that this budgeting philosophy is seriously flawed. According to this report, budgeting at a 50/50 probability level erroneously assumes that areas of increased risk and lower risk will balance each other out; in fact, particularly on space programs, risk and cost are significantly skewed upward because of the daunting engineering challenges of operating in the harsh environment of space. The report recommends budgeting for an 80 percent probability of success, a level the task force believes to be the most probable cost.

Although NOAA's response maintained that EXCOM was directly involved in NPOESS oversight and described various actions taken, including requesting independent studies, the response identifies little in the way of decisions or impacts resulting from these actions.

Moreover, EXCOM's request for two of the five studies identified in the response and its proposal to establish a PEO were not proactive measures taken to gain control of a deteriorating program; rather, they were steps taken in reaction to a crisis—learning that the first NPOESS launch would be delayed. The two independent reviews were requested in August 2005, well after the NPOESS launch delay had been identified. The first was an independent cost analysis to determine whether a Nunn-McCurdy breach had occurred, and the second was an independent program assessment largely to support the Nunn-McCurdy process. The PEO was not proposed until November 2005. Moreover, the results of another independent review conducted in 2004 and cited in NOAA's response—an independent cost analysis focusing on sensor integration—yielded schedule and cost estimates considerably higher than those of the IPO, yet there is no indication that EXCOM questioned whether the IPO's estimate should be used.

NOAA's response states that it agrees with the intent of our recommendation but suggests that it is already obtaining regular, independent reviews of the NPOESS program. It is important to highlight here that the intent of this recommendation is for a process to be established through which qualified individuals who are independent of the NPOESS program and not responsible for its management conduct regular reviews of NPOESS (e.g., on a quarterly or semiannual basis, as well as at major milestones) to determine the program's status and risks relative to the new budget, schedule, and technical requirements baseline established during Nunn-McCurdy certification. Collectively, these individuals should have extensive space program experience; expertise in management, acquisition, systems engineering, and verification and testing of large space systems; the requisite technical, cost, and programmatic expertise; and an understanding of the current thinking on best practices for acquisition of large space systems. Results and recommendations should be documented and provided both to EXCOM and the Deputy Secretary of Commerce.

Contractor Received Excessive Award Fees for a Problem-Plagued Program.

Summary of NOAA's Response

In its response, NOAA criticized the draft report's second finding (1) for failing to fully characterize the award fee structure of the NPOESS contract, (2) for not adequately recognizing that the NPOESS contract was a DoD contract and therefore subject to the rules, regulations and oversight of the Air Force, not the DOC, and (3) for failing to consider the March 29, 2006, DoD policy on the administration of award fees.

OIG Comments

With regard to NOAA's first concern, we believe the report carefully, accurately, and correctly describes the NPOESS fee structure. In its written response, NOAA provided some general information about the fee structure—all of which is already included in the report. It also noted its belief that the structure was commensurate with the program's complexity and the risk level inherent in the baseline program. While we agree that the NPOESS program is complex and have clearly noted the impact its high-risk nature could have on the fee amount in the report, we believe it is fair—if not essential—to at least question the decision to allow an award fee pool of up to 20 percent, particularly in light of the fact that such an amount is unusual even at the

Department of Defense, where high-risk, complex programs are not uncommon.

With regard to NOAA's second point, the first page of the report's executive summary clearly states that "[i]n August 2002, the IPO, using DoD's contracting authority, awarded a single satellite integration contract worth \$4.5 billion to a prime contractor..." Furthermore, our description of the IPO structure clearly indicates that DoD has lead responsibility for acquisition matters. We therefore made no changes to the report to address this concern. In addition, although the contract may have been awarded according to DoD rules and regulations, given that half of the program's funding comes from the Department of Commerce, we believe it is appropriate for us as well as for NOAA and the Department to examine the management of the contract's award fee.

Finally, we are pleased to acknowledge the new DoD policy on award fee contracts, which resulted from the December 2005 GAO review of award and incentive fees at DoD that we discuss in our audit. That policy addresses many of the issues we raised with regard to the NPOESS award fee structure and, if it is implemented in the NPOESS contract, should address our concerns about the need for adequate incentives for high-risk, critical tasks, with rolling over unearned fees to subsequent periods, and with paying fee for unsatisfactory performance. The policy does not address all of our concerns, however. Specifically, it is silent on the issue of whether interim fee should be paid when mission success milestones are missed and on whether the award fee amount for this contract is excessive. In addition, as our report notes, one of the reasons we raised all of the issues about the NPOESS award fee structure is so that NOAA could properly consider those issues when crafting award fee plans for future major acquisitions. Given the fact that NOAA is currently engaged in its first major satellite acquisition, we thought it critical to bring the problems we found with the NPOESS fee structure to its attention.

In its response to our first recommendation for this finding, NOAA indicated that, in light of the new DoD policy on award fee management, EXCOM will review the current award fee structure to determine the specific changes needed to ensure compliance with the DoD policy. As noted previously, the DoD policy does not address all of the issues we raised with regard to that structure. NOAA's response therefore fails to address what changes the Under Secretary for Oceans and Atmosphere will recommend to EXCOM to address our concerns about whether interim fee should be paid when mission success milestones are missed and whether the award fee amount for this contract is excessive.

NOAA's response to our recommendation concerning the responsibility for determining fee awards indicated that EXCOM has already addressed this recommendation with the proposed establishment of the PEO. If this position is established and the PEO is not directly responsible for managing the NPOESS program, that action should meet the intent of our recommendation.

NOAA's response is included in its entirety as an appendix to this report.

INTRODUCTION

Since the 1960s, the United States has operated two separate polar-orbiting meteorological satellite systems. The Polar Operational Environmental Satellite (POES) Program is managed by the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), and the Defense Meteorological Satellite Program is managed by the Department of Defense (DoD). The satellites carry a suite of sensors that collect environmental data to generate graphical weather images and specialized weather products for forecasters, the military, and the public. Polar satellites also collect data that is used to monitor environmental and climate phenomena such as ozone depletion and droughts. In 1994, by Presidential Decision Directive, the two programs were converged to produce a single state-of-the-art environmental monitoring satellite system, the National Polar-orbiting Operational Environmental Satellite System (NPOESS) with the goal of reducing duplication and significantly cutting costs. The National Aeronautics and Space Administration (NASA) is a partner in NPOESS because of its experience with the Earth Observing System (EOS), whose remote sensing and spacecraft technologies are expected to improve NPOESS capabilities.



THE WHITE HOUSE
WASHINGTON
May 5, 1994
PRESIDENTIAL DECISION
DIRECTIVE/NSTC-2

SUBJECT: Convergence of
U.S.-Polar-Orbiting Operation
Environmental Satellite
Systems



NPOESS will monitor global environmental conditions, and collect and disseminate data related to weather, atmosphere, oceans, land, and near-space environment. NPOESS is considered critical to the United States's ability to maintain the continuity of data required for weather forecasting and global climate monitoring through the year 2020.

Cost Overruns Cause Nunn-McCurdy Breach

The Nunn-McCurdy provision of the FY 1982 National Defense Authorization Act requires the Secretary of Defense to notify Congress when unit costs for a major acquisition program such as NPOESS grow by 15 percent⁴ over original baseline estimates. It further requires that should costs grow by 25 percent, the program can only continue if the Secretary certifies in writing that the program is essential to national security, more cost-effective alternatives do not exist, the new cost estimate is reasonable, and a management structure is in place to adequately manage and control unit costs.

Early estimates for the NPOESS program set life-cycle costs at \$6.5 billion and an availability date of March 2008 for the first NPOESS satellite. On September 28, 2005, program officials notified Congress that NPOESS costs had grown by at least 15 percent. This escalation was largely due to problems with a critical sensor—the Visible Infrared Imager/Radiometer Suite (VIIRS).⁵ In November 2005, the Government Accountability Office (GAO) informed Congress that life-cycle cost estimates for NPOESS are likely to grow to \$9.7 billion, and the launch of the first NPOESS satellite is at least 17 months behind schedule.⁶ That same month, an estimate prepared for NPOESS management by DoD’s Cost Analysis Improvement Group showed that cost growth had exceeded 25 percent, triggering the Nunn-McCurdy certification requirement. Failure to provide this certification would terminate DoD’s involvement in the program. Such a termination would have a devastating impact given that DoD provides half the program’s funding.

Current Program Structure Establishes Shared Management and Accountability

The three agencies supporting NPOESS formed an Integrated Program Office (IPO) to manage the program, outlining their roles and responsibilities in a memorandum of agreement (MOA), dated May 26, 1995. Under the MOA, NOAA has overall management responsibility for the converged system, as well as for satellite system operations; DoD has lead responsibility on acquisition matters; and NASA is the lead agency for promoting transition to new technologies. NOAA and DoD share the costs of NPOESS equally. The NPOESS Executive Committee (EXCOM) provides overall policy and guidance. EXCOM consists of the Under Secretary of Commerce for Oceans and Atmosphere, the Under Secretary of Defense for Acquisition and Technology, and the NASA Deputy Administrator. The Integrated Program Office is located within NOAA under the NPOESS program director.⁷

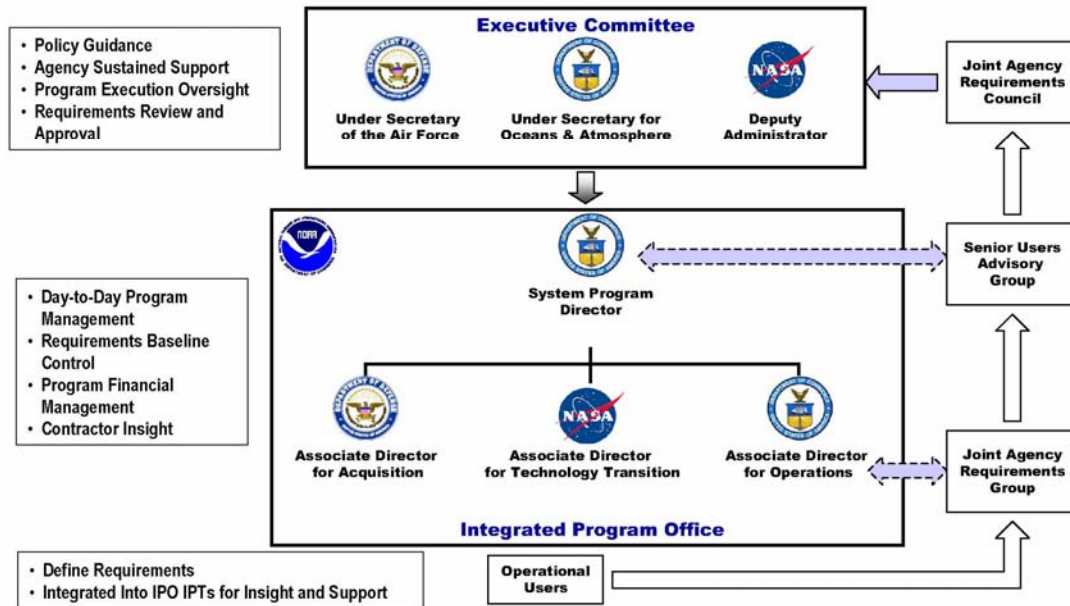
⁴ 10 U.S.C § 2433.

⁵ VIIRS collects visible/infrared imagery and radiometric data. Data types include atmospheric, clouds, earth radiation budget, clear-air land/water surfaces, sea surface temperature, ocean color, and low light visible imagery.

⁶ U.S. Government Accountability Office, November 2005. *Polar-Orbiting Environmental Satellites—Technical Problems, Cost Increases, and Schedule Delays Trigger Need for Difficult Trade-off Decisions*, GAO-06-249T. Washington, D.C: GAO.

⁷ According to the MOA, the program director is a NOAA employee who reports to the NOAA Administrator through the NOAA Assistant Administrator for the National Environmental Satellite, Data and Information Service (NESDIS). In September 2005, the NOAA program director resigned and was replaced by a DoD employee.

Tri-Agency Management Structure



Source: NPOESS IPO Presentation dated January 13, 2004

Though not stipulated in the MOA, the agencies formed a steering committee to provide additional executive leadership: committee members include the assistant administrator for NESDIS and his counterparts at DoD and NASA, each of whom reports to the EXCOM member for their agency.

NPOESS acquisition plans call for the procurement and launch of six satellites over the life of the program, as well as the integration of 13 instruments. The IPO reports that 7 of the 13 instruments involve new technology development; and 4 of the 7, including VIIRS, are critical to the program. To reduce risk associated with the NPOESS program, NASA is conducting the NPOESS Preparatory Project—which entails launching a demonstration satellite equipped with VIIRS and two other critical sensors to test their capabilities prior to the launch of the first NPOESS satellite. This satellite launch was originally scheduled for May 2006.

Contract and Fee Structure. In 1997, the IPO awarded multiple contracts for sensor development and fabrication to reduce the risk of associated problems and program delays. In August 2002, a single satellite integration contract valued at \$4.5 billion was awarded to a prime contractor. The sensor development contracts were subsumed as subcontracts to the NPOESS prime. The prime contract is divided into two broad phases: Engineering and Manufacturing Development (EMD) and Production. The contract is currently in the EMD phase, which is a cost reimbursement arrangement, providing for payment of allowable costs incurred by the contractor. It covers the continuing development of the sensor instruments and the completion of the first two NPOESS satellites. The Production phase will be fixed price and includes options for the final four NPOESS satellites.

The contract uses award fees as incentives intended to encourage outstanding performance. The Federal Acquisition Regulation (FAR) defines an award fee as “an award amount that the contractor may earn in whole or in part during performance and that is sufficient to provide motivation for excellence in such performance areas as quality, timeliness, technical ingenuity, and cost-effective management.”⁸ The amount of the award fee ultimately paid is “determined by the Government’s judgmental evaluation of the contractor’s performance in terms of the criteria stated in the contract.”⁹

The fee distribution for the EMD phase is divided into three types: base fee, award fee, and mission success fee. Base fee is set at 2 percent of total estimated cost and does not have to be earned, i.e., the contractor receives this fee automatically each billing period regardless of its performance. The other two fees must be earned. The award fee pool is 13 percent of total estimated cost, while the mission success fee pool is 5 percent. This brings the potential fee pool to 20 percent of total estimated cost, of which 18 percent is tied to performance. The contractor’s eligibility for award fees is determined each March and September. The pool for each fee type is shown below.

Fee Type	Amount in Fee Pool
Base	\$ 57,190,785
Award	\$369,294,988
Mission Success	\$136,817,498

Final determinations for award fee and mission success fee amounts are subjective. As shown in table 1 (see page 5), mission success fee is tied to the successful completion of seven distinct events. For each period or event, the contractor receives a score that determines the amount of the fee pool it ultimately earns. For the award fee, the score is based on the government’s assessment of contractor performance as measured against three broad evaluation criteria: management, technical, and cost. Originally the weightings were as follows: management – 40 percent, technical – 35 percent, and cost – 25 percent. But concerns about cost overruns caused the IPO to change these percentages prior to award fee period 5 (October 2004) to 40 percent for management, 30 percent for technical, and 30 percent for cost in an attempt to increase the incentive for cost control. The scoring for mission success fee is based on the contractor’s performance of the event as a whole, taking into account the extent to which mission success objectives were met.

⁸ See FAR Part 16.405-2—Cost-Plus-Award-Fee Contracts.

⁹ Ibid.

Table 1. Mission Success Fee Events

Event Title	
1	Critical Design Review
2	NPOESS Preparatory Project (NPP), Sensors Complete and Delivered
3	NPP Ground Readiness
4	Processing of Preparatory Project Data
5	NPOESS Ground Readiness
6	Processing NPOESS Data Records
7	Interim Operational Capability

The plan currently establishes five performance ratings for both award and mission fee.

Rating Definitions	
Excellent	90 – 100%
Very Good	80 – 89%
Good	65 – 79%
Marginal	50 – 64%
Unsatisfactory	Below 49%

Rollover of Unearned Fee. The award fee plan contains a provision for rolling over unearned fees to subsequent periods at the discretion of the fee determining official, which gives the contractor additional time and opportunity to earn this money. When a rollover is allowed, the fee determining official specifies the amount available and the conditions the contractor must meet to earn it. Rollover amounts and related performance evaluations are kept separate from the regular pool for the period in question. Ultimately, any unearned portion of the available fee pool can be converted to cover program costs or retained for future use (including more fee awards).

Fees Earned Are Initially At Risk. The NPOESS contract stipulates that all award and mission success fees earned during the EMD phase are earned “at risk.” This means that even though the contractor has earned the fees, it may have to return up to 100 percent of them if it fails to deliver a system that provides useful service over its life. However, the fee determining official has the option to “retire” a portion of the at-risk fee in conjunction with each award fee period assessment, thus exempting that portion from return in the event of program failure. The fee risk retirement option, though, does not begin until several years in the future; so all fees earned to date are still at risk.

Related Audit and Evaluation Work

In 1998, our office reported that NPOESS life-cycle cost estimates for critical sensors and algorithms were significantly higher than awarded contract values, and recommended that the life-cycle estimate and related assumptions be revised for the entire program without delay.¹⁰ NOAA disagreed that immediate action was warranted, stating that some contractors were having technical problems and costs were exceeding budget estimates. We stated that actual contract award amounts, coupled with technical problems and related cost estimate growth, are better indicators of program costs than earlier assumptions, and reaffirmed our position that NOAA needed to promptly reevaluate the life-cycle cost estimate assumptions and update the program baseline.

In 1999, the Commerce and NASA OIGs conducted a joint review of the risks and costs associated with critical sensor technology that is being transferred to NPOESS from NASA and other sources.¹¹ We found that preliminary planning assumptions for the NPOESS Preparatory Project did not include evaluating the feasibility of testing the Ozone Mapper Profiler Suite and reported that excluding this sensor would significantly increase the risk of disrupting the continuous collection of vital ozone data. We recommended that the IPO analyze the feasibility of the sensor as a possible payload for the Preparatory Project and assess the operational risk of not demonstrating the sensor.

Besides its November 2005 report cited previously and an earlier NPOESS review,¹² GAO recently assessed the Department of Defense's use of award and incentive fees,¹³ finding many of the same issues we report here regarding the NPOESS program and award fee plan: for example, GAO found that DoD practices undermine efforts to motivate contractor performance and do not hold contractors accountable for achieving desired acquisition outcomes, such as meeting cost and schedule goals and delivering desired capabilities. It also reported that DoD programs frequently pay most of the available award fees regardless of whether acquisition outcomes fall far short of DoD's expectations, were satisfactory, or exceeded expectations. These findings and the weaknesses we noted in the NPOESS award fee plan suggest the need for stringent restructuring of the requirements of such plans so that their overriding effect is to motivate contractors to meet cost and schedule goals and thus provide best value to the government.

¹⁰ U.S. Department of Commerce, Office of Inspector General, September 1998. *NPOESS Acquisition Well Planned, but Life-cycle Cost Estimates for Critical Sensors Are Overstated*, OSE-9593. Washington, D.C.: Department of Commerce OIG.

¹¹ U.S. Department of Commerce, Office of Inspector General, March 1999. *Proposed NPOESS Preparatory Project Reduces Operational Risk, but Excludes Demonstration of Critical Ozone Suite*, DOC OSE-11103/NASA IG-99-012. Washington, D.C.: Department of Commerce OIG and National Aeronautics and Space Administration OIG.

¹² U.S. Government Accountability Office, September 2004. *Polar-Orbiting Environmental Satellites—Information on Program Cost and Schedule Changes*, GAO-04-1054. Washington, D.C.: GAO.

¹³ U.S. Government Accountability Office, December 2005. *Defense Acquisitions: DoD Has Paid Billions in Award and Incentive Fees Regardless of Acquisition Outcomes*, GAO-06-66. Washington, D.C.: GAO.

OBJECTIVES, SCOPE, AND METHODOLOGY

The purpose of our audit was to determine (1) how problems with the NPOESS program are identified and communicated by the contractor to the IPO and by the IPO to NOAA management, and (2) whether award fees are administered effectively. We also considered specific concerns of the House Science Committee regarding (1) oversight of the program and (2) the amount of award fee paid the contractor notwithstanding the fact that the program is in crisis.

Our fieldwork entailed review of applicable federal law, guidance, policies, and procedures, and interviews with NPOESS IPO and NOAA officials. We also reviewed a variety of NPOESS documents including the memorandum of agreement establishing the IPO, the NPOESS single acquisition management plan, the single satellite integration contract, the award fee and mission success fee plan, award decisions made by the fee determining official for award fee periods two through six, briefings of the award fee review board, monthly status reports to EXCOM from 2002 through 2005, EXCOM meeting minutes and briefing materials for meetings, independent review team briefings, and GAO reports. Because of the criticality of the VIIRS sensor to both the NPOESS Preparatory Project and NPOESS satellites and the problems experienced with its development, our review focused on VIIRS issues as they affect the NPOESS program.

We conducted our primary fieldwork from October 2005 to March 2006 at the NPOESS Integrated Program Office headquarters in Silver Spring, Maryland. We did not assess compliance with laws and regulations, as those matters were not pertinent to this audit. Neither did we assess the reliability of computer-based data because such data was not essential to our objectives. We limited our evaluation of internal controls to the IPO processes for transferring information to EXCOM by way of written reports and verbal briefings. The body of this report presents the results of these tests.

We performed this audit in accordance with Government Auditing Standards issued by the Comptroller General of the United States and under the authority of the Inspector General Act of 1978, as amended, and Department Organization Order 10-13, dated May 22, 1980, as amended.

FINDINGS AND RECOMMENDATIONS

I. EXCOM Did Not Effectively Challenge Optimistic Assessments of the Impact of VIIRS Problems on NPOESS

The information that the problems with the VIIRS sensor would delay the NPOESS launch took observers of the program by surprise. We began our audit in part because of our own concerns and those expressed by members of Congress and OMB staff that the IPO either did not identify VIIRS problems or, if identified, did not bring them to the attention of EXCOM or other senior management. In fact, the opposite was true. Although we found that information sharing was not effective at the outset of the program, as VIIRS problems persisted, the IPO and prime contractor took steps to improve communication, as well as increase their oversight of the VIIRS subcontractor. At the request of the DoD EXCOM member, the IPO gave EXCOM monthly status reports presenting critical cost, schedule, and technical progress data on NPOESS and providing a wealth of information about the problems with VIIRS. These reports consistently pointed out that VIIRS was the source of the majority of the constantly growing cost and schedule overruns. Despite mounting evidence of the seriousness of the VIIRS problems, EXCOM did not effectively challenge the IPO's optimistic assessments that those problems would not delay the first NPOESS launch or exceed the program's management reserve.¹⁴

A. Communication Between the IPO and Contractor Was Improved to Address Recurring Problems with VIIRS

Year	No. of VIIRS Problems Documented by IPO
2002	1
2003	4
2004	5
2005	3
Total	13

VIIRS problems became apparent after hardware testing began. Between September 2002 and September 2005, the IPO documented 13 design, manufacturing, and integration and test problems (see box), with 9 reportedly resolved through 2005. In detailing the source of the VIIRS problems, an independent review team, convened by EXCOM in early 2005, concluded that the IPO and prime contractor were late in identifying the full extent and impact of the problems.

According to the team, the VIIRS design was to be based on an existing NASA instrument,¹⁵ but the contractor and government failed to recognize the design was changing substantially as it developed. The team also noted that the internal processes of the VIIRS subcontractor were inadequate and not being followed, and the subcontractor's management communication and oversight were poor.

IPO officials acknowledged that the VIIRS subcontractor did not receive adequate oversight early in the program and the prime contractor had been reluctant to provide information to the government regarding VIIRS. They told us that they initially relied too heavily on remote communication with the VIIRS subcontractor rather than obtaining firsthand information through contractor management and IPO oversight at the subcontractor's facility. After a succession of VIIRS problems, the IPO and contractor took steps to improve communication, most notably by providing oversight and supervision at the subcontractor's site. In late summer 2005, to improve

¹⁴ Management reserve refers to funds set aside to provide an adequate budget for unanticipated work on a contract.

¹⁵ VIIRS was to be based on the moderate resolution imaging spectroradiometer (MODIS).

oversight not only of VIIRS but the program as a whole, the IPO instituted a comprehensive monthly internal review in which IPO senior management receives assessments of progress and risks from IPO instrument managers, engineers, and scientists. Daily summaries of VIIRS sensor status are also prepared for senior IPO management.

B. Executive Leadership Received Detailed Monthly Status Reports But Provided Limited Oversight

Since December 2002, at the request of the DoD EXCOM member, the IPO has submitted monthly status reports on NPOESS to EXCOM presenting budget, schedule, and technical information, and earned value measures. These measures depict the actual progress of a project—work completed, time taken, and costs incurred compared against the plan. Earned value measures include a schedule performance index (SPI) and cost performance index (CPI) that reflect a project’s schedule and cost variance as a ratio instead of a dollar amount. Ratios less than 1 indicate that work is behind schedule and over budget. A program progressing according to plan or exceeding it will have an SPI and CPI of 1.0 or greater. Table 2 shows the deterioration of these indexes over time, as documented in the monthly status reports, for both the NPOESS program as a whole and the VIIRS sensor.

Table 2. Earned Value Measures for Selected Time Periods for NPOESS Program and VIIRS Sensor from Monthly Status Reports				
Date of Report	NPOESS SPI ^a	NPOESS CPI ^b	VIIRS SPI ^a	VIIRS CPI ^b
September 2003	.96	.969	.90	.895
February 2004	.96	.95	.89	.80
September 2004	.95	.91	.88	.71
December 2004	.95	.89	.88	.68
March 2005	.94	.87	.87	.66
July 2005	.93	.83	.88	.60
August 2005	.93	.82	.91 ^c	.89 ^c
^a SPI is schedule performance index ^b CPI is cost performance index ^c VIIRS SPI and CPI were calculated against a revised plan incorporating an increased cost and extended schedule; therefore, these measures are not comparable to the measures from the previous periods.				

As shown in table 3, the monthly status reports repeatedly described the problems with VIIRS, as well as the actions being taken to solve them, and consistently noted that VIIRS was causing the majority of the constantly growing cost and schedule overruns. (See appendix I for additional VIIRS-related issues identified in the status reports.)

Table 3. Selected Information on VIIRS from Monthly Status Reports to EXCOM

Date of Report	Information Reported
Dec. 12, 2002	– Problem reported with VIIRS that corrupts instrument observation.
Sept. 16, 2003	<ul style="list-style-type: none"> – VIIRS has become “our problem child.” – Structural problems reported in the VIIRS organization in addition to technical problems. – Costs are above budget in several areas because the work was more difficult than estimated.
Jan. 20, 2004	– VIIRS is responsible for about 50% of the \$26M projected overrun at program completion.
Apr. 19, 2004	<ul style="list-style-type: none"> – VIIRS remains program’s biggest challenge. – Just over 60% of total program overrun are attributable to VIIRS.
May 19, 2004	– All team members report that VIIRS schedule is optimistic and high risk.
Aug. 24, 2004	– Presence at contractor site of contractor personnel and VIIRS subcontractor corporate management has increased.
Sept. 27, 2004	<ul style="list-style-type: none"> – VIIRS schedule remains very high risk. – VIIRS is responsible for about 62% of the projected overrun at program completion.
Dec. 21, 2004	<ul style="list-style-type: none"> – VIIRS will not make December 2005 NPP delivery date. – Need to replan VIIRS and another instrument because of an unanticipated cost increase will cause NPOESS Preparatory Project launch to slip. – VIIRS schedules have borne no resemblance to reality over the last several months.
Feb. 28, 2005	<ul style="list-style-type: none"> – VIIRS problems are exerting significant pressure on FY05 and 06 budgets. – NPOESS launch date is not affected, but budget reserves are strained with the continuing sensor problems.
Mar. 23, 2005	<ul style="list-style-type: none"> – VIIRS subcontractor is meeting day-to-day schedules. – Contractor and VIIRS subcontractor agreed on a 13-month delivery slip for NPP. – Contractor is concerned that continued high manpower levels required on VIIRS, CMIS, and parts of NPOESS spacecraft design threaten NPOESS launch. – Review to identify any possible impact to the launch date for NPOESS continues. – Continuing sensor problems strain ability to stay within budget reserves.

According to IPO officials, EXCOM was heavily involved early in the program, but its involvement dwindled over time. It met only sporadically throughout the period in which the VIIRS problems were occurring. In the 32-month period from May 2003 through December 2005, EXCOM met formally six times (see box), and did not meet at all from May to December 2003, even as the monthly reports showed VIIRS subcontract-induced delays and dubbed VIIRS “our problem child.” The 2004 monthly status reports repeatedly advised of overruns on VIIRS as well; however, EXCOM did not convene until June and July 2004. Although the monthly reports continued to warn of VIIRS schedule erosion and cost overruns, EXCOM did not meet again until late January 2005—one month after the report stating that VIIRS would not meet its deadline for delivery to the NPOESS Preparatory Project and the launch would be delayed.

Schedule of EXCOM Meetings	
Period	Meetings Held
May to Dec. 2003	None
Jan. to Dec. 2004	June July
Jan. to Dec. 2005	January August October November

In an attempt to provide greater executive leadership, NOAA, NASA, and DoD formed the tri-agency steering committee. Its members were the Assistant Administrator for Satellite and Information Services (AA/NESDIS) and his counterparts at DoD and NASA, all of whom reported to an EXCOM member. Over time, committee membership grew to include the Deputy Under Secretary of NOAA and others. The committee is not authorized by the memorandum of agreement and has no decision-making authority, but EXCOM has relied on it to assist with program oversight. For instance, at the January 2005 EXCOM meeting, the steering committee was asked to form an independent review team to investigate problems and their impact on the Preparatory Project. At the August 2005 EXCOM meeting, it was charged with recommending new guidelines for award fee determinations and commissioning a Defense Space Acquisition Board review team to evaluate the program.

As a NOAA employee, the NPOESS program director briefed the AA/NESDIS regularly and NOAA’s Under Secretary and Deputy Under Secretary “as necessary” on the status of NPOESS. The AA/NESDIS told us that he was aware of problems with the VIIRS sensor and the impact on the Preparatory Project, but had relied on the program director’s assurance that the problems were containable within the management reserve and would not affect NPOESS. The Deputy Under Secretary of NOAA told us that he received and reviewed the monthly EXCOM reports and became increasingly concerned in July 2004 when he noticed the earned value measures were deteriorating, even though the program director maintained the problems could be solved within the management reserve with no impact on NPOESS. In fact, the management reserve was being consumed at an unsustainable rate—by August 2004, 92 percent of the contractor’s reserve (\$135 million out of \$147 million) had either been spent or allocated, and new problems were continuing to surface.

On January 31, 2005, the program director briefed EXCOM on the VIIRS problems, stating that the IPO expected a 10- to 12-month delay in delivering the sensors, but that NPOESS should not be affected. (He also noted that the contractor estimated a 16-month delay.) The February 28 monthly report expressed concern that VIIRS problems were straining FY 2005 and FY 2006 budgets, but indicated that the NPOESS launch would not be affected. The March 23 report noted that the contractor was concerned that VIIRS, as well as problems with another sensor, the

conical microwave imager/sounder (CMIS),¹⁶ were threatening the NPOESS launch, and at a meeting on March 31, the contractor advised the program director that the VIIRS problems would indeed delay the NPOESS launch. The contractor documented this impact in a formal notification letter dated May 19, 2005. At its August 19 meeting, EXCOM directed that a Nunn-McCurdy notification package be prepared to report unit cost growth of 15 percent or greater.

Beginning in 2004, EXCOM commissioned several reviews, including an independent assessment of the impact of the VIIRS problems on the Preparatory Project and NPOESS and an independent cost analysis by DoD's Cost Analysis Improvement Group to determine whether the 25 percent Nunn-McCurdy threshold would be breached, requiring program certification. The results of the latter analysis showed that the breach would exceed 25 percent. As a result, NPOESS is undergoing Nunn-McCurdy certification, with completion expected in the June 2006 time frame.

Conclusion

Despite the mounting evidence of serious problems as development of VIIRS proceeded, EXCOM did not effectively challenge the IPO's optimistic assessments that the problems would not delay the first NPOESS launch or exceed the program's management reserve. Inadequate oversight, in effect, postponed the critical evaluations and decisions needed to replan the program's faltering elements and contain the cost and schedule overruns. Time and money were thus wasted as the problems with NPOESS continued unchecked. And VIIRS is not the only high-risk element of NPOESS—CMIS, for example, poses significant risk. After the Nunn-McCurdy review is complete and assuming the program is certified, close and sustained oversight by senior Department management and EXCOM—informed by accurate and objective information—will be essential to ensuring serious problems do not fester and the revised NPOESS program remains on track. Regular evaluations and reporting on NPOESS to the Deputy Secretary and EXCOM by independent experts will help provide objective information and advice, and serve as a needed check on the inherent optimism of program officials.

Recommendation

The Deputy Secretary should ensure that the Under Secretary for Oceans and Atmosphere in his role on the EXCOM works with the other members of the EXCOM to obtain and review regular, independent evaluations of the status of NPOESS. In particular, such evaluations should thoroughly assess the progress toward completing high-risk or otherwise critical tasks and the associated impact of any problems encountered.

Department's Response

In his written response to the draft report, the Deputy Secretary noted how important both he and the Secretary of Commerce consider the NPOESS program to the Department's mission to the nation. He indicated that since becoming aware of the issues associated with NPOESS last year,

¹⁶ CMIS collects global microwave radiometry and sounding data to produce microwave imagery and other meteorological and oceanographic data.

he has received monthly updates from NOAA and has met with the chief executive officers and other senior executives of the prime contractor and the VIIRS subcontractor. The Deputy Secretary stated that he takes the report's findings and recommendations seriously, along with those he expects will result from the Nunn-McCurdy certification process. Once that process is complete, he indicated that he will work with the Under Secretary for Oceans and Atmosphere and the EXCOM partners at DoD and NASA to ensure that the intent of both our recommendations and those of the Nunn-McCurdy process are reflected in the management, oversight and execution of the NPOESS program.

NOAA's Response

NOAA's written response emphasized that NPOESS is one of the most complex environmental satellite programs ever undertaken and noted that few programs have carried out a total system development of this nature. NOAA asserted that our draft report is inaccurate in its characterization of EXCOM's level of involvement in NPOESS, stating that EXCOM was directly involved in NPOESS oversight. NOAA said that throughout EXCOM's existence, it has been concerned with the overall direction of NPOESS, given the technical complexity and aggressive schedule and continued to provide direction to the IPO concerning budget and schedule assumptions, and progress in the program. NOAA stated that EXCOM members had a number of private discussions with senior NPOESS contractor executives regarding concerns with performance and the IPO's optimistic assumptions about the contractor's ability to meet budget and schedule baselines. NOAA disagreed with our statement that it commissioned several independent reviews beginning in January 2005, noting that such reviews began in 2004. The response specifically identified the following five independent reviews tasked by EXCOM:

- A program assessment in mid-2004 that focused on the space weather component of the NPOESS program and provided information on the complexity of the NPOESS. The EXCOM agreed that space weather should be a part of the program and put the IPO on alert for possible problems regarding the complexity of the program.
- Two independent cost reviews by the DoD's Cost Analysis Improvement Group (CAIG), one in late 2004 and one in late 2005. The first review was concerned with the risk, schedule, and cost implications of using a new sensor test bed to accomplish required sensor integration and concluded that if the test bed worked, the projected NPOESS schedule was feasible. The second review in November 2005 verified schedule and cost overruns in the baseline program and led to the determination of a Nunn-McCurdy breach.
- A review of NPP, including an examination of VIIRS, by an independent review team in early 2005. The review team noted VIIRS was experiencing significant development problems and would delay NPP launch at least 10 months. The team did not identify cost and schedule issues which would delay launch of the initial NPOESS spacecraft.

- An independent program assessment in late 2005 that found major cost, schedule, and management problems.

Finally, in November 2005, EXCOM proposed establishing a Program Executive Office (PEO), headed by a seasoned Flag level acquisition professional, to independently oversee the IPO.

In response to our recommendation to obtain regular independent reviews, NOAA said that EXCOM has been actively and directly involved in the oversight and management of NPOESS, including proposing a PEO responsible for conducting ongoing independent analysis and reviews of the NPOESS program. NOAA also stated that the tri-agency partners are already conducting monthly reviews, and will conduct major independent reviews related to the major milestones of the program. Noting that the Nunn-McCurdy process will determine the future management structure, NOAA stated that it is committed to building on its already effective working relationship with the other EXCOM members to ensure effective management and oversight of NPOESS.

OIG Comments

NPOESS is clearly an extraordinarily complex program. NOAA, OIG, and all interested parties agree on this. But it is precisely because of this complexity that we would have expected much closer and documented oversight by EXCOM. Because NPOESS was budgeted for a 50 percent probability of success, the need for close and continuous oversight was all the more critical. While budgeting at this level suggests NPOESS had an equal chance of being either under or over budget, a May 2003 report by a joint task force of the Defense Science Board and Air Force Scientific Advisory Board points out that this budgeting philosophy is seriously flawed. According to this report, budgeting at a 50/50 probability level erroneously assumes that areas of increased risk and lower risk will balance each other out; in fact, particularly on space programs, risk and cost are significantly skewed upward because of the daunting engineering challenges of operating in the harsh environment of space. The report recommends budgeting for an 80 percent probability of success, a level the task force believes to be the most probable cost.


The statement in our draft report that EXCOM commissioned several reviews beginning in January 2005 pertained to actions taken after the program director briefed EXCOM regarding a 10- to 12-month delay in delivering VIIRS. We do not dispute that NOAA commissioned a number of independent studies beginning in 2004 and have modified the wording of our report to avoid any misunderstanding.

Although NOAA maintained that EXCOM was directly involved in NPOESS oversight and described various actions that were taken, including requesting independent studies, the response identifies little in the way of decisions or impacts resulting from these actions, other than EXCOM agreeing that space weather should be part of NPOESS. Moreover, EXCOM's request for two of the five studies identified in the response and its proposal to establish a PEO were not proactive measures taken to gain control of a deteriorating program; rather, they were steps taken in reaction to a crisis—learning that the first NPOESS launch would be delayed. The two independent reviews were requested in August 2005, well after the NPOESS launch delay had been identified. The first was an independent cost analysis to determine whether a Nunn-

McCurdy breach had occurred, and the second was an independent program assessment largely to support the Nunn-McCurdy process. The PEO was not proposed until November 2005.

The results of another independent review cited in NOAA's response—the 2004 CAIG review focusing on the use of a new test bed for sensor integration—is a stark reminder of the optimism characterizing the IPO's assessments. For the first and second NPOESS launches, CAIG estimates showed sensor integration schedules that were 11 and 27 months longer than IPO's estimates (with the comment that the difference for the first launch could be partially offset by an earlier start on integration). The CAIG further estimated that engineering, manufacturing, development, and procurement costs would amount to \$1.8 billion more than IPO's estimate, with the difference attributed primarily to the difference in integration durations. To estimate the integration period, the CAIG used historical data for space meteorological programs, while the IPO estimate was based on savings it expected to realize using a new contractor-developed test bed. The CAIG briefed this information at the January 31, 2005, EXCOM meeting.

NOAA states in its response that the CAIG review concluded that if the test bed worked then the projected NPOESS schedule was feasible. However, the briefing presented to EXCOM by the CAIG conveys a less affirmative message (see box). In addition, the minutes of this meeting stated that it was generally agreed that the program would meet schedule, cost, and technical requirements if the test bed worked as advertised; however, the minutes also said that if the test bed did not work, the CAIG's estimate is the more likely outcome. Despite the significant disparity between the estimates of the CAIG and IPO, there is no indication that EXCOM questioned whether the IPO's estimate should be used.



Summary of IPO and CAIG
NPOESS Program Duration Estimates

- Historical space meteorological programs have 2 – 3 year integration periods (dependent upon # of sensors).
- NPP integration period is scheduled for just under 2 years (47% longer than NPOESS C1).
- Using historical program integration times, NPOESS will slide to the right, requiring a re-evaluation of the meteorological satellite plan.
- IPO's plan to accomplish integration in 1 year is dependent on savings attributed to use of an Electrical Engineering Model Test Bed (EEMTB).

14

Source: "Cost Analysis Improvement Group Independent Cost Assessment," briefing by Curt Khol, OSD Cost Analysis Improvement Group to EXCOM, January 31, 2005.

NOAA's response states that it agrees with the intent of our recommendation but suggests that it is already obtaining regular, independent reviews of the NPOESS program. It is important to highlight here that the intent of this recommendation is for a process to be established through which qualified individuals who are independent of the NPOESS program and not responsible for its management conduct regular reviews of NPOESS (e.g., on a quarterly or semiannual basis, as well as at major milestones) to determine the program's status and risks relative to the new budget, schedule, and technical requirements baseline established during Nunn-McCurdy certification. Collectively, these individuals should have extensive space program experience; expertise in management, acquisition, systems engineering, and verification and testing of large space systems; the requisite technical, cost, and programmatic expertise; and an understanding of

the current thinking on best practices for acquisition of large space systems. Results and recommendations should be documented and provided both to EXCOM and the Deputy Secretary of Commerce.

II. Contractor Received Excessive Award Fees for a Problem-Plagued Program

Award fees are intended to motivate a contractor to strive for excellence in such performance areas as quality, timeliness, technical ingenuity, and cost-effective management. The NPOESS experience, however, clearly shows that this incentive system does not always promote the desired caliber of performance. The NPOESS program is currently in Nunn-McCurdy breach, more than \$3 billion over budget and at least 17 months behind schedule—hardly a model of cost-effectiveness or timeliness. Yet the prime contractor has received more than \$123 million in award fees—84 percent of the available fee pool for the first six award periods. For the first five periods, the contractor averaged 90 percent of available fees.

To determine how the contractor was able to receive so great a portion of the fees when the program was so troubled, we examined the award fee plan and identified several flaws in its structure. The plan's evaluation criteria are not sufficiently focused on critical, high-risk tasks. Also, the amount of fee the contractor can earn (up to 20 percent of the contract's total estimated costs) appears excessive in comparison to other government award fee contracts. Finally, we question the practices of paying fees for performance rated unsatisfactory and allowing the contractor multiple opportunities to rollover unearned fee.

Although the payments appear to be excessive, they were deemed appropriate by the fee determining official—the government official designated to set award and mission success fee amounts earned by the contractor. In the case of NPOESS, the fee determining official also serves as the program director, and as such is responsible for day-to-day management of the program. The intimate connection between the director's professional reputation and the success of both the program and the contractor could affect his objectivity as fee determining official in setting award amounts.

In light of the severe problems the NPOESS program is experiencing, the current award fee system is clearly not promoting excellent contractor performance. Accordingly, NOAA should work with EXCOM to review and revise the award fee plan to address the problems we identified and consider alternative methods for promoting excellence. It should also segregate program management and fee determining duties, assigning the latter to an individual who is not involved in day-to-day management of NPOESS.

A. Award and Mission Success Fees Have Not Resulted in Excellent Contractor Performance

Through the first five award fee periods (September 2002 through March 2005) the fee determining official awarded more than 90 percent of the available pool to the contractor, and rolled over approximately 44 percent of unearned fees into subsequent periods, giving the contractor additional opportunities to earn them. In award period 6, the contractor earned 48 percent of available fees; none of the unearned fee was rolled over. Table 4 shows the total percentages awarded for fee periods 1 through 6, with and without rollover amounts factored in.

The contractor received these fees even though the program was experiencing serious problems and cost overruns as discussed in the various EXCOM reports. At the end of period 4, for example, the program showed cost and schedule overruns in five major areas—most notably in

the Space Segment, which includes VIIRS and accounts for over 54 percent of the negotiated contract cost. The earned value measures showed a schedule performance index (SPI) of .95 and a cost performance index (CPI) of .90. SPI and CPI reflect a project's schedule and cost variance as a ratio instead of a dollar amount. As noted previously, ratios less than 1 indicate that work is not meeting the schedule or cost baseline. Ideally a program should have an SPI and CPI of 1.0 or greater. The NPOESS indexes indicated that overall, the program was running about 5 percent behind schedule and 10 percent over budget. However, the Space Segment had an SPI of .92 and a CPI of .84, meaning it was about 8 percent behind schedule and 16 percent over budget, a significant difference from the overall program. Also, according to IPO and contractor estimates, by the end of period 4 the total life-cycle cost for the NPOESS program had increased from \$6.5 billion to \$7.4 billion.

Table 4. Final Award Fee Decisions with Rollover

Period	\$ Pool	Award		Unearned	\$ Rollover Designated	Rollover Earned	Total % (with rollover)
		%	\$				
1 (Sep 02 – Mar 03)	28,393,630	95	26,973,949	1,419,681	1,419,681	709,840	97.5
2 (Apr 03 – Sep 03)	26,624,692	89	23,695,976	2,928,716	1,500,000	1,500,000	94.6
3 (Oct 03 – Mar 04)	22,560,609	94	21,206,973	1,353,636	1,353,636	812,182	97.6
4 (Apr 04 – Sep 04)	22,560,609	92	20,755,760	1,804,849	0 ^a	0	92.0
5 (Oct 04 – Mar 05)	24,165,968	82	19,816,094	4,349,874	1,000,000 ^b	TBD	82.0
Total for Periods 1–5	124,305,508	90	112,448,752				
6 (Apr 05 – Sep 05)	22,157,204	48	10,672,635	11,484,569	0 ^a	0	48
Total for Periods 1–6	146,462,712	84	123,121,387	23,341,325	5,273,317	3,022,022 ^c	86 ^c
^a No unearned award fee was designated as rollover from periods 4 and 6. ^b Rollover in the amount of \$1 million designated from period 5 is tied to events scheduled for completion in periods 7 and 8 (\$500,000 for each period). ^c These amounts will increase if rollover designated from period 5 is awarded to the contractor.							

The earned value measures continued to worsen. By the end of period 5, the total program SPI had fallen to .94 and the CPI had fallen to .85. The Space Segment's SPI had dropped to .91 and its CPI to .77. So while the overall program was now about 6 percent behind schedule and 15 percent over budget, the Space Segment was running about 9 percent behind schedule and 23 percent over budget. By the end of period 5, the contractor had advised the IPO that it needed additional funds to attempt to meet scheduled dates for the launch of the first two NPOESS satellites, but that even with additional money, it would likely miss the dates for critical design review and the first launch.

Even as cost increases and schedule delays mounted in periods 4 and 5, the contractor received award fees of 92 percent (for "excellent" performance) and 82 percent (for "very good"),

respectively, for those periods. These ratings seem distinctly at odds with the state of the program at that time. In period 6, the award fee fell to 48 percent of available funds, reflecting a rating of unsatisfactory.

Contractor received interim mission success fees even as it missed required milestones

Prior to making a final award decision, the fee determining official may approve interim award and mission success payments, a provision designed to improve the contractor's cash flow. If the final fee decision exceeds the interim payment, the contractor may bill for the difference. If it is less, the contractor must return the difference or adjust future billings. The fee determining official may authorize interim mission success fee payments at the 1-, 2-, and 3-year points prior to the scheduled completion date of the event. The cumulative amount of the fee paid may not exceed 20 percent of the available pool for the first payment, 40 percent for the second, and 60 percent for the third. For NPOESS, the fee determining official approved interim mission success payments for events 1 through 4 in September 2003 and September 2004.

The first event, Critical Design Review, is intended to verify that the system design can be produced and will meet its design specification when built. To accomplish this, the contractor must prove (among other things) that each system entity, including the sensors, will be able to meet their individual specifications. The second event calls for the on-time delivery of the cross-track infrared sounder (CrIS)¹⁷ and VIIRS sensors. The September 2003 EXCOM report noted that CrIS was doing quite well, but that VIIRS was not and had become the program's "problem child." Earned value measures at the time showed VIIRS at 10 percent behind schedule and more than 10 percent over budget. Yet in that same month, the fee determining official awarded the contractor 18.5 percent out of a possible 20 percent of the available mission success fee pool for events 1 and 2. In September 2004, the official awarded another 21.5 percent for each of these events even though the EXCOM report for that month stated both VIIRS and CrIS were over budget and behind schedule. In fact, at that time VIIRS was 12 percent behind schedule and approximately 30 percent over budget.

The third event, Ground Readiness for the Preparatory Project, relies on delivery of both VIIRS and CrIS sensor designs. As mentioned previously, VIIRS was running behind schedule in September 2003, and both sensors were running behind schedule in September 2004. Yet the contractor again received maximum interim fee payments for this event.

¹⁷ CrIS will provide improved measurements of the temperature and moisture profiles in the atmosphere.

Table 5 lists the total of all interim mission success fee payments.

Table 5. Interim Mission Success Fee Payments^{a,b}

Event	Total Pool (\$)	September 2003		September 2004		Total	
		Fee Award (\$)	Percent	Fee Award (\$)	Percent	Fee Award (\$)	Percent
1	3,689,156	681,499	18.5	794,163	21.5	1,475,662	40
2	12,297,185	2,271,664	18.5	2,647,210	21.5	4,918,874	40
3	6,342,328	1,135,832	18.0	1,401,099	22	2,536,931	40
4	43,859,958			8,771,992	20	8,771,992	20
Total		4,088,995		13,614,464		17,703,459	

^a The cumulative amount of the fee paid may not exceed 20% of the available pool for the first payment, 40% for the second, and 60% for the third.
^bThe contractor did not request interim fees in 2005.

Though the contract allows for interim mission success fee payments, they are not guaranteed. The fee determining official should carefully consider the contractor's progress toward eligible events and only make such payments when warranted by measurable achievements toward established goals.

B. Flawed NPOESS Award Fee Plan Needs to Be Revised

Our examination of award fees paid to date under the NPOESS contract revealed an incentive structure with serious flaws. Because the award fee plan is part of the contract with the prime, fixing these problems may require modification of the contract.¹⁸ The Nunn-McCurdy certification process, which includes a review of the plan for NPOESS, provides an opportunity for addressing these problems and revising the contract as necessary. The failings of NPOESS are also instructive for NOAA; the agency should consider these failings and related issues as it crafts other award fee plans and contracts for future major acquisitions.

Misplaced incentives put insufficient focus on accomplishment of critical, high-risk tasks

The current award fee plan does not appear to account for the fact that some contract tasks are more critical or riskier than others. For example, as mentioned previously, the Space Segment accounts for over 50 percent of the contract value and includes VIIRS and the other critical sensors that have been plagued with problems and cost overruns. But the plan does not give additional weight to the score for this segment during the award fee determination process. By treating program aspects that have greater impact and/or risk equivalently with areas that have much less impact or lower risk, the plan fails to give the contractor an adequate incentive to

¹⁸ For the award fee, the government can make unilateral changes to the plan before the start of an evaluation period if it provides written notice to the contractor. Changes made once the evaluation period has begun require the contractor's agreement. For mission success fee, the government may change the plan if it provides written notification to the contractor at least 1 year before the scheduled completion of the mission success fee event. After that point, changes to the plan require the contractor's consent. The total amounts of the award fee and mission success fee pools can only be changed by modifying the contract for added or deleted work.

perform in the high risk, high impact areas. NOAA and EXCOM should consider new ways to provide incentives for tasks that are more critical or riskier than others.

NPOESS fee pools appear excessive

The NPOESS contract also provides an award fee pool that may be excessive. In a review of a sample of Defense Department contracts with award fees, GAO found that less than 1 percent of the contracts provided for award fees greater than 15 percent, and only 14 percent of the contracts allowed award fees of 15 percent.¹⁹ We recognize that fee amounts reflect the level of risk associated with a program. Given the high-risk nature of NPOESS, a relatively high award fee percentage may be warranted. However, a fee of 18 percent appears excessive, especially when the contractor automatically receives a base fee of 2 percent.²⁰ NOAA and EXCOM should reassess whether a fee pool of 20 percent of estimated costs is appropriate.

Rewarding unsatisfactory performance undermines goal of award fee contracts

As mentioned earlier, award fees are intended to motivate a contractor to strive for excellence in such performance areas as quality, timeliness, technical ingenuity, and cost-effective management. Paying \$10.6 million in award fees when the contractor's performance was rated unsatisfactory, as happened in period 6, clearly sends the wrong message. In addition, by paying over \$54 million for performance rated less than excellent, the fee determining official has diluted the motivational effectiveness of the award fees. NOAA and EXCOM should consider whether any fees should be paid for less than excellent performance, in particular, for unsatisfactory performance.

Fee rollover may compromise integrity of award fee process

In the award fee context, "rollover" is the process of moving unearned fees from one evaluation period to a subsequent one, thereby giving the contractor additional opportunities to earn the unused amount. In its review of award fee contracts, GAO criticized Defense's use of this practice, citing excessive reliance on rollover as another indication of the agency's reluctance to withhold fees.²¹ While rollover can be an important mechanism for maintaining leverage with contractors, GAO noted that recent award fee guidance issued by the Air Force, Army, and Navy states that this practice should rarely be used so as to avoid compromising the integrity of the award fee evaluation process.²²

Under the NPOESS contract, the fee determining official has rolled over unearned fee in four of the first six periods. NOAA and EXCOM should consider whether the integrity of the award fee process is in any way compromised by continually allowing the contractor to earn previously unearned fees.

¹⁹ GAO-06-66, page 12.

²⁰ It should be noted that 63 percent of the sample of award fee contracts in the GAO report did not allow base fee at all.

²¹ GAO-06-66, page 20.

²² Ibid.

C. Program Management and Fee Determining Responsibilities Should Be Segregated

The NPOESS fee determining official is the same individual who serves as the program director, and therefore may have difficulty being completely objective when setting fee awards. The program director is responsible for the day-to-day management of the program and is under great pressure to demonstrate progress on NPOESS. Therefore, his objectivity in determining the amount of award fees may be questioned, as a low award fee amount could be seen as evidence of a troubled program.

Award fees routinely exceeded amounts recommended by Award Fee Review Board

As part of the award fee decision process, IPO staff at all levels enter their comments about contractor performance into an electronic database. At the end of each evaluation period, the comments and the contractor’s assessment of its performance in that period are brought before an award fee review board, which includes key IPO personnel. The board deliberates and each member rates the contractor’s performance against the management, technical, and cost criteria. The scores are averaged, and the resulting number—along with a detailed briefing—forms a recommendation for award fee amounts that is presented to the fee determining official. The official considers this information as well as the contractor’s self-assessment (as allowed by the plan) and other pertinent data, and sets a fee amount. We found that for fee periods 2 through 5, the official’s rating of the contractor’s performance was consistently higher than that of the board.²³

Table 6. Contractor Scores By Period

Period	Award Fee Review Board Score (%)	Rating	Fee Determining Official’s Score (%)	Rating	Difference (%)
2			89	Fully Satisfactory	
3			94	Excellent	
4			92	Excellent	
5			82	Very Good	
6			48.25	Unsatisfactory	

For period 5, the difference between the two recommendations was significant (). The divergence between the board’s recommended rating of percent and the fee determining official’s recommendation of 82 percent was particularly controversial since it was during this award period that the contractor finally acknowledged the problems with VIIRS would delay the launch of the NPOESS satellites. The fee determining official explained his deviation from the board’s recommendation as follows:

- Individual board members’ scores ranged from 0 to 93 percent.
- Results were biased by two NASA members concentrating on their own “narrow view”

²³ There is no board data from period 1.

of impacts of instrument schedule problems.²⁴

- Other members also focused on very narrow areas.
- Several areas were going well.
- Formal recovery plans were actively being worked with the IPO.
- Prudent actions to further reduce risk while plans are in preparation were being taken.

Overall, the official determined that the contractor “met a majority of the objectives outlined in the Award Fee criteria and the multiple significant shortfalls identified during the period were being addressed with corrective action plans and additional actions to make them fully executable.”

The fee determining official’s evaluation does not address the continued decline of the program, as evidenced by the earned value measures for period 5, which as mentioned, showed NPOESS moving from 5 percent behind schedule to 6 percent, and from 10 percent over budget to 15 percent, and the Space Segment moving to 9 percent behind schedule and 23 percent over budget. In light of those declines and the realization that the VIIRS problems were going to delay the satellite launch, even the board’s rating of _____ percent appears questionable.

Segregating responsibilities for program management and fee determination could improve award fee process

GAO reports that at the Department of Defense, the fee determining official is generally at a higher level organizationally than those directly involved in evaluating the contractor—typically a program executive officer²⁵ who has broad responsibility for a portfolio of related programs, but does not directly manage any of them. Segregating the position of fee determining official from positions involved in day-to-day program management theoretically enables that official to be more objective when making award fee decisions. While the NPOESS program director was supposed to have authorities similar to those of a program executive officer, during the period we reviewed, NPOESS was the only program under the director’s purview and he was intimately involved in its daily management. Failing to separate these responsibilities appears to have jeopardized the objectivity of the process. NOAA should work with EXCOM to assign fee determining responsibility to an official who is not involved in the direct day-to-day management of NPOESS.

Recommendations

The Deputy Secretary should ensure that the Under Secretary for Oceans and Atmosphere in his role as a member of the EXCOM works with the other members of the EXCOM to:

- (1) Critically review and revise the NPOESS award fee plan, taking into consideration whether

²⁴ Our review revealed that this was not the case. It was actually one NASA and one NOAA member who scored the contractor very low.

²⁵ GAO-06-66, “Defense Acquisitions: DoD Has Paid Billions in Award and Incentive Fees Regardless of Acquisition Outcomes,” December 2005, page 8 (footnote 7).

- interim fees should be paid when mission success milestones are being missed,
- the plan provides adequate incentives for tasks that are critical to the program's success and/or are high risk,
- fee amounts (i.e., up to 20 percent of the contract's total estimated costs) are excessive,
- the contractor should receive fees for unsatisfactory performance, and
- rolling over fees to subsequent award periods is appropriate.

(2) Assign responsibility for determining fee awards to an official who does not directly manage the NPOESS program.

NOAA's Response

In its response, NOAA generally criticized the draft report's second finding (1) for failing to fully characterize the award fee structure of the NPOESS contract, (2) for not adequately recognizing that the NPOESS contract was a DoD contract and therefore subject to the rules, regulations and oversight of the Air Force, not the DOC, and (3) for failing to consider the March 29, 2006, DoD policy on the administration of award fees.

OIG Comments

With regard to NOAA's first concern, we believe the report carefully, accurately, and correctly describes the NPOESS fee structure. In its written response, NOAA provided some general information about the fee structure, all of which is already included in the report. It also noted its belief that the structure was commensurate with the program's complexity and the risk level inherent in the baseline program. While we agree that the NPOESS program is complex and have clearly noted the impact its high-risk nature could have on the fee amount in the report, we believe it is fair—if not essential—to at least question the decision to allow an award fee pool of up to 20 percent, particularly in light of the fact that such an amount is unusual even at the Department of Defense, where high-risk, complex programs are not uncommon.

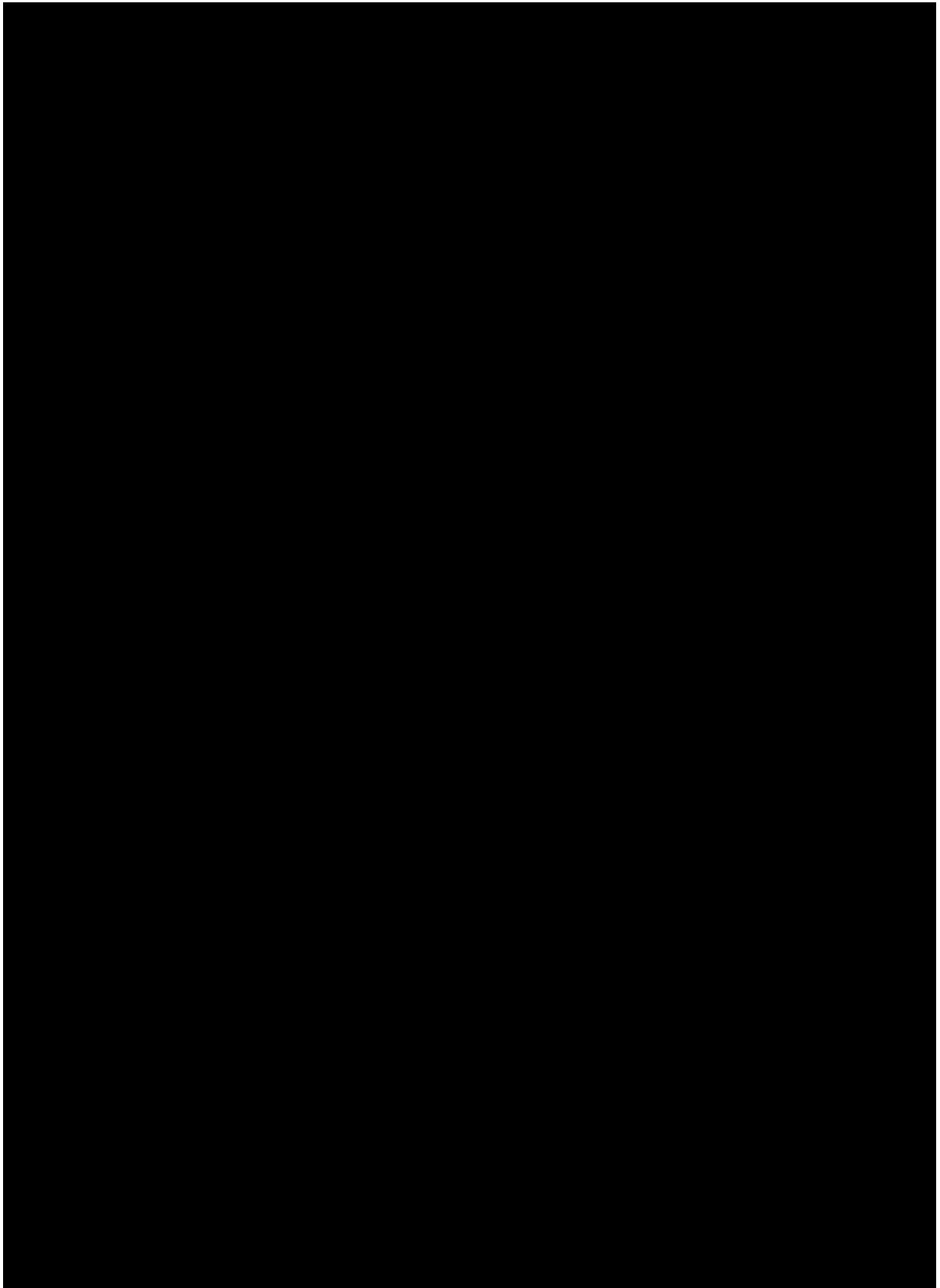
With regard to NOAA's second point, the first page of the report's executive summary clearly states that “[i]n August 2002, the IPO, using DoD's contracting authority, awarded a single satellite integration contract worth \$4.5 billion to a prime contractor...” Furthermore, our description of the IPO structure clearly indicates that DoD has lead responsibility for acquisition matters. We therefore made no changes to the report to address this concern. In addition, although the contract may have been awarded according to DoD rules and regulations, given that half of the program's funding comes from the Department of Commerce, we believe it is appropriate for us as well as for NOAA and the Department to examine the management of the contract's award fee.

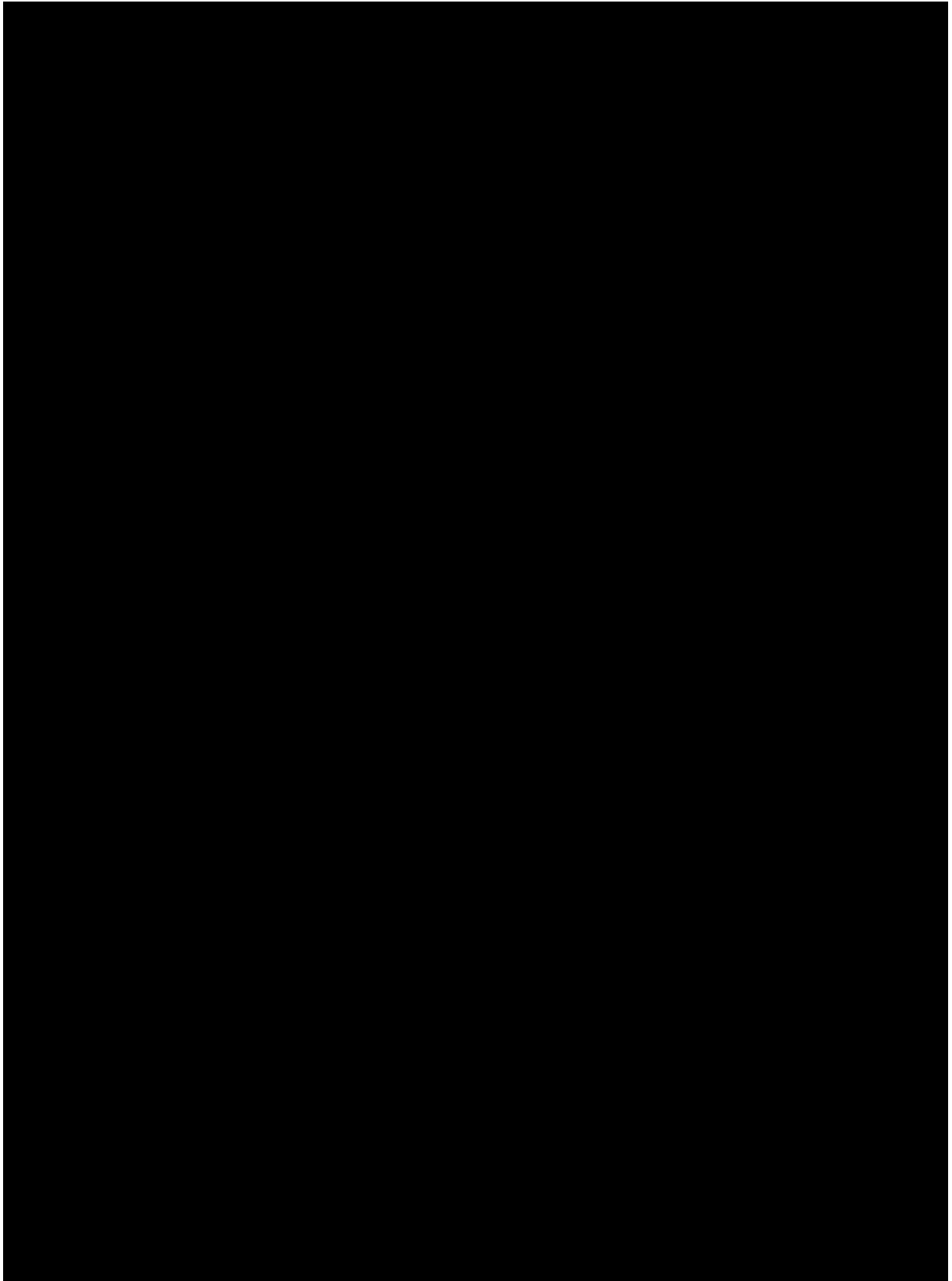
Finally, we are pleased to acknowledge the new DoD policy on award fee contracts, which resulted from the December 2005 GAO review of award and incentive fees at DoD that we

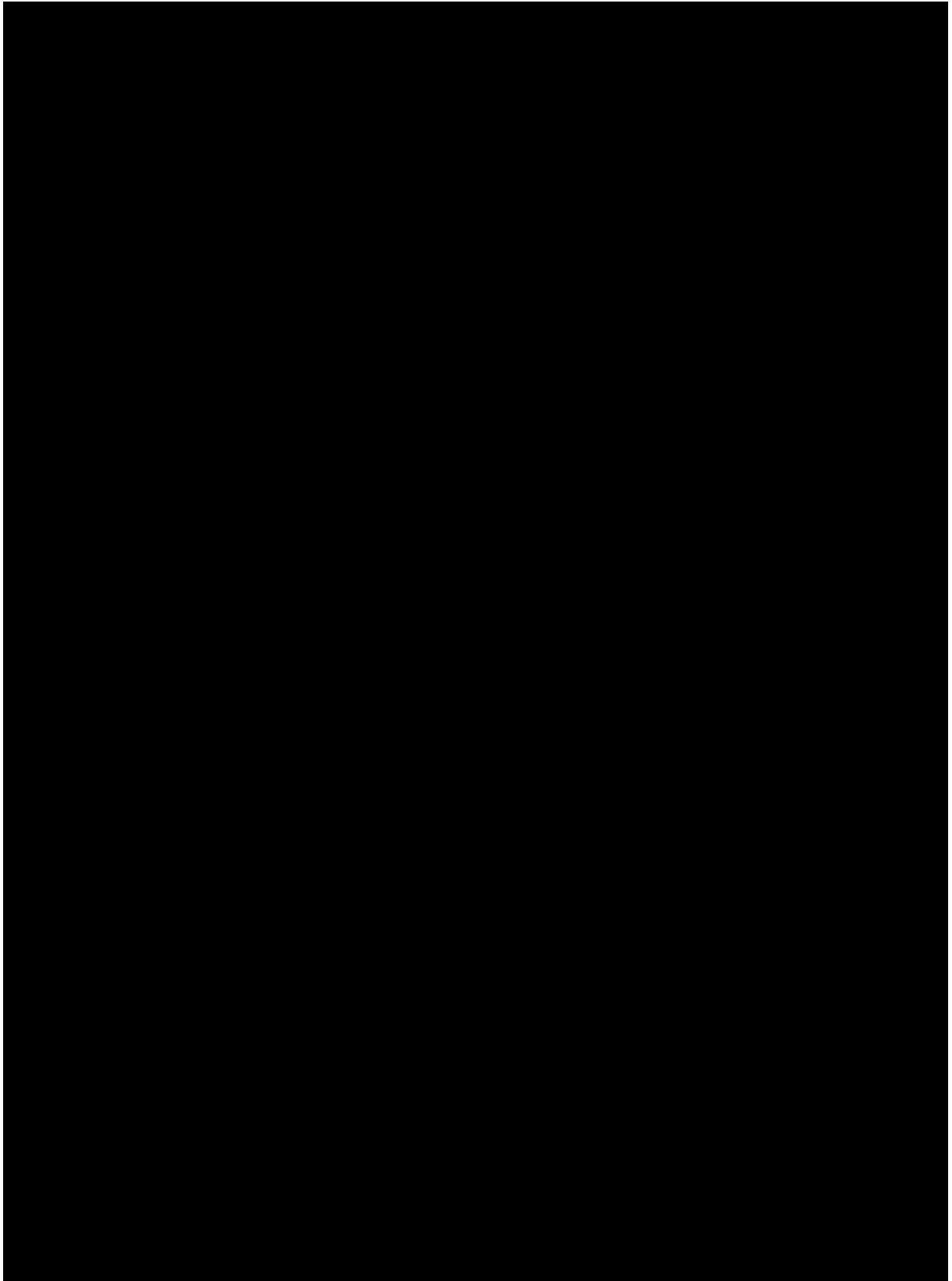
discuss in our audit. That policy addresses many of the issues we raised with regard to the NPOESS award fee structure and, if it is implemented in the NPOESS contract, should address our concerns about the need for adequate incentives for high-risk, critical tasks, with rolling over unearned fees to subsequent periods, and with paying fee for unsatisfactory performance. The policy does not address all of our concerns, however. Specifically, it is silent on the issue of whether interim fee should be paid when mission success milestones are missed and on whether the award fee amount for this contract is excessive. In addition, as our report notes, one of the reasons we raised all of the issues about the NPOESS award fee structure is so that NOAA could properly consider those issues when crafting award fee plans for future major acquisitions. Given the fact that NOAA is currently engaged in its first major satellite acquisition, we thought it critical to bring the problems we found with the NPOESS fee structure to its attention.

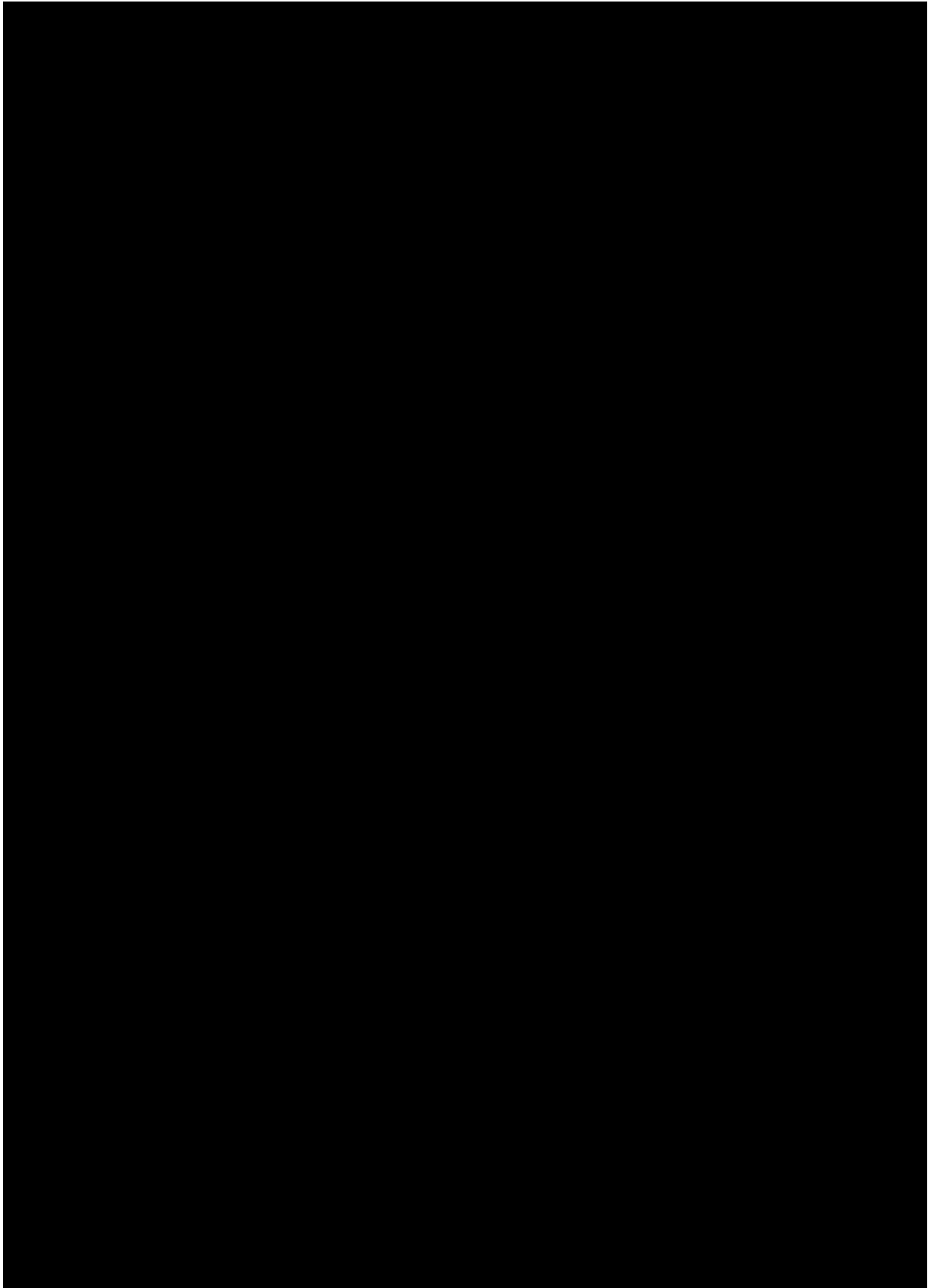
In its response to our first recommendation for this finding, NOAA indicated that, in light of the new DoD policy on award fee management, the EXCOM will review the current award fee structure to determine the specific changes needed to ensure compliance with the DoD policy. As noted previously, the DoD policy does not address all of the issues we raised with regard to that structure. NOAA's response therefore fails to address what changes the Under Secretary for Oceans and Atmosphere, will recommend to the EXCOM to address our concerns about whether interim fee should be paid when mission success milestones are missed and whether the award fee amount for this contract is excessive.

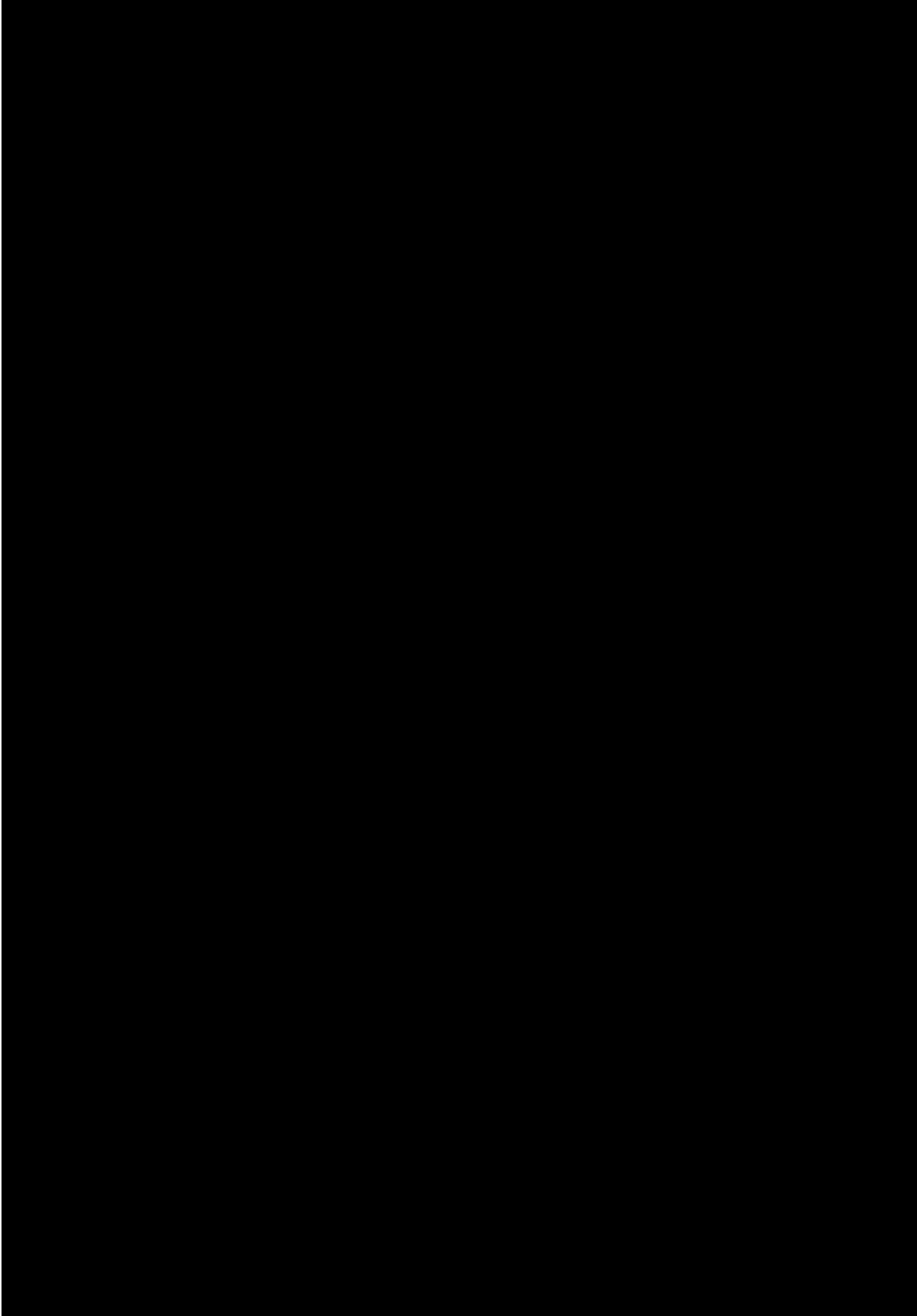
NOAA's response to our recommendation concerning the responsibility for determining fee awards indicated that the EXCOM has already addressed this recommendation with the proposed establishment of the PEO. If this position is established and the PEO is not directly responsible for managing the NPOESS program, that action should meet the intent of our recommendation.

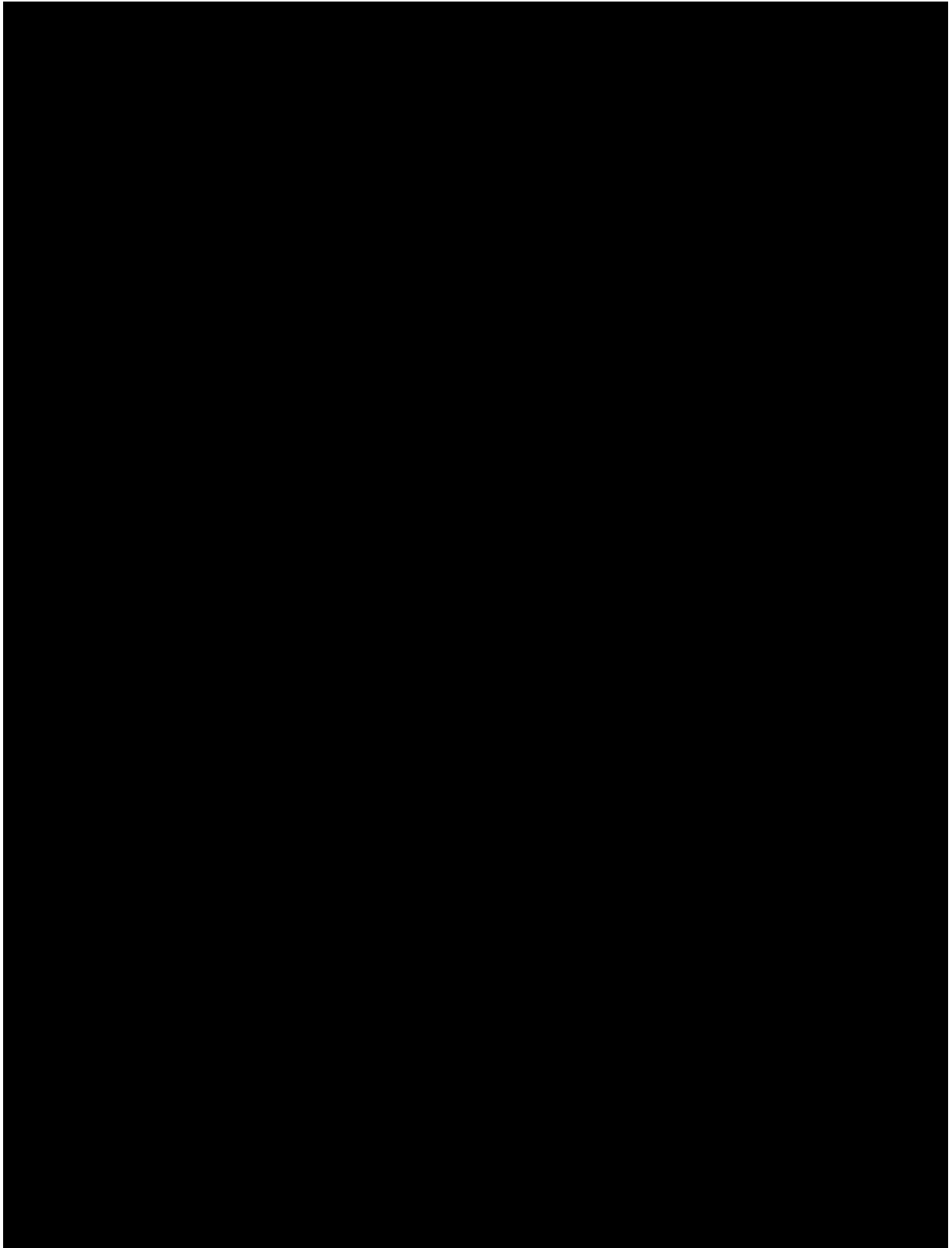


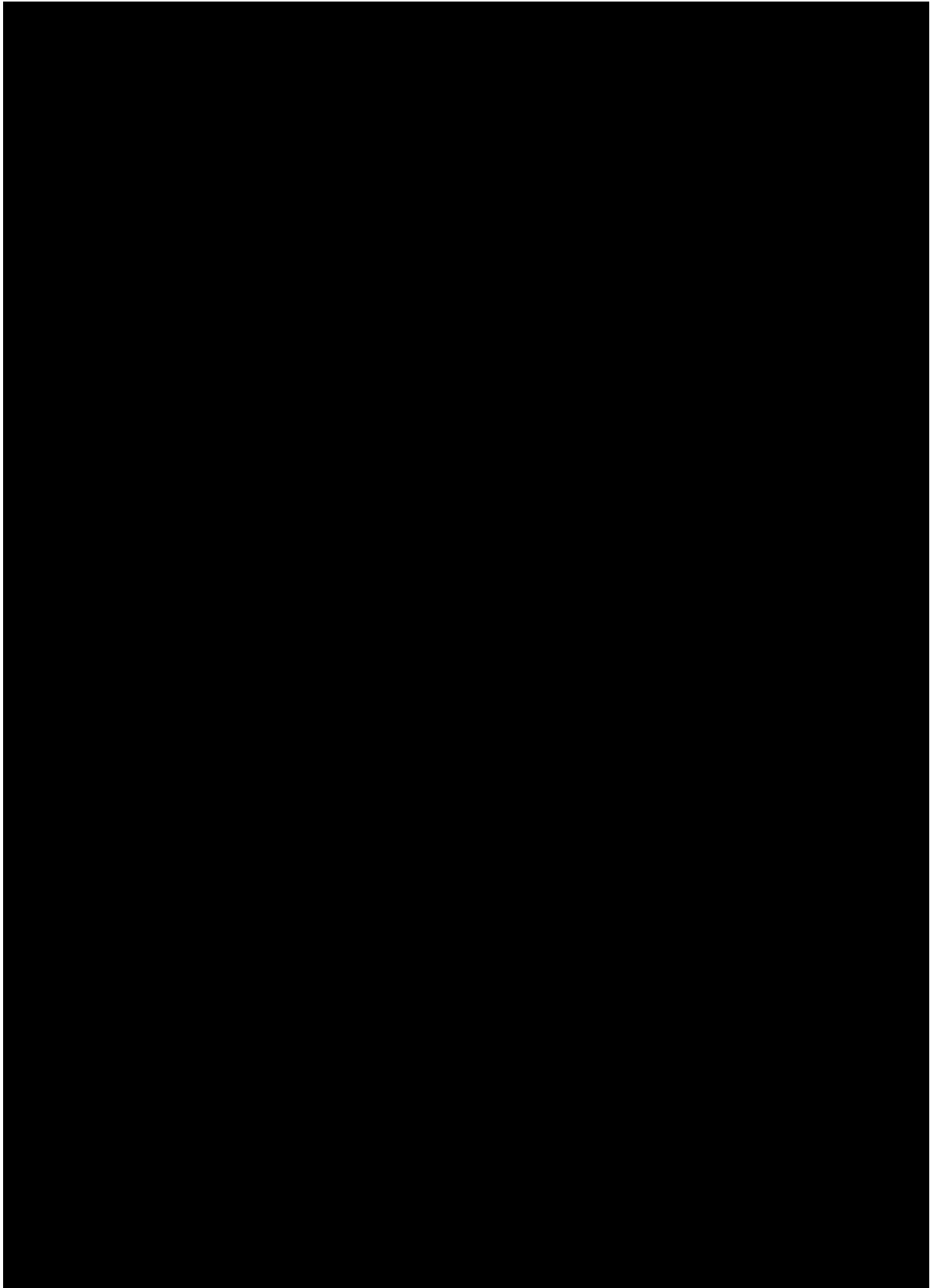


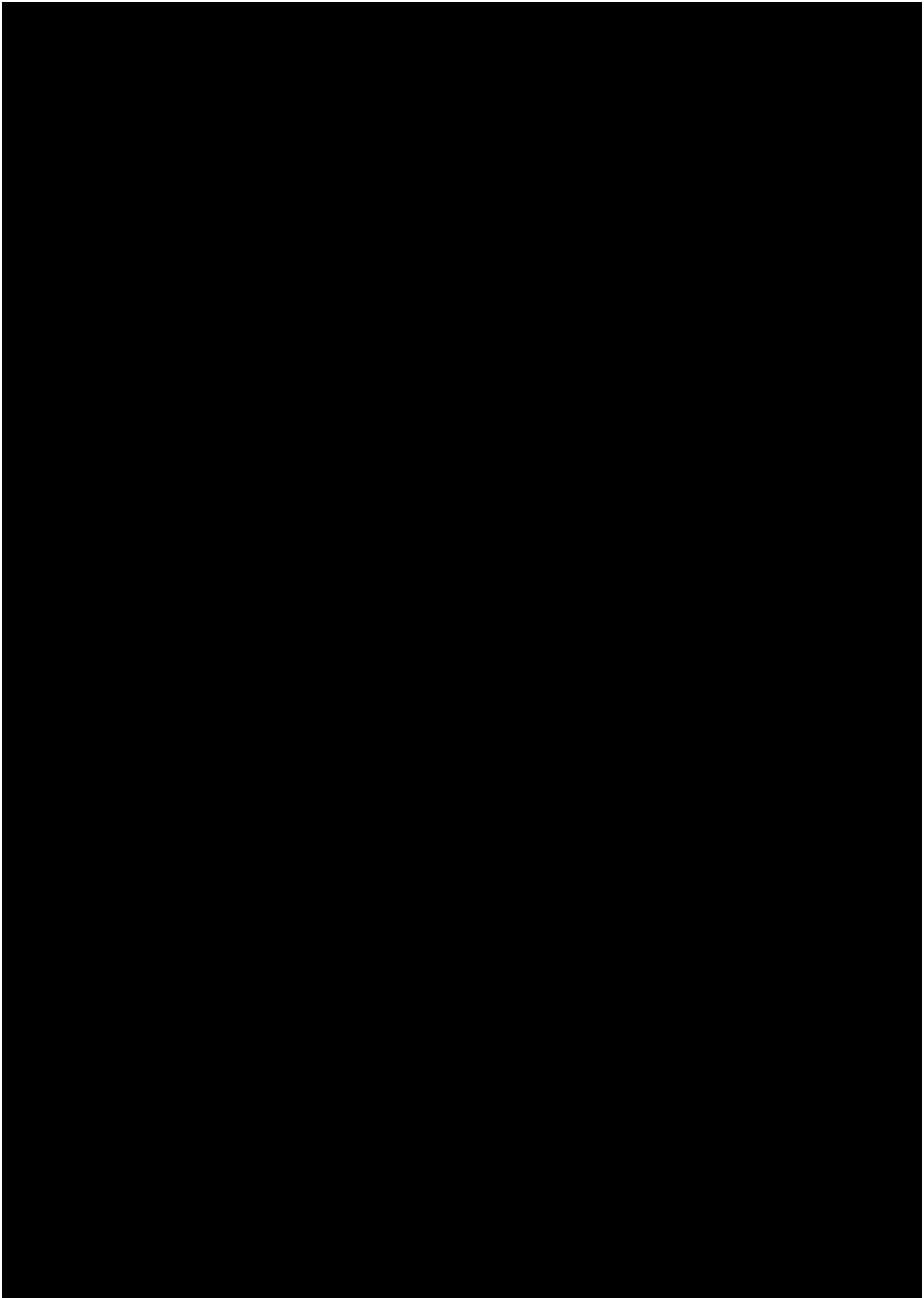


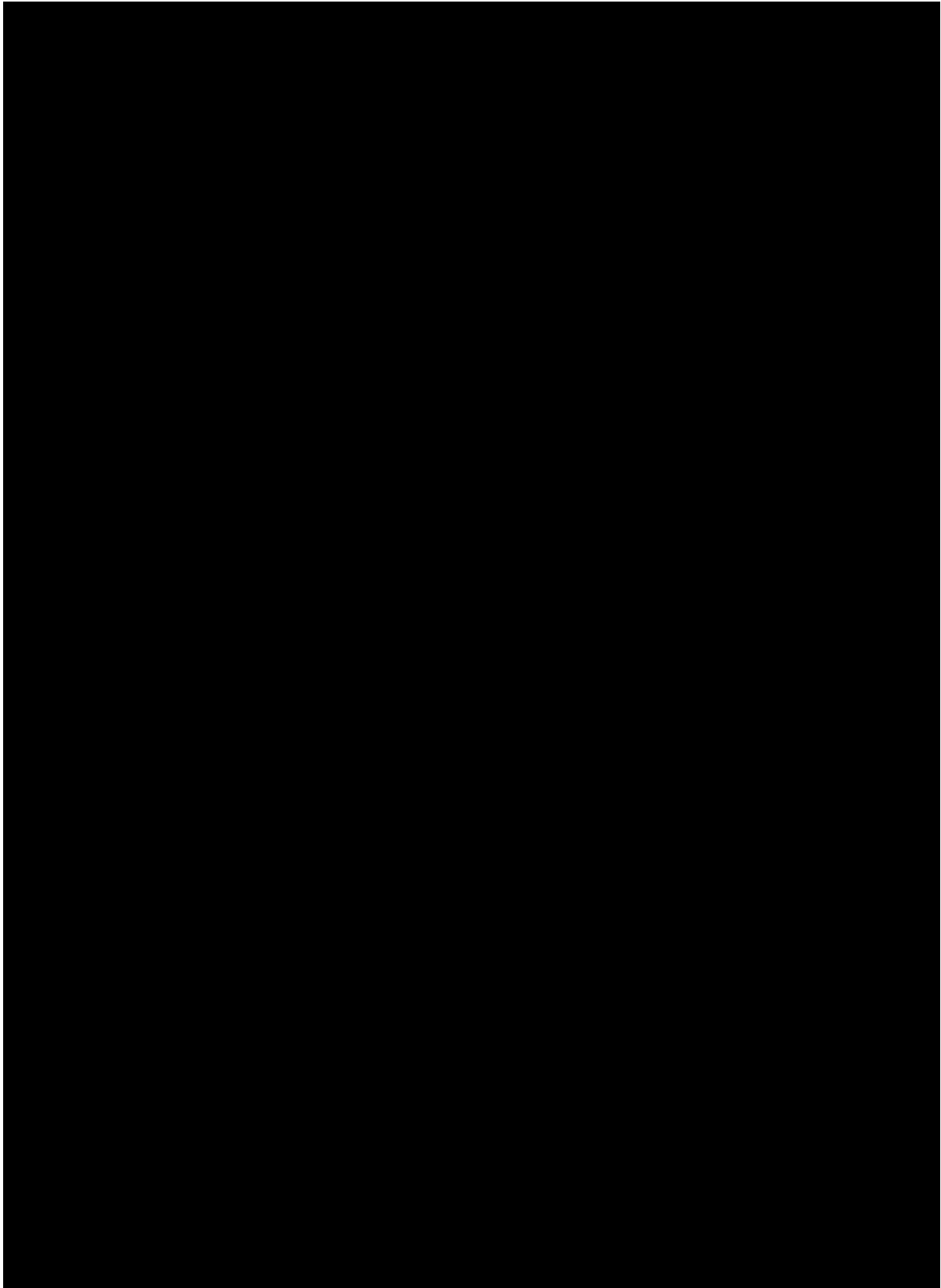


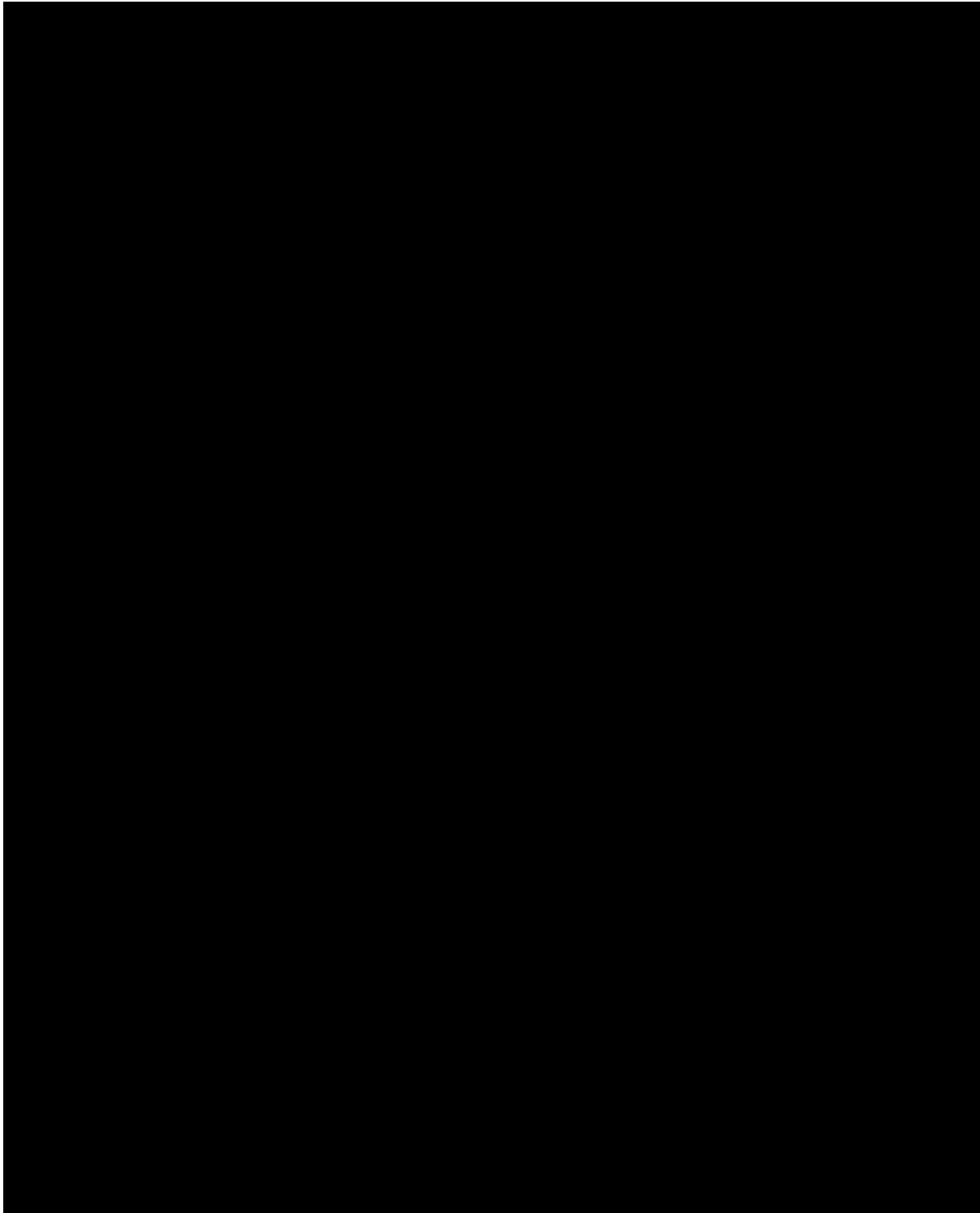












APPENDIX II

GLOSSARY


AA/NESDIS	Assistant Administrator for NESDIS
CPI	Cost Performance Index
CrIS	Cross-track Infrared Sounder
DoD	Department of Defense
EMD	Engineering and Manufacturing Development
EVMS	Earned Value Management System
EXCOM	Executive Committee
FAR	Federal Acquisition Regulation
GAO	Government Accountability Office
IPO	Integrated Program Office
IPT	Integrated Product Team
MOA	Memorandum of Agreement
NASA	National Aeronautics and Space Administration
NESDIS	National Environmental Satellite, Data and Information Service
NOAA	National Oceanic and Atmospheric Administration
NPOESS	National Polar-Orbiting Operational Environmental Satellite System
OIG	Office of Inspector General
POES	Polar-orbiting Operational Environmental Satellite
SPI	Schedule Performance Index
VIIRS	Visible Infrared Imager/Radiometer Suite



THE DEPUTY SECRETARY OF COMMERCE
Washington, D.C. 20230

May 2, 2006

MEMORANDUM FOR: Johnnie E. Frazier
Inspector General

FROM: David A. Sampson 

SUBJECT: Draft Audit Report No. OIG-17794-6-0001/2006, *Poor Management Oversight and Ineffective Incentives Leave NPOESS Well Over Budget and Behind Schedule*

Thank you for providing me a copy of your Draft Audit Report No. OIG-17794-6-0001/2006, *Poor Management Oversight and Ineffective Incentives Leave NPOESS Well Over Budget and Behind Schedule*. I have reviewed your report and discussed it with Under Secretary Lautenbacher. As you may know, the National Oceanic and Atmospheric Administration (NOAA) has submitted separate detailed comments and responses to the draft report.

Secretary Gutierrez and I consider the National Polar-orbiting Operational Environmental Satellite System (NPOESS) to be very important both to the Department's mission and to the Nation. We have been and will continue to be fully committed to ensuring that the issues identified in your draft report are addressed.

NPOESS is crucial not only to the Department of Commerce, but also to the missions of the Department of Defense and NASA, with whom we share responsibility for the program. Because of the significance of the program, we take the draft report, its findings, and its recommendations very seriously. NPOESS is vital to our future weather and environmental observations capabilities, and I am fully committed to rigorous management and oversight to ensure the success of the program.

Since becoming aware of the issues associated with NPOESS last year, I have received monthly status updates from NOAA and have met with the CEOs and other senior executives of Northrup Grumman and Raytheon to discuss the Secretary's and my concerns and to review their corrective action plan. Additionally, as your report acknowledges, the program is currently undergoing the Department of Defense's Nunn-McCurdy certification process, and I look forward to receiving the final recommendations from that review.


Again, I appreciate and take seriously the findings and recommendations in your report, as well as those recommendations that we expect to come out of the Nunn-McCurdy process led by DoD. Once the Nunn-McCurdy process is complete, I will work with Under Secretary Lautenbacher and our partners at the Department of Defense and at NASA to ensure that the intent of both your recommendations and those of the Nunn-McCurdy process are reflected in our management, oversight, and execution of this vital program.



UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary of Commerce
for Oceans and Atmosphere
Washington, D.C. 20230

APR 27 2006

MEMORANDUM FOR: Johnnie E. Frazier
Inspector General

FROM: Conrad C. Lautenbacher, Jr.
Vice Admiral, U.S. Navy (Ret.) 
Under Secretary of Commerce
for Oceans and Atmosphere

SUBJECT: Comments to OIG Draft Report – *Poor Management
Oversight and Ineffective Incentives Leave NPOESS
Program Well Over Budget and Behind Schedule*
Draft Audit Report No. OIG-17794-6-0001/2006

Attached is the National Oceanic and Atmospheric Administration (NOAA) response to the Office of Inspector General (OIG) draft report on the National Polar-orbiting Operational Environmental Satellite System (NPOESS) program's management oversight and award structure.

NOAA shares the OIG's interests in ensuring effective management and oversight of the NPOESS program. We are committed to taking appropriate actions to manage the program effectively under the existing tri-agency management structure with the Department of Defense (DoD) and the National Aeronautics and Space Administration.

We are concerned with several conclusions represented in the draft report, and recommend the report be modified to (1) adequately acknowledge the complexity of the NPOESS program; (2) represent the ongoing level of direct involvement by the Executive Committee (EXCOM) in oversight of the Integrated Program Office (IPO) and the NPOESS program, (3) fully characterize the award fee structure of the NPOESS contract, and (4) adequately recognize the DoD role in administration of the NPOESS contract, as a DoD contract and, therefore, subject to the rules, regulations, and oversight of the Air Force, not the Department of Commerce.

We appreciate the opportunity to respond to the draft report. The response was prepared in accordance with Department Administrative Order 213-3, *Inspector General Auditing*. To ensure accuracy of the report's findings and recommendations, we encourage the attached comments be addressed prior to the report being finalized.

Attachments



**NOAA Comments on the Draft OIG Report Entitled
“Poor Management Oversight and Ineffective Incentives Leave NPOESS Program Well Over
Budget and Behind Schedule”
(Draft Audit Report No. OIG-17794-6-0001/2006)**

General Comments

NOAA appreciates the efforts by the Office of the Inspector General to review the National Polar-orbiting Operational Environmental Satellite System (NPOESS) program. We agree with the intent of the recommendations to improve overall management of the program in view of the cost overruns and schedule delays. We believe the draft report (1) does not adequately acknowledge the complexity of the program; (2) omits the ongoing level of direct involvement by the Executive Committee (EXCOM) in oversight of the Integrated Program Office (IPO) and the NPOESS program, (3) does not characterize fully the award fee structure of the NPOESS contract, and (4) does not adequately recognize the Department of Defense’s (DoD) role in administration of the NPOESS contract, as an Air Force contract and, therefore, subject to the rules, regulations, and oversight of the Air Force, not the Department of Commerce. In addition, the draft report does not provide substantial new information beyond what was known to the EXCOM and tri-agency partners. Most of the recommendations or actions have been already considered by the EXCOM or tri-agency partners. While NOAA agrees with the intent of the recommendations and where applicable has begun to implement them with its interagency partners, the draft report does not adequately recognize the future of NPOESS, including the management and contract, will be determined by the on-going Nunn-McCurdy certification process (led by DoD).

Complexity of the NPOESS Program. The draft report does not acknowledge NPOESS is one of the most complex environmental satellite programs ever undertaken. Thirteen different instruments will fly in various configurations depending on the satellite’s designated orbit. Several of these sensors represent significant advances when compared to current technology and require an extensive research and development effort. Integration of these sensors on a single platform adds to the challenge. Few programs have undertaken a total system development of this nature.

Direct Involvement by EXCOM in NPOESS Oversight. The draft report is inaccurate in its characterization of the EXCOM’s level of involvement in NPOESS oversight. Since its formation and throughout its existence, the EXCOM has been concerned with the overall direction of NPOESS, given the technical complexity and aggressive schedule. The EXCOM continued to provide direction to the IPO concerning budget and schedule assumptions, and the progress in the program. EXCOM members also had a number of private discussions with senior NPOESS contractor executives regarding concerns with performance and the IPO’s optimistic assumptions about the ability of the contractor to meet budget and schedule baselines. Included among the actions taken by the EXCOM were the following:

- The EXCOM tasked a number of independent reviews and analyses, including –
 - An overall program assessment by Brigadier General Don Walker, U.S. Air Force (Ret.), in mid-2004. This assessment focused on the space weather component of the NPOESS program and provided information on the complexity of the NPOESS. The EXCOM agreed that space weather should be a part of the program and put the IPO on alert for possible problems regarding the complexity of the program.

- Two independent cost reviews by the DoD's Cost Analysis Improvement Group (CAIG), one in late-2004 and one in late-2005. The first review was concerned with the risk, schedule, and cost implications of using a new sensor test bed to accomplish required sensor integration. The review concluded that if the test bed worked then the projected NPOESS schedule was feasible. The NPOESS program has yet to employ the sensor test bed. The second review in November 2005 verified schedule and cost overruns in the baseline program and led to the January 2006 certification of a Nunn McCurdy program breach.
 - A review of the NPOESS Preparatory Project (NPP), including an examination of the Visible/Infrared Imager/Radiometer Suite (VIIRS) sensor, by an Independent Review Team (IRT) in early-2005. The IRT noted VIIRS was experiencing significant development problems and would delay NPP launch at least 10 months. The team did not identify cost and schedule issues which would delay launch of the initial NPOESS spacecraft.
 - In late-2005, an Independent Program Assessment (IPA) found major cost, schedule, and management problems.
- After a competitive source selection and an independent review in 2002, the EXCOM approved a cost-plus type contract for the NPOESS Engineering and Manufacturing Development (EMD) phase. The EXCOM believed this type of contract was appropriate given the inherent complexity, development challenges, and program risk. The contract was awarded using DoD/Air Force procedures (not through the Department of Commerce). The program was funded and structured at the 50 percent probability of success level
 - With the concurrence of the EXCOM, the Air Force member of the EXCOM assigned General (select) Sue Mashiko to the IPO in February 2005 to independently assess the magnitude of the NPOESS problems.
 - The EXCOM challenged the IPO estimates of the problems, and associated cost and schedule implications, and sought further independent advice in 2004 and 2005.
 - In November 2005, the EXCOM proposed an independent management structure – Program Executive Office (PEO) to oversee the IPO – and assigned a seasoned Flag level acquisition professional. The tri-agency partners are already conducting monthly reviews, and will conduct major independent reviews related to the major milestones of the program. NOAA is committed to building on its already effective working relationship with the other EXCOM member to ensure effective management and oversight of NPOESS.

Award Fee Structure. The award fee structure selected for this program was commensurate with the program's complexity and the risk level inherent in the baseline program. The EXCOM structured the acquisition strategy including the award fee approach to maximize short-term performance and ensure satisfactory on-orbit performance. Specifically, the contract provided total fees of up to 20 percent (2 percent fixed, 13 percent award, and 5 percent mission success). All earned fee (excluding the fixed fee) is at risk until satisfactory on-orbit performance has been demonstrated (e.g., spacecraft and instruments meet pre specified performance levels).

NPOESS Contract Subject to DOD Acquisition Rules. The draft report does not fully explain the genesis, management, and oversight of the NPOESS contract. NOAA is an EXCOM member and participated in the source selection. The contract is an Air Force contract; as such, it is managed and overseen by the IPO using Air Force policies and procedures. The report did not consider the March 29, 2006, DoD policy memo on the administration of award fees. This policy impacts administration of the NPOESS award fee. (DoD policy attached).

Recommended Changes for Factual/Technical Information

Page 12, second paragraph, line 1:

Change “Beginning in January 2005,” to “Beginning in 2004,”

Page 12, second paragraph, lines 1-4:

Although the report acknowledges “several reviews” were commissioned by the EXCOM and made specific reference to two reviews, NOAA believes the report understates the level of EXCOM management review (see “General Comments”). We recommend this section be expanded to include the additional reviews and actions taken by the EXCOM.

Throughout document:

NOAA recommends insertion of references to the March 29, 2006, DoD memorandum on “Award Fee Contracts” (FAR 16, DFARS 215, DFARS 216).

Editorial Comments

Page 7, third paragraph, line 1:

Insert “2004” after October

Throughout document:

Change “Undersecretary” to “Under Secretary”

Throughout document:

Change DOD to DoD

NOAA Response to OIG Recommendations

Specific actions to improve the management and oversight of the NPOESS program, and actions to address budget and schedule issues, will result from decisions reached during the Nunn-McCurdy certification process. NOAA will provide updates on the actions being taken by the EXCOM following completion of the Nunn-McCurdy certification process.

Recommendation 1 (Page 12):

The Deputy Secretary should ensure that the Undersecretary for Oceans and Atmosphere in his role on the EXCOM works with the other members of the EXCOM to obtain and review regular, independent evaluations of the status of NPOESS. In particular, such evaluations should thoroughly assess the progress toward completing high-risk or otherwise critical tasks and the associated impact of any problems encountered.

NOAA Response:

The EXCOM has been actively and directly involved in the oversight and management of NPOESS, including proposing in late 2005 an independent management structure, called a PEO, responsible for conducting ongoing independent analysis and reviews of the NPOESS program. The tri-agency partners are already conducting monthly reviews, and will conduct major independent reviews related to the major milestones of the program. Note: The Nunn-McCurdy process will determine the future management structure. NOAA is committed to building on its already effective working relationship with the other EXCOM members to ensure effective management and oversight of NPOESS.

Recommendation 2 (Page 20):

The Deputy Secretary should ensure that the Undersecretary for Oceans and Atmosphere in his role as a member of the NPOESS EXCOM works with the other members of the EXCOM to:

- (1) Critically review and revise the NPOESS award fee plan, taking into consideration whether:
 - interim fees should be paid when mission success milestones are being missed,
 - the plan provides adequate incentives for tasks that are critical to the program's success and/or are high risk,
 - fee amounts (i.e., up to 20 percent of the contract's total estimated costs) are excessive,
 - the contractor should receive fees for unsatisfactory performance, and
 - rolling over fees to subsequent award periods is appropriate.
- (2) Assign responsibility for determining fee awards to an official who does not directly manage the NPOESS program.

NOAA Response:

With respect to the first part of the recommendation – NPOESS award fee structure – given the March 29, 2006, revised DOD policy on award fee management, the EXCOM will review the current award fee structure within NPOESS to determine specific changes to ensure compliance with the new DOD rules. With respect to the second part of the recommendation, the EXCOM has addressed this recommendation already with the proposed establishment of the PEO.



OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

MAR 29 2006

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
(ATTN: ACQUISITION EXECUTIVES)
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Award Fee Contracts (FAR 16, DFARS 215, DFARS 216)

Award fee contracts must be structured in ways that will focus the government's and contractor's efforts on meeting or exceeding cost, schedule, and performance requirements. The ability to earn award fees needs to be directly linked to achieving desired program outcomes. In December 2005, the Government Accountability Office (GAO) issued a report, entitled "DEFENSE ACQUISITIONS: DoD Has Paid Billions in Award and Incentive Fees Regardless of Acquisition Outcomes" <http://www.gao.gov/new.items/d0666.pdf>, which made a number of recommendations on how to improve the use of award fees.

In the DoD response dated December 12, 2005, the Department generally concurred with the recommendations in the report and agreed to issue a policy memo by March 31, 2006, to (1) address desired outcomes and the role the award fee should play in the overall acquisition strategy; (2) remind the acquisition workforce to follow existing policies; (3) provide guidance to the acquisition workforce on "rollover"; and (4) develop a communication plan to share proven incentive strategies across the entire DoD acquisition workforce. These actions correspond to Recommendations 1, 2, 4 and 7, respectively, in the GAO report. Separately the Department will respond to Recommendations 3, 5 and 6 of the report at a later time. While award fee contracts are intended to be flexible, this memorandum provides additional guidance on the proper use of award fees.

Link Award Fees to Desired Outcomes (GAO Recommendation 1)

While award fee contracts are used when it is neither feasible nor effective to devise predetermined objective performance targets, it is imperative that award fees be tied to identifiable interim outcomes, discrete events or milestones, as much as possible. Examples of such interim milestones include timely completion of preliminary design review, critical design review, and successful system demonstration. In situations where there may be no identifiable milestone for a year or more, consideration should be given to apportioning some of the award fee pool for a predetermined interim period of time



based on assessing progress toward milestones. In any case, award fee provisions must clearly explain how a contractors' performance will be evaluated.

Award Fees Must Be Commensurate with Contractor Performance (GAO Recommendation 2)

While award fee arrangements should be structured to motivate excellent contractor performance, award fees must be commensurate with contractor performance over a range from satisfactory to excellent performance. Clearly, satisfactory performance should earn considerably less than excellent performance, otherwise the motivation to achieve excellence is negated. However, because base fees are typically limited to no more than three percent of target cost (DFARS 216.405-2), it is appropriate to award a portion of the award fee pool for satisfactory performance to ensure that contractors receive an adequate fee on our contracts. Performance that is less than satisfactory is not entitled to any award fee.

Rollover of Award Fees (GAO Recommendation 4)

An element of many award fee plans is the ability to “roll over” unearned award fee money from one period to another. The following limitations on the use of “rollover” are established:

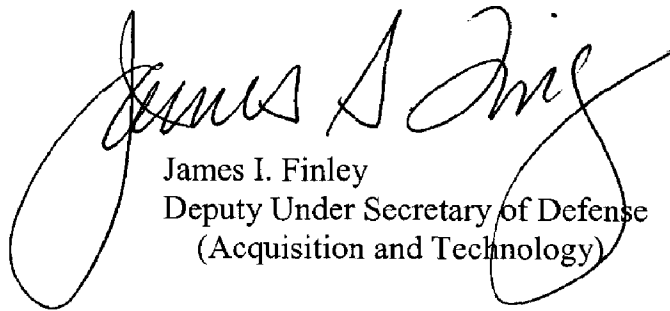
- Use of a “rollover” provision should be the exception rather than the rule.
- Use of an award fee rollover provision is a business decision and should be addressed in the acquisition strategy, including the rationale as to why a rollover provision is appropriate.
- If “rollover” is used, the contractor may only earn a portion of the fee that was rolled over, even for subsequent excellent performance. Factors to consider in determining how much to reduce the available rollover fee include, how close the contractor came to meeting the scheduled milestone, in terms of cost, schedule and performance. For example, the reduction in rollover fees for missing a milestone by a year should be significantly greater than for missing a milestone by 30 days.
- If the Fee Determining Official approves the use of “rollover,” the official contract file must be documented accordingly and the contractor must be notified.

Communication Plan (GAO Recommendation 7)

In order to facilitate discussion and to share proven incentive strategies across the entire acquisition workforce, the Department has established the “Award and Incentive Fees” Community of Practice (CoP) under the leadership of the Defense Acquisition University (DAU). The CoP will serve as the repository for all related materials including policy information, related training courses, examples of good award fee

arrangements, and other supporting resources related to this policy memorandum. The CoP is available on the DAU Acquisition Community Connection at <https://acc.dau.mil/awardandincentivefees>.

This policy memorandum is effective immediately. The DFARS and/or its PGI supplement will be revised to reflect the policy contents of this memorandum. Please direct any questions to Michael Canales at 703-695-8571 or e-mail Michael.Canales@osd.mil.



James I. Finley
Deputy Under Secretary of Defense
(Acquisition and Technology)