Hubble Telescope Oversight and Investigative Literature

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Abstract

This presentation documents the signficant quanties of oversight and investigative literature produced on the hubble Space Telescope (HST) program over the past 35 years. This literature can be found in Congressional Record, congressional committee hearings and investigations, reports from NASA including technical reports, Office of Inspector General reports, historical assessments, the National Academies, C-SPAN broadcasts, and journalistic investigations. Additional contents of this presentation include information about the role of U.S. and European contractors in this program, the geographic dispersion of these contractors, and the role of academic institutions and commercial companies in producing the Hubble and its components. Presentation conclusions note the wide availability of information on this program assessing its development to enable taxpayers to draw their own conclusions on the program's desirability, and that such programs are inherently political and can be controversial.

Keywords: Hubble Space Telescope, space science policymaking, governmental contracts, government information, government program oversight, government program analysis, government transparency

Supervisión del telescopio Hubble y literatura de investigación

Resumen

Esta presentación documenta la considerable cantidad de literatura de supervisión e investigación producida sobre el programa del Telescopio Espacial Hubble (HST) durante los últimos 35 años. Esta literatura se puede encontrar en el Registro del Congreso, audiencias e investigaciones de comités del Congreso, informes de

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la NASA (incluidos informes técnicos), informes de la Oficina del Inspector General, evaluaciones históricas, las Academias Nacionales, transmisiones de C-SPAN e investigaciones periodísticas. El contenido adicional de esta presentación incluye información sobre el papel de los contratistas estadounidenses y europeos en este programa, la dispersión geográfica de estos contratistas y el papel de las instituciones académicas y las empresas comerciales en la producción del Hubble y sus componentes. Las conclusiones de la presentación señalan la amplia disponibilidad de información sobre este programa, evaluando su desarrollo para que los contribuyentes puedan sacar sus propias conclusiones sobre la conveniencia del programa, y que dichos programas son inherentemente políticos y pueden ser controvertidos.

Palabras clave: Telescopio espacial Hubble, formulación de políticas sobre ciencia espacial, contratos gubernamentales, información gubernamental, supervisión de programas gubernamentales, análisis de programas gubernamentales, transparencia gubernamental

哈勃望远镜监督与调查文献

摘要

本篇报告记录了过去35年来针对哈勃太空望远镜(HST)项目产生的大量监督和调查文献。这些文献包括国会记录、国会委员会听证会和调查报告、美国国家航空航天局(NASA)的报告（包括技术报告）、监察长办公室报告、历史评估报告、美国国家科学院报告、C-SPAN广播节目以及新闻调查报道。本报告的其他内容还包括美国和欧洲承包商在该项目中的角色、这些承包商的地域分布，以及学术机构和商业公司在哈勃望远镜及其组件制造过程中所扮演的角色。报告结论指出，关于该项目的信息广泛可用，有助于评估其发展情况，从而使纳税人能够自行判断该项目的合理性；同时，报告也指出，此类项目本身具有政治性，并可能引发争议。

关键词：哈勃太空望远镜，空间科学政策制定，政府合同，政府信息，政府项目监督，政府项目分析，政府透明度

The 35-year life of the Hubble Space Telescope has produced significant quantities of oversight and investigative literature on program performance and quality from U.S. Government information resources. These document how this program has experienced operational support from organizations as varied as NASA's Goddard Space Flight Center, Johns Hopkins University Space Science Telescope Initiative, and the European Space Agency. During this program Hubble has relied on maintenance from the space shuttle crew and experienced multiple successes and problems including waste, mismanagement, and performance failures. Such resources must be documented in any assessment of this and other U.S. government supported programs.

Sources for this documentation include:

Congressional Record-Includes transcripts of congressional floor debates, legislative text, and recorded votes.

NASA reports including NASA Office of Inspector General reports documenting the management performance of NASA programs and historical assessments of these programs.

National Academies Reports.

Government Accountability Office (GAO) reports documenting the performance of government programs for Congress.

Congressional committee investigations and hearings with particular emphasis on those from the House Science, Space, and Technology Committee and the Senate Commerce, Science, and Transportation Committee which have oversight jurisdiction over NASA and the House and Senate Appropriations Committee subcommittees having funding jurisdiction over NASA.

Journalistic investigations.

C-SPAN broadcasts.

Additional factors to consider in Hubble Space Telescope performance include NASA's relationship with contractors in the U.S. and internationally, telescope technical requirements, public opinion, and the geographic dispersion of economic contracts to commercial companies and universities. According to a 2020 NASA Hubble program history, such contracts totaled 31 states representing 62 U.S. Senators and potentially 269-270 congressional districts. Such widespread representation gave and continues giving this program widespread political support.

Examples of this literature include:

A 1990 NASA Technical Memorandum on Optical Systems Failure stressing reliance on a single test method that was vulnerable to error, concerns about cost and schedule inhibiting further testing, external and internal program reviews being inadequate, and that engineers and scientists qualified to analyze test detail failed to do so in sufficient detail.

A 2005 National Academies study assessing options for extending the Hubble Space Telescope. This

document, authorized by Congress in the aftermath of the 2003 Shuttle Columbia disaster, concluded that NASA should continue using the space shuttle to service the telescope and that robotic technology should be developed to facilitate Hubble servicing.

A 1999 NASA Inspector General report noted that discontinuing Hubble service missions after 2003 would produce $104 million in cost savings and program plans to install newer advanced instruments would facilitate the telescope being able to examine larger areas of the sky with higher resolution.

A 2004 GAO report maintained that NASA did not have definitive estimates of Hubble's potential cost, that NASA's contention of sustaining engineering costs were $9-10 million per month, but that NASA could not produce costs to support this estimate since such costs were not tracked by servicing mission, and there is not a design solution for autonomous space shuttle inspection and repair which could change this estimate.

Congressional committee hearings are also a high yield source of information on Hubble. Committees may invite or subpoena witnesses who have varying levels of expertise on the subject matter being discussed. These witnesses are sworn in as if they were in a court of law. Examples of witnesses testifying at a February 2, 2005, House Science Committee on Huble research included individuals from the National Research Council who assessed the Hubble, the Space Telescope Science Institute, and the company MDA Space Missions. Hearing transcripts can also include post-hearing responses to questions from committee members and material submitted to the committee and inserted into the transcript by outside organizations such as the Institute of Electrical and Electronic Engineers.

Presentation resources include Hubble program funding levels by federal fiscal year, contract information for institutions such as the University of Colorado-Boulder and California Institute of Technology, a chart of proposal submission and acceptance rates for Hubble Space Telescope observing proposals, proposals submitted by and awarded to entities in the U.S. and other countries, published papers counts from 1991–2019 in academic journals on Hubble data, listings of industrial partners in the U.S. and information on Hubble components they produced, and documentation of European company and European Space Agency participation in this program.

Key presentation conclusions include:

- The Hubble and James Webb Space Telescope containing lofty and idealistic scientific visions.
- These programs featuring waste, mismanagement, fraud, and political controversy.
- Contracts for these programs are heavily coveted by commercial companies and academic institutions.

- Congressional and parliamentary representatives in multiple countries seek to provide lucrative financial contracts and jobs in these programs for workers in their districts/constituencies. This political support may continue even if there is fraud, mismanagement, and controversy in these programs.
- Taxpayers in democratic countries have access to multiple resources to study and document program performance on Hubble and other governmental programs. They can then use such information to communicate their beliefs about program desirability or undesirability to their elected and appointed officials.
- Your own legislative/parliamentary representative may be a significant player in sculpting the funding and policymaking direction of Hubble or other governmental programs.

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https://www.usaspending.gov/ Search for contracts by fiscal year and other variables.