



## On the Advanced X-ray Astrophysics Facility and Cassini Saturn Probe: Letter Report

### DETAILS

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## On the Advanced X-ray Astrophysics Facility and Cassini Saturn Probe

*On July 5, 1994, Space Studies Board Chair Claude R. Canizares and Board Past-Chair Louis J. Lanzerotti sent the following letter to Presidential Science Advisor John Gibbons.*

Recent developments in outlay allocations to NASA's Senate appropriations subcommittee are threatening the necessity for very difficult choices in the FY95 budget. As you know, many of NASA's science missions have been closely scrutinized for savings over the past few years. In particular, the two largest space science mission development programs, the Cassini Saturn probe and the Advanced X-ray Astrophysics Facility (AXAF), have been subjected by NASA to budget-driven rescopings. Each of these missions has been accorded the highest priority in its respective discipline.<sup>1</sup> On completion of these rescopings, which significantly reduced total program cost in each case, the National Research Council (NRC) Space Studies Board was asked to conduct scientific reviews to determine if the resulting missions remained scientifically responsive to the opportunities presented by our current state of knowledge. Copies of the final reports on these two assessment studies are enclosed, but we would like to summarize their findings briefly here.

With respect to Cassini, on October 19, 1992, the Board's Committee on Planetary and Lunar Exploration (COMPLEX) stated that:

Although the Cassini spacecraft has undergone considerable revision, it is COMPLEX's overall opinion that the restructured Cassini mission remains responsive to the scientific priorities set out in its report, *A Strategy for Exploration of the Outer Planets: 1986-1996*. Significant though these changes are with respect to legitimate individual science objectives, the recommended modifications do not substantially compromise the primary mission objectives, which include the intensive study of the saturnian system as a whole.

We also note the significant investment of the European Space Agency in the

Huygens Titan probe, which will perform a pioneering first characterization of Titan's atmosphere and surface.

With respect to AXAF, the Board created a task group to evaluate the quality of the program that resulted from AXAF's division into two spacecraft, AXAF-I (imaging), and AXAF-S (spectroscopy). This task group reported its findings, with the endorsement of the NRC's Committee on Astronomy and Astrophysics, on April 28, 1993, as follows:

The Task Group on AXAF [TGA] concludes that the revised AXAF program continues to meet the scientific expectations set forth in previous NRC reports, which have recommended AXAF as the highest-priority, new, large-scale program in astronomy. . . . Thus the TGA urges NASA to proceed with the implementation of the restructured AXAF program and to make every effort to ensure the launch of both AXAF-I and AXAF-S before the end of this decade.

The subsequent cancellation of the AXAF-S mission, while dismaying, did not impair the scientific promise of the imaging mission, whose "angular resolution . . . is more than an order of magnitude better than that offered by any other mission under development or even in the planning stages."

The enclosed letter reports on the two missions provide the scientific and technical background that elaborates and substantiates these program reassessments. We realize that science missions must be balanced within the overall objectives of NASA and priorities of the federal R&D budget, but cancellation of either AXAF or Cassini would be a serious reverse for NASA's program of exploration of the solar system and the universe beyond. Please contact us if you have any further questions about these missions or their importance to U.S. science.

## NOTES

1 For Cassini, see *A Strategy for Exploration of the Outer Planets: 1986-1996* (National Academy Press (NAP), Washington, D.C., 1986), page 5; for AXAF, see *Astronomy and Astrophysics for the 1980s*, Volume 1 (NAP, 1982), page 15; for AXAF, see also *The Decade of Discovery in Astronomy and Astrophysics* (NAP, 1991), page 65.