

Department of Energy/National Aeronautics and Space Administration
Review of the
GLAST Large Area Telescope (LAT) Project

January 2003

A joint Department of Energy (DOE) and National Aeronautics and Space Administration (NASA) Mini-Review and Quarterly Status Review of the Large Area Telescope (LAT) project was held on January 30, 2003 at the DOE facility in Germantown, Maryland. The review committee was chaired by Dan Lehman (SC-81) and consisted of five DOE and eight NASA reviewers (see Attachment A).

The LAT will be the principal scientific instrument to be flown on the NASA GLAST mission, scheduled for launch in 2006. It is being jointly developed by DOE and NASA, along with participation from foreign partners, France, Italy, Japan, Sweden, and is scheduled for delivery to NASA in September 2005. The LAT is designed to measure the energy and direction of gamma-rays incident from space in the energy range of approximately 20 MeV to greater than 300 GeV.

The charge for the review was to determine the status and progress of the project since the July 2002 joint DOE “baseline” and NASA preliminary design review and the November 2002 quarterly status review. In particular, the Committee was asked to review technical, cost, and schedule issues and to assess the project’s plans for their resolution.

PROJECT STATUS

Total Project Cost (TPC)	\$121.3 million
DOE	\$37.0 million
NASA.....	\$83.3 million
Japan.....	\$1 million
Other Contributions are in-kind	

Percent Complete (as of December 31, 2002)	38 percent
Remaining Contingency on Costs at Risk (as of December 31, 2002).....	33 percent

Critical Decision (CD) Approvals

CD-2, Approve Performance Baseline.....	November 2002
CD-3, Approve Start of Construction (planned).....	July 2003
CD-4, Approve Start of Operations (planned).....	March 2006

TECHNICAL

The technical progress overall is good; however, there are several technical issues outstanding.

The emphasis of the project is currently on the design engineering in preparation for the joint DOE/NASA review scheduled in April 2003. For NASA, this is the Critical Design Review (CDR), which is concurrent with the DOE CD-3 review.

There were eight top design issues identified at the November 2002 review. Two of these have been closed and three more have been added at the current review. Of these issues, three are still dynamic and causing the most concern to the project: 1) tracker bottom tray design, 2) mechanical connection from Grid to calorimeter, and 3) completion of the ASIC electronics designs.

In addition, the flight software development plan and schedule was not felt to be at an adequate level. The project has developed corrective actions and is monitoring mitigation efforts continuously. These actions were assessed by the committee to be adequate. However, they still voiced concern about when the tracker design would be finalized. The project was asked to report to NASA and DOE as to whether the project design will be sufficiently prepared for the CDR/CD-3 review by the proposed dates. (See action items below).

COST AND SCHEDULE

The Cost and Schedule was seen to be tight. The project has currently expended about 38 percent of the Budget at Completion (BAC) of \$101.1 million and has a remaining contingency of 33 percent on the costs at risk (costs remaining less program education/outreach costs, funded as a level of effort by NASA). Additional draws on project contingency have been identified, primarily for schedule corrective actions and additional engineering management. When incorporated into the baseline by the April 2003, CDR/CD-3 review, the project is expected to be about 45 percent complete with a remaining contingency of 23 percent on the costs at risk.

Project developments and manpower issues have contributed to four weeks of negative schedule variance since the baseline schedule was established. None of this schedule erosion is on the critical path. The project identified their corrective actions and is in the process of implementing these. They expect to eliminate the negative schedule trend by the CDR/CD-3 review and to be fully recovered and on schedule by the end of the year. The goal is to maintain the original 17 weeks of float in the schedule. Several subsystems still have manpower issues that are being evaluated.

The project was asked to do a bottoms-up contingency and risk analysis with all cost liens identified by the CDR/CD-3 review. In addition, they were asked to report schedule and cost variance trends monthly to DOE and NASA to ensure progress.

MANAGEMENT

The LAT Management is strong and well structured. At the July 2002 review, it was recommended that the Instrument Project Office be strengthened in the area of engineering management. The project responded by appointing a LAT Chief Engineer and a LAT System Engineer, along with their recent appointment of a Deputy Project Manager. The impact of these appointments was evident to the review members in the presentations made by these individuals. The LAT Project Management organization appears to be strong, stable, and well structured. The SLAC Directorate oversight of the LAT project continues to be significant and is of great value to the LAT project.

FOREIGN PARTNERSHIPS

The Foreign Partnerships have some unresolved risks. All the foreign partners are currently delivering on their responsibilities. A major issue remaining with the project is the commitment of CY 2003 funding from the Italian Space Agency (ASI) that is still pending. The potential shortfall is \$5 million. This commitment is needed before June 2003 to avoid delaying the tracker production in Italy. LAT project management is working to mitigate this issue. SLAC management has arranged an International Finance Committee meeting for February 18-19, 2003 and this issue will be one of the major items on the agenda.

SUMMARY and RECOMMENDATIONS

Overall, the project is seen as strong but still has some risks and unresolved issues in its preparation for the CDR/CD-3 review. The Committee felt that the corrective actions were adequate to resolve the technical issues. Costs and schedule were both seen to be tight, and it was recommended that the agencies monitor these closely. The ASI funding issue is a concern and it is hoped that the upcoming IFC meeting will help. The Committee was very impressed by the management team. It is strong and the tools are being used effectively.

ACTION ITEMS

Action	Responsibility	Due Date
Develop Flight Software Plan and Schedule	LAT project	2/7/2003
Finalize Dates for CDR/CD-3 review	LAT project	2/24/2003
Develop Contingency Plan for Italian Funding Shortfall	LAT project	3/5/2003
Status of the Schedule Recovery Plan Implementation	LAT project	Monthly

Attachment A**REVIEW PARTICIPANTS****U.S. Department of Energy**

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