

# BASELINE CHANGE PROPOSAL (BCP)

1) BCP Number: <b>LAT – 001</b>		2) BCP Title: <b>Project Rebaseline</b>	
3) Budget Number: <b>MIE # KA050102-EQU01CC</b>		4) Title: <b>Large Area Telescope (LAT)</b>	
5) Date Received (Field Office):		Date Received (Program Office):	
6) Change Designation: <b>Routine</b>	7) BCP Level: Level 0 [ <input type="checkbox"/> ]    Level 2 [ <input type="checkbox"/> ] Level 1 [ <input checked="" type="checkbox"/> ]    Level 3 [ <input type="checkbox"/> ]	8) Directed Change? Yes [ <input type="checkbox"/> ] No [ <input checked="" type="checkbox"/> ]	9) Program: <b>SC-20, Office of High Energy Physics</b>
10) Point of Contact: <b><u>Evaristo J. Valle</u></b>		12) FAX: <b><u>(650) 926-3210</u></b>	
11) Phone: <b><u>(650) 926-4552</u></b>		13) Location: <b>SSO</b>	
14) Change Description:			
<p>The total cost of this BCP is \$5.0 Million (M). This cost represents the DOE contribution to the total increased cost of the fabrication project of \$11.7M. NASA will provide the other \$6.7 M.</p> <p>There is no change to the scheduled date of the Critical Decision 4 “End of Fabrication” approval milestone. The scheduled date of the Critical Decision 3 “Start of Fabrication” approval is now 8/31/03.</p> <p>The proposal moves the development of the Crystal Detector Elements (CDE’s) to the U.S. Previously, this work was to be done by the French institutions and funded by CNES.</p> <p>The proposal provides a better definition of the scope of the work in the fabrication project for developing the Instrument Operations Center (IOC), used to operate the instrument during the scientific data collection phase.</p> <p>The proposal provides a better definition of the end of the fabrication phase to be when the instrument is shown to be fully functional and compliant with GLAST Mission requirements and successfully passes the Pre-Environmental test Review (PER).</p>			
15) Change Justification: (If Directed Change specify authority and documentation)			
<p>The LAT is a joint scientific partnership between DOE and NASA along with four foreign partners: France, Italy, Japan and Sweden. The foreign partners participate in the LAT collaborations via contributions in-kind. The French Space Agency (CNES) dropped their in-kind contributions to the LAT project at the end of April 2003.</p> <p>A previously scheduled joint DOE Critical Decision 3 (CD-3) review and NASA Critical Design Review (CDR) was held at SLAC in May 2003. The review committee felt that the costs due to the CNES default could not be covered within the project over the long term. In addition, the committee recognized additional cost, contingency and schedule issues since the original baseline in November 2002. They recommended that CD-3 status be approved contingent upon resolution of these issues.</p> <p>This BCP reflects the impact to the LAT fabrication project due to the CNES default and the additional costs and contingency needed for the current estimate-at-completion. A review of the full re-baseline proposal was held July 31, 2003, at the DOE Germantown facility. The committee supported the re-baseline plan for the LAT fabrication project and recommended that the BCP and CD-3 status be approved by DOE.</p>			

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The only change to the Level 1 Milestones in conjunction with the rebaselining effort is a revision to the CD-3 date from July 15, 2003 to August 31, 2003. This is due to the extra time needed to prepare for the baseline change proposal approval meeting. The Critical Decision 4 (CD-4) “End of Fabrication” approval date of March 15, 2006 remains the same.

The development of the Crystal Detector Elements (CDE’s), which are part of the calorimeter subsystem, was to be done by the French institutions and funded by CNES. Due to the CNES default, this work has been moved to the U.S. The change to the project resulted in internal delay of some of the subsystems, causing changes to lower level milestones.

The proposal provides a better definition of the scope of work in the fabrication project for developing the Instrument Operations Center (IOC), used to operate the instrument during the scientific data collection phase. The management of the IOC startup during the fabrication phase will continue to part of the project. Since the actual development and implementation of the IOC is to be done by the science collaboration, the BCP is to move it to operating costs to be consistent with current DOE practices.

The proposal provides a better definition of the end of the fabrication phase and is consistent with present practices on detector projects. After the LAT instrument has been fabricated and shown to be fully functional and compliant with GLAST Mission requirements, it undergoes a pre-environmental test review (PER). It then is shipped from SLAC to another yet-to-be-determined facility to undergo environmental testing. After completion of this testing, it undergoes a pre-ship review (PSR) and is shipped to the spacecraft contractor for observatory integration. The current baseline calls for the end of fabrication milestone to be when the GLAST Mission project manager accepts the instrument at the successful completion of the PSR. The BCP calls for the end of fabrication milestone to be upon successful completion of the PER and shipment to the environmental test facility. The GLAST Mission project manager then accepts the instrument and manages it during the commissioning and operations phase. This modification will make the end of fabrication phase consistent with DOE Order 413.3 and DOE-HEP practice regarding particle detectors.

## 16) Impact of Non-Approval:

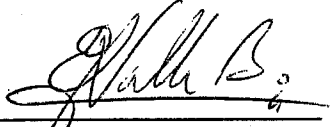
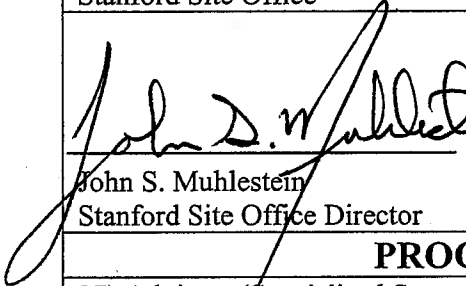
In the current baseline, the LAT project has a total estimated cost of \$121.7M and is approximately 50% complete with \$13.8 M remaining of contingency, or 2% contingency based on costs-at-risk (the cost-to-go minus the Education and Outreach costs). The proposed change is for a total estimated cost of \$133.4 M, an increase in total cost of \$11.7 M, with DOE providing \$5M and NASA providing \$6.7M. With the new baseline, the project would have \$16.2M remaining contingency and 25% contingency based on costs-at-risk.

If this BCP is not approved, the project will need to look towards NASA and the international collaboration in order to reprogram with an associated slip in schedule. Any further slip in schedule will cost the LAT project approximately \$2 million per month and the GLAST mission an additional \$5 million per month. NASA has scheduled a GLAST Mission Confirmation review for September 2, 2003. The lack of additional funding from DOE and rebaseline of the LAT project may result in NASA canceling the project resulting in the loss of an opportunity to do the important astrophysics research which the GLAST mission is designed to provide.

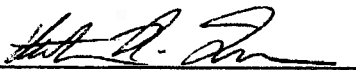
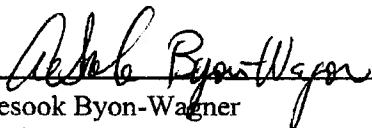
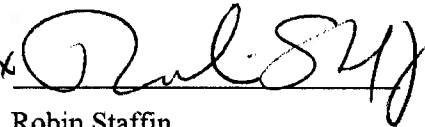
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<b>17) Impact on Cost Baseline:</b>	Baseline (As of June 2003)		Proposed		Change	
	Total	DOE	Total	DOE	Total	DOE
Estimate without contingency	\$ 107.9M	\$ 33.5M	\$ 117.2M	\$ 37.4M	\$ + 9.3M	\$ +3.9M
Contingency	<u>13.8M</u>	<u>3.5M</u>	<u>16.2M</u>	<u>4.6M</u>	<u>+ 2.4M</u>	<u>+1.1M</u>
TEC	\$ 121.7M	\$ 37.0M	\$ 133.4M	\$ 42.0M	\$ + 11.7M	\$ +5.0M
<b>18) Impact on Funding Profile (BA):</b>						
Approval of this Baseline Change Proposal will provide TEC funds in FY 2003 and FY 2005 only. The changes to the funding profile are shown below:						
	<u>Prior FY</u>	<u>FY03</u>	<u>FY04</u>	<u>FY05</u>	<u>Total</u>	
Baseline (\$M)						
DOE TEC	16.8	8.9	7.9	3.4	37.0	
Proposed (\$M)						
DOE TEC	16.8	8.9	7.9	8.4	42.0	
Change in DOE TEC (\$M)				5.0	5.0	
<b>19) Explanation of Impact on Cost and Funding Baseline:</b>						
The additional DOE funding of \$5M will permit the LAT project to mitigate the cost and schedule impact caused mostly by the CNES funding action and the project to go forward as joint DOE & NASA partnership.						
<b>20) Impact on Schedule Baseline:</b>						
Change of CD-3 milestone. No change in end of fabrication approval milestone						
Milestone (No. and Description)	Baseline (Month/Year)		Proposed (Month/Year)		Change	
CD-3	7/15/03		8/31/03		1.5 months	
CD-4	3/15/06		3/15/06		0 months	
<b>21) Explanation of Impact on Schedule Baseline:</b>						
The CD-3 approval milestone has been delayed by 1.5 months to allow the extra time needed to adequately prepare the BCP and CD-3 approval documents.						
<b>22) Impact on Scope Baseline:</b>						
The CDE development is now part of the project. There is a better definition for the scope of work in the IOC development. There is a better definition for the end of fabrication phase.						
<b>23) Explanation of Impact on Scope Baseline:</b>						
The CDE development has now moved from France to the U.S. The scope of work on the project for the IOC development is now consistent with current DOE practices. The definition of the end of fabrication phase to be when the fully functional instrument leaves SLAC is now consistent with DOE-HEP practice for particle detectors. (See more information in section 17 above).						
<b>24) Other Impacts (Health, Safety, Environment, etc.)</b>						
None						

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<b>25) Interim or Corrective Actions:</b> The management of the LAT project has been strengthened since the May CD-3/CDR review. The new Project Manager, Lowell Klaisner, the former Deputy Project Manager and Chief Engineer, has a thorough grasp of the project and communication within LAT project management and between project management and the Laboratory is much improved.	
<b>FIELD DISPOSITION - LEVEL 2</b>	
<b>26) Members</b>	<b>Recommendations</b>
 _____ Evaristo J. Valle LAT Federal Project Director Stanford Site Office	_____ Date 8/27/03
 _____ John S. Muhlestein Stanford Site Office Director	_____ Date 8/22/03
<b>PROGRAM DISPOSITION - LEVEL 1</b>	
<b>27) Advisors (Specialized Support, as required)</b>	<b>Recommendations</b>
_____ Kathleen R. Turner LAT Program Manager Office of High Energy Physics	_____ Date
_____ Aesook Byon-Wagner Senior Program Manager Office of High Energy Physics	_____ Date
<b>ACQUISITION EXECUTIVE - LEVEL 1</b>	
Disposition <input type="checkbox"/> Approved <input type="checkbox"/> Endorsed <input type="checkbox"/> Rejected	Comments:
_____ Robin Staffin Associate Director Office of High Energy Physics	_____ Date

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<b>FIELD DISPOSITION - LEVEL 2</b>	
26) Members	Recommendations
<p><u>Attached</u></p> <p>Evaristo J. Valle                      Date  LAT Federal Project Director  Stanford Site Office</p>	
<p><u>attached</u></p> <p>John L. Muhlestein                      Date  Stanford Site Office Director</p>	
<b>PROGRAM DISPOSITION - LEVEL 1</b>	
27) Advisors (Specialized Support, as required)	Recommendations
<p><u></u>                      <u>8/28/03</u>  Date  Kathleen R. Turner  LAT Program Manager  Office of High Energy Physics</p>	
<p>* <u></u>                      <u>8/28/03</u>  Date  Aesook Byon-Wagner  Senior Program Manager  Office of High Energy Physics</p>	
<b>ACQUISITION EXECUTIVE - LEVEL 1</b>	
Disposition <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Endorsed <input type="checkbox"/> Rejected	Comments:
<p>* <u></u>                      <u>9/3/03</u>  Date  Robin Staffin  Associate Director  Office of High Energy Physics</p>	