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UT



CRA_TER Project

Instrument Preliminary Design Review (I-PDR)
September 28th, 2005

*Cosmic **RA**y Telescope for the **E**ffects of **R**adiation*



CRaTER Team

- CRaTER is a multi-Institutional Project lead by Harlan Spence of B.U.
 - Aerospace Corporation
 - Air Force Research Laboratory
 - Boston University
 - Massachusetts Institute of Technology
 - National Oceanographic and Atmospheric Administration
 - University of Tennessee
- Science Mission involves all of the Institutions
- Flight Hardware Design, Fabrication, Test & Calibration is being done by three of the Institutions
 - Aerospace Corp
 - B.U.
 - MIT
- Detailed roles and responsibilities within the hardware team have been defined and documented.

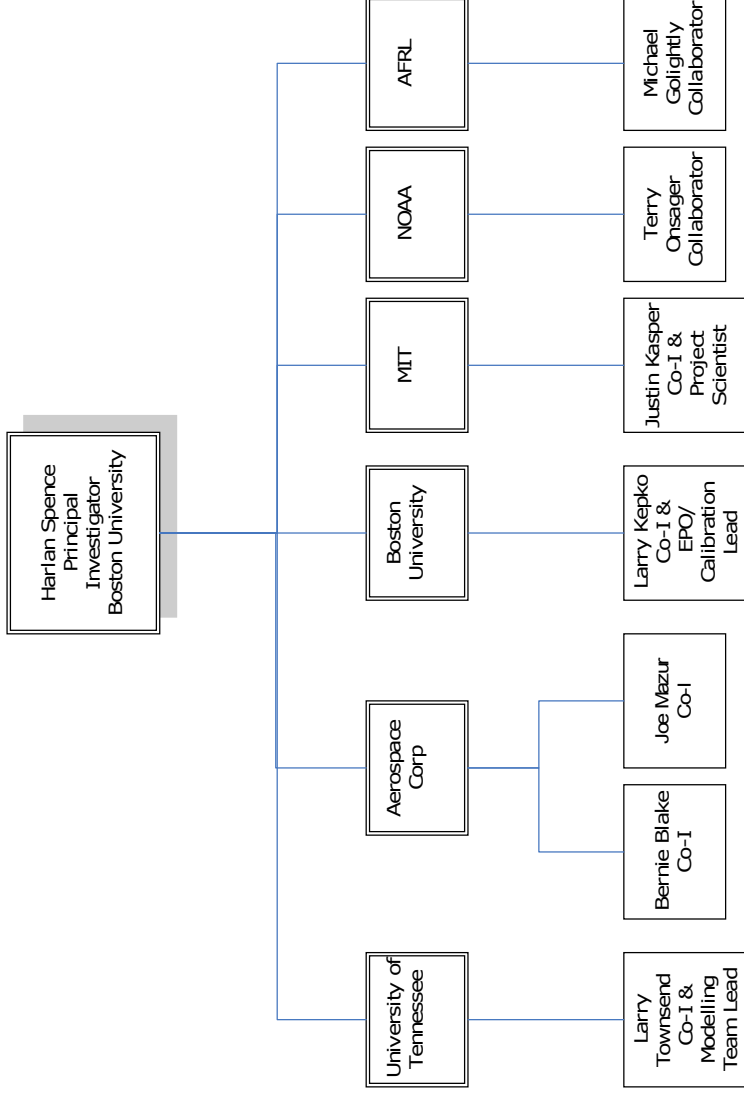


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CRaTER Project Science Team

Friday, June 17, 2005

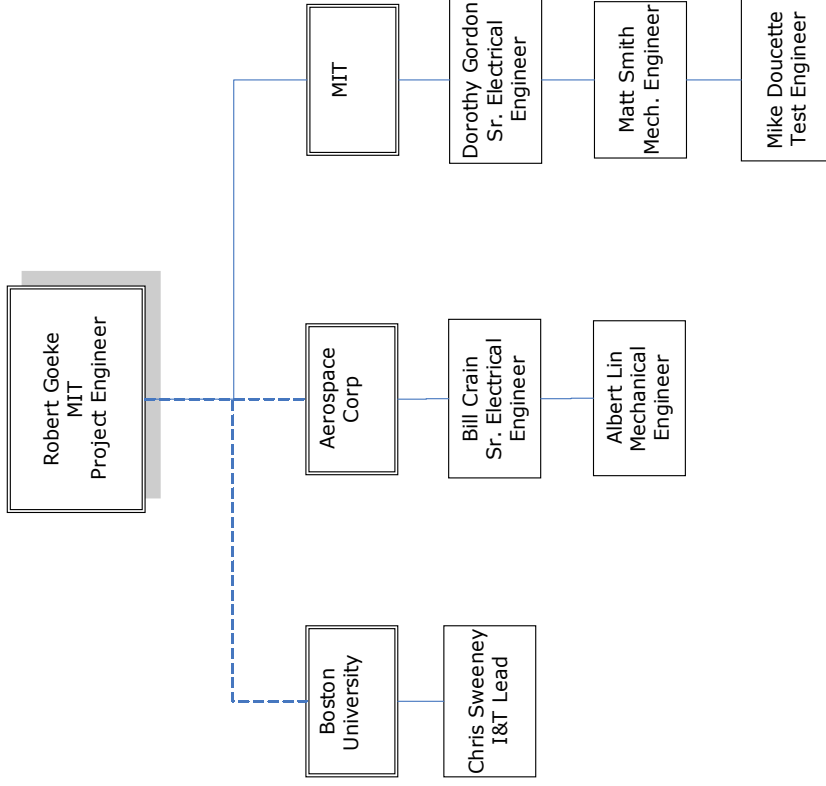


Cosmic RAY Telescope for the Effects of Radiation



CRaTER Project Engineering

Tuesday, September 06, 2005



Cosmic RAY Telescope for the Effects of Radiation



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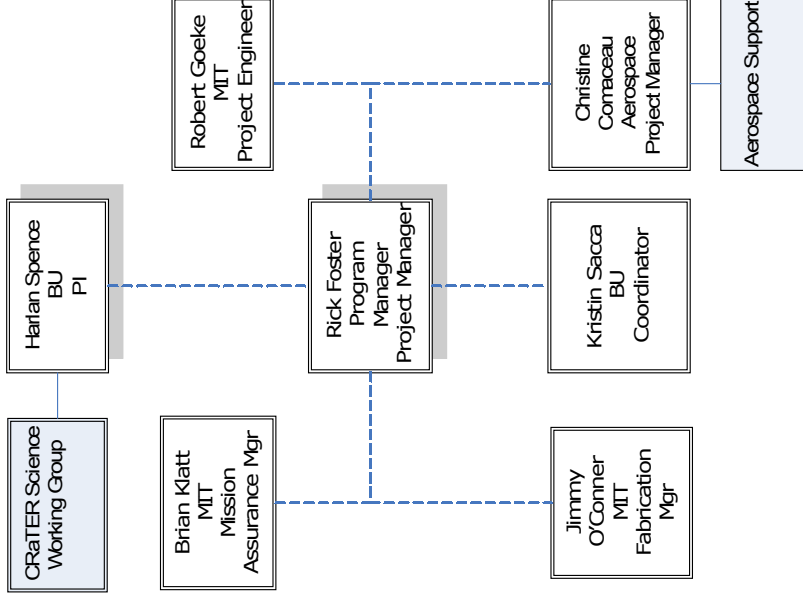


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CRaTER Instrument Management Team

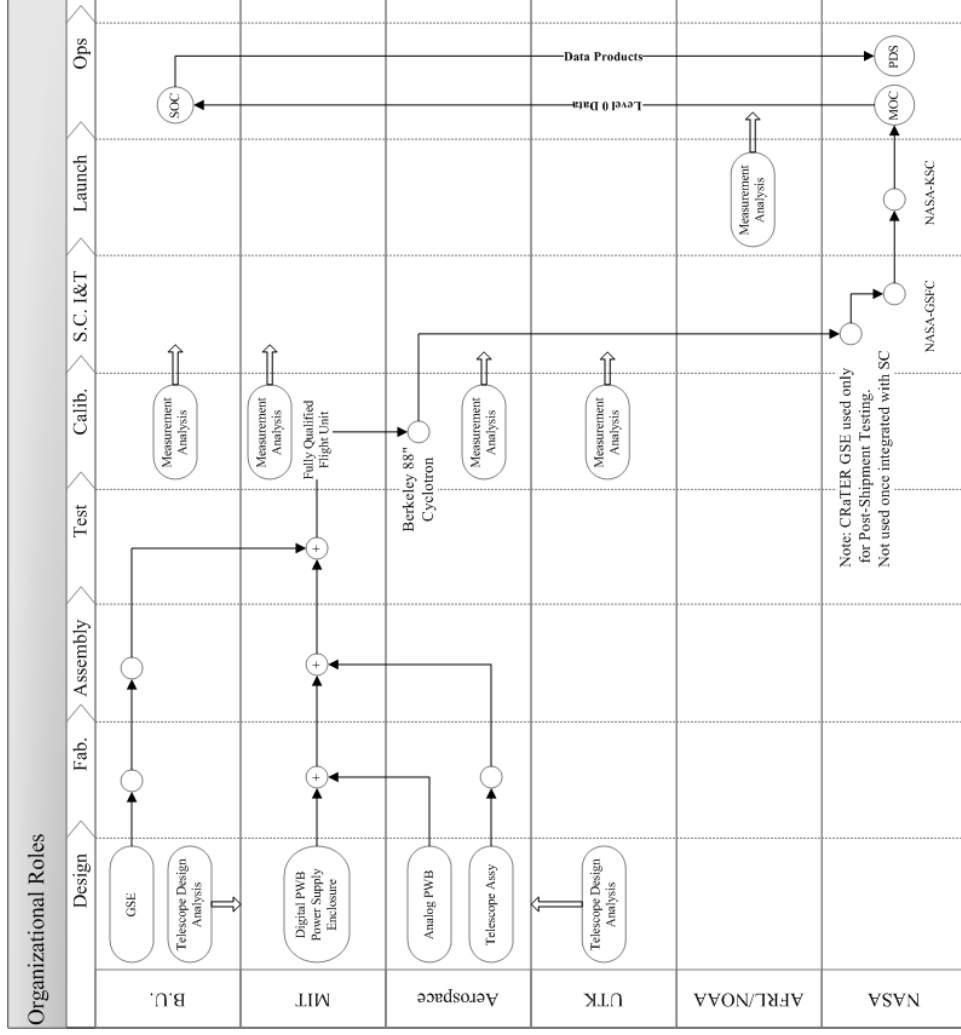
Friday, June 17, 2005



Cosmic RAY Telescope for the Effects of Radiation



General Organizational Roles in the Project



Cosmic RAY Telescope for the Effects of Radiation



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What are we building?

- Flight Model CRaTER Instrument (Deliverable to NASA)
 - Fully Qualified and Calibrated
- Flight Spare Instrument
 - Fully Qualified and Calibrated
 - The incremental costs associated with putting spare components together is minimal
 - CRaTER Project has only budgeted for a few spare detectors. Yield may be a factor
 - The science team will utilize the spare for instrument characterization at different particle accelerators, both pre and post launch to help develop SOC analysis tools. Using the spare reduces risk to the flight unit.
- Engineering Model Instrument
 - Fairly high fidelity model
 - Not Flyable
- Mass/CG Simulator
- Command & Data Handling Simulator
 - It may be possible that we will use the EM for this function, but still under review.
- M&E GSE for internal CRaTER project use
 - Will be used up thru post shipment testing at NASA-GSFC
- Various jigs and fixtures for instrument testing and calibration
- Shipping containers for instrument transportation

Cosmic **RAy** Telescope for the **E**ffects of **R**adiation



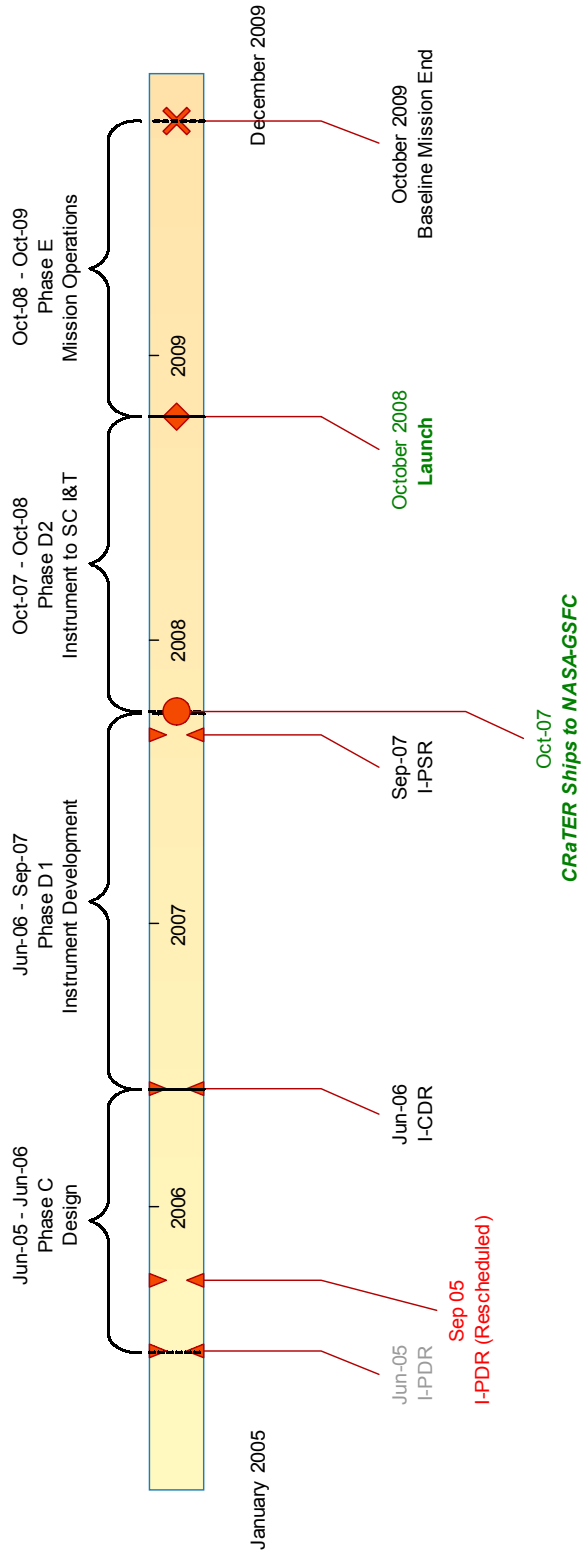
CRAaTER Project Schedule

- The CRAaTER Project Schedule tracks the NASA LRO Top Level Schedule
 - LRO schedule being used by CRAaTER currently at Rev 0.7
 - The CRAaTER Project Schedule Holy Grail
 - **A fully qualified & calibrated flight unit to NASA-GSFC by Oct 2007**
- Even with the some problems getting the project started, the schedule prognosis is *plausible*.
- After I-PDR, the next technical milestone will be the submittal of the of the Engineering Model detector technical specification to Micron Semiconductor for quotation and subsequent procurement.
 - Oct 2005
- Near I-PDR, the next programmatic milestones will be the issuance of a no cost extension to the Phase ABCbridge contract and then completion of the Phase CDE contract (extension)
 - Current estimation for the completion of the Phase CDE contract extension signoff is before the end of November 2005



LRO Master Schedule v0.7 – Instrument

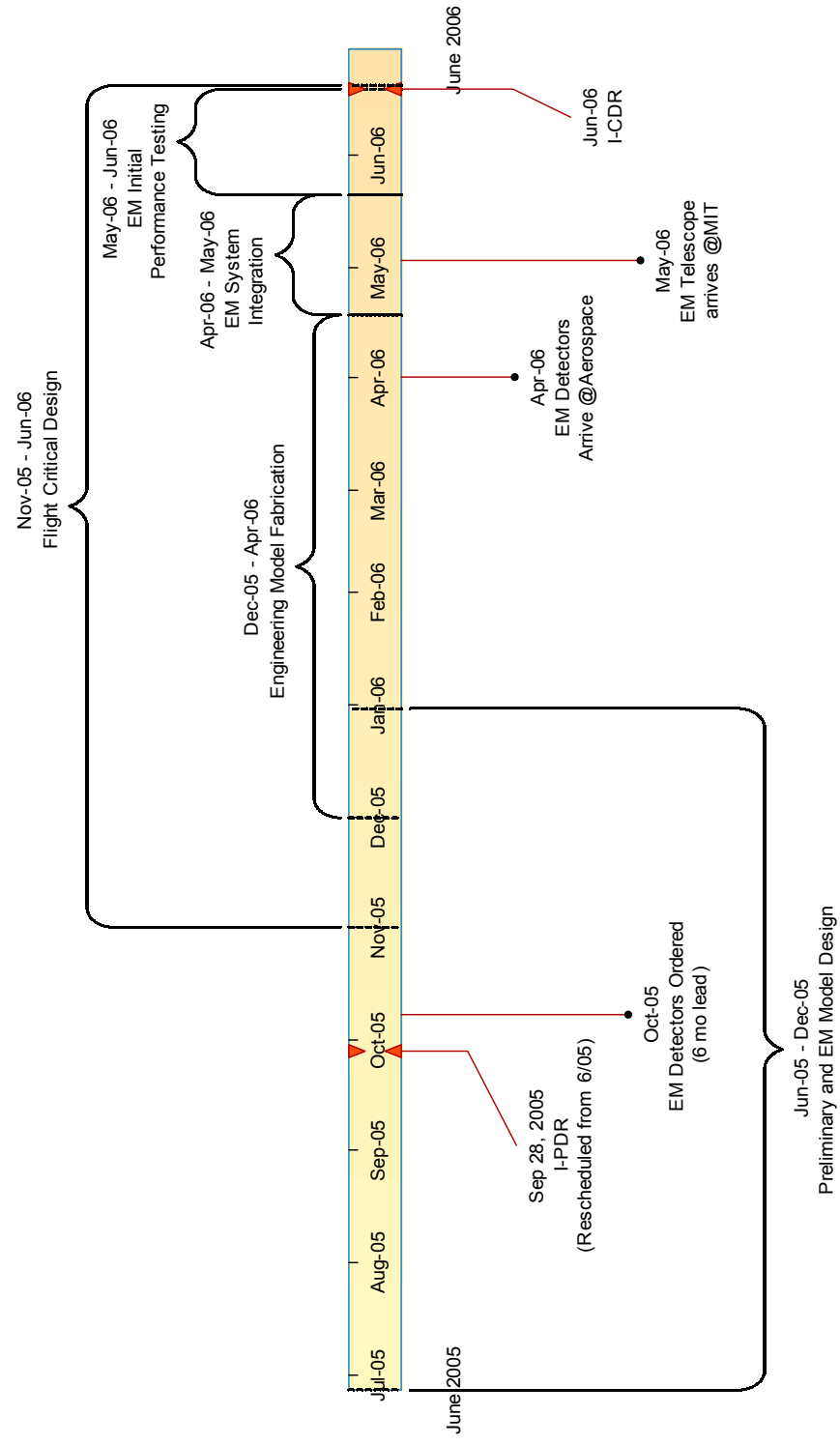
CRaTER Master Milestone Rev05.vsd





Phase C Milestones

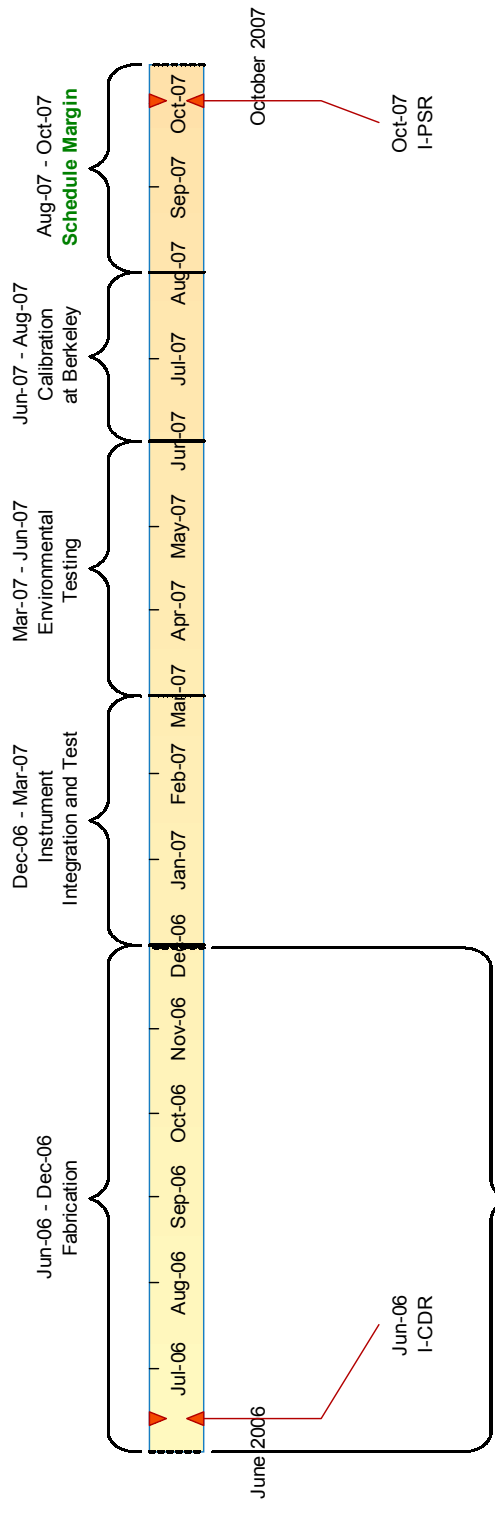
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Phase D1 Milestones

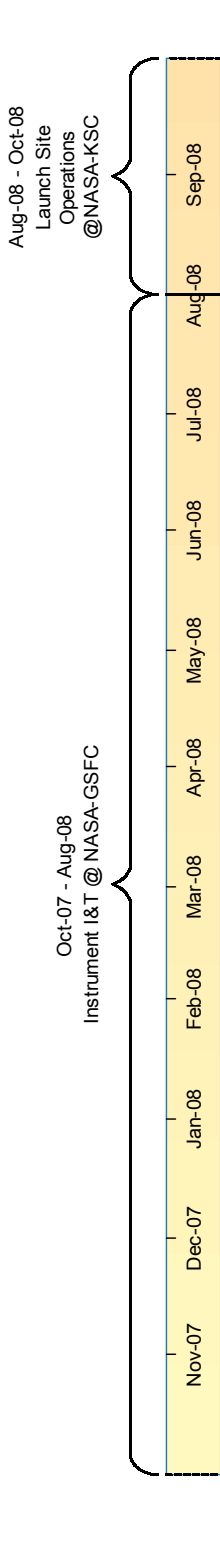
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Note: During the flight fabrication phase, significant beamline characterization by the Science team, of the Engineering Model Instrument will be occurring in parallel

Phase D2 Milestones

CRaTER Master Milestone Rev05.vsd



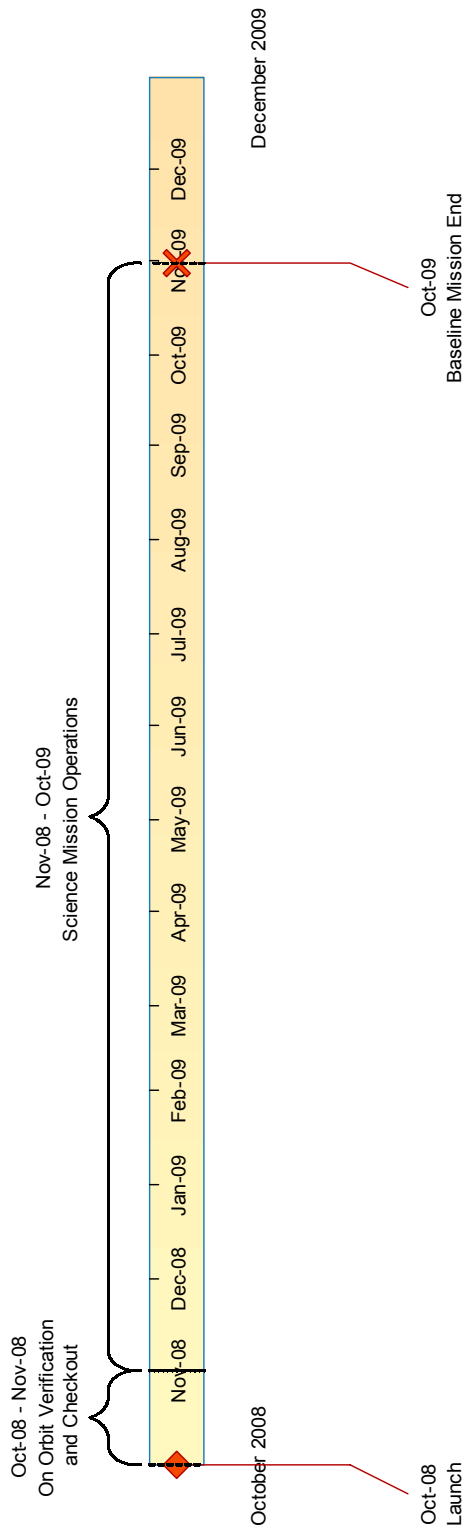
October 2007

October 2008



Phase E Milestones

CRaTER Master Milestone Rev05.vsd





Risk Management

- CRaTER Risk Management methodology detailed in CRaTER plan doc# 32-01202
- Classification of risk modeled on NASA methodology
 - Likelihood and impact assessment.
- At I-PDR, there is one green level identified risk.
 - The identified risk is the possibility of receiving the flight detectors and finding or developing problems with them during flight instrument I&T
 - These detectors are “made to order” and typically have a 6 month lead time.
 - 2 detectors have been beam tested already, two more on order
 - 6 detectors will have been test in the EM model prior to I-CDR
 - CRaTER Plans to build a flight and flight spare instrument

<i>High</i>				
<i>Significant</i>				
<i>Low</i>		1		
<i>Negligible</i>				
	<i>Negligible</i>	<i>Low</i>	<i>Significant</i>	<i>High</i>

Impact

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