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CRaTER Pre-Environmental Review (I-PER)

Risk Management
Rick Foster

September 10-11, 2008

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



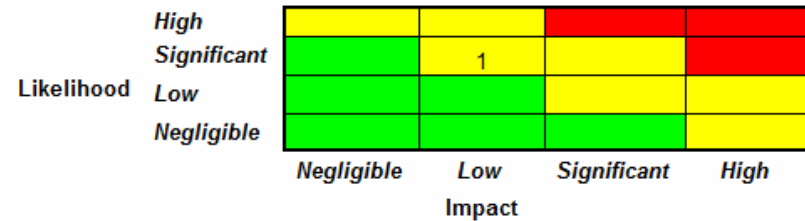
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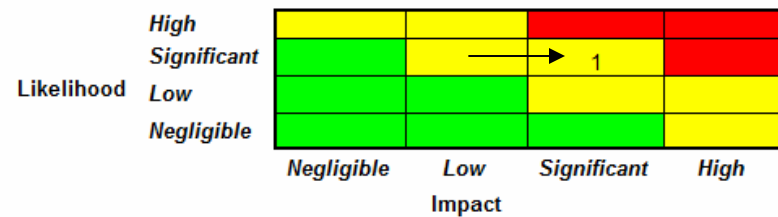
Detector Delivery Risk

- Delivery of flight qualified detectors in a timely manner from Micron has been flagged as a risk from the beginning of the program.
- By CDR, the most significant problem was the late delivery of the Engineering Model Detectors and a subsequent longer than expected packaging ECO for the flight detectors.
- By October 2006, the risk level was increased due to Micron being unable to commit to an accelerated schedule once the packaging issues were resolved. All schedule margin was utilized to meet instrument delivery of Oct07.
- Finally, the detectors delivery was slipped due to the discovery of expired date codes on the epoxy planned for bonding the silicon detectors to their PCB mounts. This was discovered before the detectors were mounted, but very close to the planned ship date.
- Detector delivery slip from Micron resulted in non-recoverable slip in CRaTER delivery to NASA-GSFC from Oct07 to Dec07.

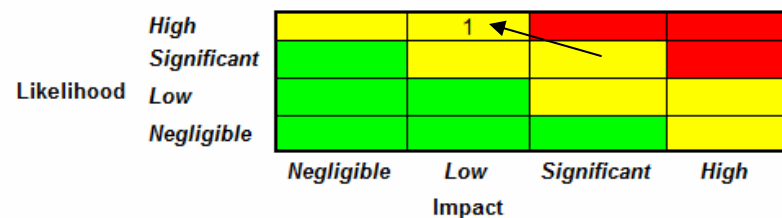
June 2006 (CDR)



October 2006



Sept 2007





Detector Delivery Risk (cont)

- Residual Risk
 - The late delivery of the flight detectors results in an ~2 month delivery slip of the CRaTER Flight Model to NASA-GSFC (High Likelihood/Significant Impact* Rating)
 - Dec07 delivery of CRaTER FM to NASA-GSFC coordinated with LRO Project Office
 - CRaTER Instrument Team costs of schedule slip covered out of CRaTER financial reserves.
- Remaining Mitigation
 - For a single detector level repair, there remains 4 flight spare detectors in CRaTER stock (2x140um and 2x1000um).
 - CRaTER Flight Spare Instrument still on track to be a fully qualified backup unit.
- Lessons Learned
 - Assure procurement spec is fully negotiated and the purchase order is placed with no less than a 6 month lead time for similar, already developed Micron detectors.
 - Remember, the Silicon is Micron's primary expertise, not necessarily flight packaging.
 - Assign someone to maintain constant contact with Micron. Do not assume they are going to meet their schedule or that you are the highest priority. They are a small company.

*One of the Significant Impact criteria is a schedule slip of 4-6 months to Spacecraft I&T per the CRaTER Risk Management Plan



Limited Life and Consumables Plan

- There are no limited life or consumables are utilized in the CRaTER Instrument Design