

Request For Action

LRO-CRATER-PDR-0001

Program:	
Project:	Lunar Reconnaissance Orbiter (LRO)
Element:	CRATER (CRATER)
Review:	Preliminary Design Review (PDR)
Date:	9/29/2005

Originator: -TBD-

Phone: 301-286-6459

Organization:

Category: -

Title: Peer Reviews

Action Requested: W. B. Keegan, Independent, 410-746-9503, briankeegan@comcast.net

Requested:

Implement a "peer review" activity within the CRaTER Project that complies with the spirit of the LRO requirement and assures assessment by subject matter experts from outside the CRaTER development team that can critique the design details both from a best-practice and a requirements compliance perspective.

Supporting Rationale: Assessment of the design by technically oriented peers from outside the immediate chain of responsibility is an invaluable aide to affirming design adequacy.

Project Response:

Comment:

Request For Action

LRO-CRATER-PDR-0002

Program:	
Project:	Lunar Reconnaissance Orbiter (LRO)
Element:	CRATER (CRATER)
Review:	Preliminary Design Review (PDR)
Date:	9/29/2005

Originator: -TBD-

Phone: 301-286-6459

Organization:

Category: -

Title: Thermal Design

Action Requested: W. B. Keegan, Independent, 410-746-9503, briankeegan@comcast.net

Requested:

Characterize anticipated performance of the detectors over temperature. Define a preferred operating temperature range of the detectors considering the need for satisfactory operation at qual temperatures which impose 10 degree C margins beyond operating temperature. Analyze performance of the preliminary thermal design to determine temperature variation within the instrument with a constant temperature at the spacecraft interface. Determine the needed temperature range within which the instrument base must be maintained by the spacecraft in order to maintain acceptable instrument performance. If necessary, re-negotiate the instrument thermal ICD.

Supporting Rationale: Anticipated instrument performance over temperature was not clearly articulated. As a result, the adequacy of the current instrument to spacecraft thermal ICD requirement could not be affirmed.

Project Response:

Comment:

Request For Action

LRO-CRATER-PDR-0003

Program:	
Project:	Lunar Reconnaissance Orbiter (LRO)
Element:	CRATER (CRATER)
Review:	Preliminary Design Review (PDR)
Date:	9/29/2005

Originator: -TBD-

Phone: 301-286-6459

Organization:

Category: -

Title: Assessment of Thermal Analysis Predictions

Action Requested: Ed Ashford, Ashford Aerospace Consulting, (919) 293-1301

Requested:

- 1) Define explicit numerical and measurable performance parameter requirements (e.g., resolution and accuracy) for the CRaTER Instrument, and the temperature sensitivity of these parameters. Also establish internal temperature limits for relevant internal positions within the instrument to ensure that critical components in the design remain within their established derating requirements. From these, establish allowable temperature range values for the instrument, taking into account both model prediction accuracy and required qualification temperature margins.
- 2) Considering the above, determine whether the spacecraft interface operating temperature range as now specified (on the spacecraft side of the interface) is acceptable to the Instrument, and if not, determine what interface temperature limits could be accepted.

Supporting Rationale: Without knowing these parameters explicitly, it is not possible to assess whether the temperatures predicted by the thermal analysis are or are not within acceptable limits.

Project Response:

Comment:

Request For Action

LRO-CRATER-PDR-0004

Program:	
Project:	Lunar Reconnaissance Orbiter (LRO)
Element:	CRATER (CRATER)
Review:	Preliminary Design Review (PDR)
Date:	9/29/2005

Originator: -TBD-

Phone: 301-286-6459

Organization:

Category: -

Title: Selective Redundancy

Action Requested: Ed Ashford, Ashford Aerospace Consulting, (919) 293-1301

Requested:

The CRaTER is listed as a "Class C with selected redundancy" instrument. No effort appears to have been taken so far, however, to consider including any degree of redundancy within the design. A proposal for incorporating such redundancy, however, can only be justified by an FMEA and reliability analysis which have so far not been done. Complete FMEA and comment on selected redundancy prior to PDR.

Supporting Rationale: Required to achieve the intent of the categorization of the CRaTER as a "Class C with limited redundancy" item.

Project Response:

Comment:

Request For Action

LRO-CRATER-PDR-0005

Program:	
Project:	Lunar Reconnaissance Orbiter (LRO)
Element:	CRATER (CRATER)
Review:	Preliminary Design Review (PDR)
Date:	9/29/2005

Originator: -TBD-

Phone: 301-286-6459

Organization:

Category: -

Title: CRaTER vibration analyses

Action Requested: Ed Ashford, Ashford Aerospace Consulting, (919) 293-1301

Requested:

Neither the resonant frequency analyses performed "on the back of an envelope" for elements of the E-box, nor that performed with a mathematical model for the telescope provided any estimate of potential inaccuracy. Assumptions made for each separate analysis use different values for Q (and possibly for other parameters?). It is recommended therefore that an integrated finite element analysis be performed.

Supporting Rationale: The confidence level of the present analysis is not, in my opinion, sufficient to justify not doing a composite analysis.

Project Response:

Comment: