



DCR / ECR Number:

HR-SP-RAL-ECR-008

Spacecraft / Project	Herschel-Planck	Originator's Name	JD
System / Experiment / Model	SPIRE	Signature	John Delderfield.
Sub-System	Instrument level I/F	Date	19th November 2001
Assembly		Classification	Urgent
Sub-Assembly		Ref. Doc. / Drwg No.	Spire IID-B 2/0
Item		Reference	SCI-PT-IIDB/SPIRE-02124

ECR Title	SPIRE IID-B UPDATE, #4 based on Jean Bruston's list. Largely a re-submission of information collated on 26 th September under pointsJD1-31, from even earlier information
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ECR Description			
Required SPIRE level 0 temperature.			
Need /Justification For "Change"			
<p>The IID-B versions as from early 2001, when the 2nd ESA thermal model guidelines were applied and the Spire thermal analysis was carried out in some detail, have considered Spire to work from 1.65K He based on the physics of the states of He and to effectively have a 1.7K sink accessible via a strap. Very early IID-Bs referred loosely to level 0 as being 2K. It's very debatable whether the difference is anything but semantics, but there is solid justification for Spire's level 0 temperature.</p> <p>Detailed thermal modelling has shown that the sorption cooler's efficiency is directly rated to the level 0 temperature. So both in terms of getting the best mission return from a given amount of He and in terms of operating on a 48hour cycle, the Spire thermal accommodation as presently stated is required. There is no excess margin w.r.t 48hour cycle operation, and performance would be better with even colder accommodation rather than warmer.</p> <p>It's a little interesting that this ECR may in fact only have been triggered because certain words in section 5.7.1 have been misconstrued as stating a definitive requirement. So the ECR also fixes this.</p>			
Affected Items / Work package (Title, Number, Issue, Para)			
Section 5.7.1	<p>The wording at the top of this section is meant to refer to a general description. To save people presuming otherwise by actually introducing incorrect corrections to the text, remove text from "The cryostat shall.....conduction to the HOB"</p> <p>Note: Nitty gritty I/F temperature are all in section 5.7.2.</p>		
Section 5.7.1.1	Add paragraph at end: " Mission lifetime is based around a nominal mean operating boil-off rate of 2.2mg/sec of He"		
INDUSTRY ASSESSMENT / IMPACT OF CHANGE			
System design			
Schedule			
Cost			
Industry Assessor Signature			
Related Factors			
Spacecraft	Performance	Power	Others (Specify)
Ground Segment	Elect. Interfaces	Weight	I/F
Launch Vehicle	Mech. Interfaces	Schedule	
Payload	Test/Verification	Cost	



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Attachments	Distribution
None	See covering Sheet

Change Approved		Signature / Date	
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