

STEREO CONFIGURATION CHANGE REQUEST

For Office	TITLE: Waiver to approve the use of Shin-Etsu adhesive for the manufacture of the LET/HET SSD's on IMPACT.		CLASS:		NUMBER:		
			I				
Use Only			II		DATE: 1/7/2003		
CONFIGURED ITEM:			ORIGINATOR:			PRIORITY:	
STS Number:		Payload: STEREO	Name: Lil Reichenthal		<input type="checkbox"/> Routine <input checked="" type="checkbox"/> Urgent <input type="checkbox"/> Emergency		
Component :		Experiment: IMPACT	Organization NASA/GSFC				
Component Part #:		Serial #:	Phone: 301-286-5634				
			Email: Lillian.S.Reichenthal@nas a.gov				
TYPE OF REQUEST:		RESPONSIBLE ORGANIZATION/INDIVIDUAL:		IMPACTS: (If yes attach additional pages)			
		Tycho VonRoseninge		COST:			
<input type="checkbox"/>	Configuration				Yes	<input checked="" type="checkbox"/>	No
<input type="checkbox"/>	Deviation #						
<input checked="" type="checkbox"/>	Waiver #						
<input type="checkbox"/>	Other:		SCHEDULE				
				Yes	<input checked="" type="checkbox"/>	No	
REASONS FOR CHANGE:				RETEST REQUIRED:			
<input type="checkbox"/>	Improvement	<input type="checkbox"/>	Test/Payload Failure	<input type="checkbox"/>	New Document:	<input checked="" type="checkbox"/> No	
<input type="checkbox"/>	Reliability	<input type="checkbox"/>	Specification Requirements	<input type="checkbox"/>	Other:	<input type="checkbox"/> Yes	
PROPOSED CHANGE (Attach additional pages as required):							
<p>We would like to request a waiver for use of Shin-Etsu adhesive KJR-9022E. This is used by Micron in the manufacture of the solid-state detectors for IMPACT/LET and HET on STEREO. This is not a NASA approved adhesive.</p>							
RATIONALE (Attach additional pages as required):							
<p>There are 3 reasons why a waiver should be acceptable. First of all, we use only very tiny amounts of this material to adhere each detector wafer to a narrow lip around the wafer periphery. Secondly, the maximum temperature that the finished detectors will be allowed to see is only 40 degrees C, well below the 175 degrees C that NASA normally requires for approval testing. And thirdly, the outgassing vents for HET and LET are pointed well away from where SECCHI is located. Finally, I will mention that the properties of this material are important to minimize detector leakage current and possible cracking of the detector wafers over the required range of temperature and vibration levels. It would be an expensive research project to find an alternate material.</p> <p>We have submitted an L1 detector from LET for an outgassing test by Fred Gross in the Materials Branch here at Goddard. This detector weighed 1.37502 g prior to being baked out at 40 degrees C in vacuum for a total of 90 hours. At the end of the first 10 hours the detector had lost 1 mg, after 30 hours it had lost 1.3 mg, and after 90 hours it had lost 1.65 mg. The initial rapid loss is predominantly due to outgassing of water absorbed by the G10 fiberepoxy detector mount. The 0.35 mg lost in the final 60 hours of the test is only 0.025% of the total detector mass. The proportion of the measured weight loss due to the Shin-Etsu adhesive is unknown.</p> <p>There will be 10 L1 type detectors in LET. The Shin-Etsu adhesive is a significantly smaller proportion of the mass of the other detectors than for the L1 detectors but the absolute amounts are larger. Based on an estimate of the volume of the Shin-Etsu adhesive in each detector, we expect the outgassing of the Shin-Etsu adhesive from the 10 L1 detectors to represent about 14% of that from all detectors.</p>							

DOCUMENTS/DRAWINGS AFFECTED (Document No./Title/Section) : n/a

AFFECTED (Check all that apply):

FLIGHT SYSTEMS:

<input type="checkbox"/>	Avionics
<input checked="" type="checkbox"/>	Experiment
<input type="checkbox"/>	Structures and Mechanical

<input type="checkbox"/>	Electrical and Cables
<input type="checkbox"/>	Software/Firmware
<input type="checkbox"/>	Other:

GROUND SYSTEMS:

<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>		Other:

REQUIRED APPROVAL DATE: _____

REQUIRED JUSTIFICATION:

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For Office Use Only	TITLE:		CLASS:		NUMBER:	
					I	
					II	DATE:
CONTRACT/AGREEMENT NUMBER EFFECTIVITY:						
<input checked="" type="checkbox"/>	STEREO NAS5-97271	IMPACT S-13635Y	PLASTIC NAS5-00132	SECCHI S-13631Y		
DOCUMENTS/DRAWINGS TO BE REVISED:						
Document/Drawing Number:		Document/Drawing Title:	Section(s) No.	EO No.:	Date Completed:	
PROCESSING APPROVAL:						
		CCB				
		Out of Board				
		Emergency	Systems Engineer			Date
CCB APPROVAL:						
CCB ACTION DATE:		CCB ACTION ITEMS/CONDITIONS:				
CLOSEOUT COMMENTS:				DATE OF CLOSEOUT:		
				CMO		