



MINUTES OF MEETING
(MoM)

Spacecraft/Project	SPIRE	Document No	SPIRE-RAL-MoM-001459		
Instrument/Model		Issue No / Rev		Page	Page 1 of 7
Subsystem	CRYOSTAT	Date	5 th Dec 2002		

Title / Subject	PRE Ship Review Cryostat	Chairman	
Meeting Place	Abingdon Scientific	Secretary	

Participants		Agenda
(Print Name)	(Signature Required)	
Beth Evens (AS)		Review of test results Vacuum Cool down Hold times Temperature gradients
Eric Sawyer. (RAL)		Open Work Delivery Plan Schedule Review of documentation
Mark Harmen . (RAL)		General description/diagrams of system - services/ fittings etc..
Dave Smith. (RAL)		Cool down procedure Our wiring diagrams Details of sensor locations Test report (s) Metalcraft quality docs Procedures for Transport Handling and Installation As built drawings List of configured drawings List and copies of any non conformances and waivers Lists of Open Work / Deferred Work / Open Tests Proof Load Certificates (for supports) Cleanliness Statement C of C Logbook
Eric Clark . (RAL)		AOB Close (Lunchtime)

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Additional Distribution	Attachments

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Action No	Title and Description	Action Responsibility	Action Deadline
Ai	<p>Test Results</p> <p>Vacuum Pump down overnight achieved 10^{-4} repeatable. Was stable at 2×10^{-6} millibars with Helium Leak Test 10^{-9} cold RAL will be using a bigger Pump .</p> <p>Cleanliness of vacuum chamber will be assessed by RAL before SPIRE is inserted RAL suggested a possible bakeout at 40°C for a week. There then followed some general discussion on bakeout. AS would like RAL to duplicate their tests without baking out since there is a risk of damage to sensitive components.</p> <p>Cool Down 300K to 100K achieved in less than 5 hours. 4K pot (0.5 tank) took 4hours to cool (with liquid He) with LN2 pre-cool. LN2 boil off was achieved using 2 cartridge heaters running off shared 40V power supply (20W each).</p> <p>Beth to collate Data and forward to RAL</p> <p>Some discussion on purity of helium (not Balloon gas)</p>	Beth Evens	

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A2	<p>Hold Times With Nitrogen > 100hrs: -with full tank? Beth to Check</p> <p>Helium 0.5litres per hour with heaters off Shield at 48K To keep shield cold at 14K a gas boil off rate of 24ml/min is required. This is equivalent to a liquid usage of 2L/Hour. This will give a hold time of just under 48hrs. Readings taken periodically, less than Half full not considering Pot With needle valve open, 1.7K was being maintained. There was then some discussion on temperature control</p> <p>Temperature Gradients Requirement is less than 70mk/Hr on 4K pot 10mk/hr over several hours observed, Noise from sensors was giving problems with readings, AS not completely happy with box calibration. Switching to resistance measure gave more stable results. RAL may consider setting Lake shore readout to resistance and do calculations in software to convert results 4.2K strap Stability sensor not plugged in all the time but found to be steady every time it was checked. Gradient on the 15K shield was found to be consistent within 1K i.e.14K at each end of cap and window, this is well within spec.</p>	Beth	

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A3	The Cryostat is now warming up AS want to check all connectors as there is some concern over the fit of the high density 62pin D type connectors used, Not thought to be a problem as the connectors are mounted in brackets AS just want to be sure.	AS	
A4	Possible fault with one cernox sensor suspect Damaged wire. AS to clean and check inside and out and want to check the capillaries A heater has been fitted to the capillaries and is connected to spare wires in the cryostat, additional leads have been added external to the cryostat that are not part of the RAL supplied Harness. OPEN Work Warm up by Monday AS to open Cryostat and check wiring etc, Open work should be completed by Tuesday/ Cryostat cleaned Thursday and packed ready for delivery Friday morning 9 th Dec 02. As will accompany cryostat to RAL and assist / advice with the installation into the clean room and unpacking etc.	AS	

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	<p>Documentation Some discussion regarding the Operation Manual</p>		
A5	Wiring diagrams RAL to email there copy to Beth	Dave Smith	
A6	AS to Sketch wiring Layout	Beth Evans	
	Sensor Locations are on the AS ECAD		
	<p>Test Reports To include present tests (may be Metalcraft) summary of each test Metalcraft QA documents briefly checked by DS OK As built drawings will be included in Data pack List of Configured documents will be included in Data pack</p>		
A7	NCR on Flange to be raised Eric Clark to provide Blank RAL NCR form for use or guidance as appropriate	Beth Evans	
A8	AS to provide a Check list for Packing removal etc	Beth Evans	
	Proof load certificates will be included in data pack each foot was loaded to 100Kg with no problems.		

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A9	<p>Cryostat will be cleaned by Hydroblast and a cleanliness certificate will be supplied. Certificate of Conformance and copy of logbooks (original will be retained by AS) will be supplied</p> <p>Where possible certificate relating to peoples training i.e. welding etc will be supplied</p> <p>A Diode was broken and replaced by AS from RAL spares, Some debate followed regarding AS purchasing a replacement TBD</p> <p>TEST RESULTS Hold Time Required Hold times With everything off—72 hours Running-----48 hours</p> <p>This had not been fully demonstrated by AS. This test will be repeated at RAL as part of the commissioning trials</p> <p>Some discussion on the shield temp it has always been 9K Project to decide if Test Results are acceptable.</p>	Dave Smith / Beth Evans	