

PROJECT: SPIRE	MINUTES OF MEETING	SPIRE-RAL-MOM-001360 Date: 03-Sep-2002 No. of Sheets: 8
Subject: SPIRE Optical Alignment Meeting 3rd September 2002		
Meeting Place: RAL Date/Time: 03-September-2002 09:00 – 16:00 Agenda Dated:	Chairman: D.L.Smith Secretary: Close of Meeting: 16:00	
PARTICIPANTS		ADDITIONAL DISTRIBUTION
Dave Smith (RAL) Berend Winter (MSSL) Kjetil Dohlen (LAM) Alain Origne (LAM) Marc Ferlet (RAL) Chris Brockley Blatt (MSSL) Yann Alanou (LAM) John Coker (MSSL)	Eric Sawyer (RAL - part time) Bruce Swinyard (RAL - SCAL discussion only)	M.R. Harman

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Action / Comment Number	Short Title	Action (A), Recommendation (R), Decision (D), Observation (O)	Action / Ref. with:	Action Deadline
	Agenda	09:00 Visit of RAL facilities 10:00 Review of Alignment Sequence and Tools Run through of alignment sequence highlighting any changes to baseline plan Identify problem areas Definition and development of alignment tools 12:30 Lunch 13:30 Continuation of alignment discussion 15:00 AOB Identification of problem areas not related to alignment SCAL Baffle and the cube Anything else specific 16:15 Depart		
	Alignment Sequence	Kjetil presented a run through of alignment sequence 2K box in alignment jig – box into instrument with top lid off, align mirrors as main box – could be done if detectors not in place – box is not stiff until lid is on. Cold bus will be in detector bus which will prevent opening box. Only 1 photometer D-tool – focussing measurements will be done using long wavelength detector. D-tool will be moved to other detector positions to find centres (not focus). Needs to be done at RAL because of space, if 2K box alignment is to be done with optical bench.		

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		<p>2K optical bench alignment will be done on main optical bench at RAL supported by MSSL. Thermal bus bar will be integrated at RAL after internal alignment. Step 1 of alignment sequence is therefore not needed since thermal bus bars will not be present. Steps 1.3 to 1.7 now move to step 3.4 as part of main optical alignment procedure.</p> <p>Distortion of optical benches from successive removal of covers needs to be measured – possibly during 3D metrology. Needs to be done before installation of mirrors. Detector box installed.</p> <p>Detector boxes will be assembled without thermal bus bars and installed by MSSL onto main optical bench with covers on.</p> <p>LAM propose aligning directly wrt. to HOR rather than first calibrating the SOR wrt. to the HOR. Need a HOB simulator mounted to instrument feet with instrument optical bench. Alain described proposed HOB simulator-2. Concern was raised about the stability of the alignment after removing the HOB plate and the risk to the instrument feet. Another suggestion was to mount an adjustable optical reference in the place of the SOR. The SOR would be aligned wrt the HOR on the main HOB simulator and adjusted to be aligned with the centre of M2. The rest of the optical alignment would then be done wrt to the SOR.</p> <p>SOR would require kinematic mounts for 6 degrees of freedom.</p>		

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A-01	MSSL MGSE Specification	<p>Rotisserie may be locked into position by taper pin, although position is not absolute. Stability required is a few arcseconds. Changes in alignment could be monitored by second MAT on the SOR.</p> <p>Risk of not performing alignment – if it doesn't work then it would need alignment. Need to verify that alignment is not affected by integration activities. Hence alignment needs to be verified during initial optical integration.</p> <p>MSSL to check changes needed to meet new MGSE requirements to enable optical alignment verification.</p>	MSSL	20-Sep-2002
A-02	MGSE requirements	<p>LAM to provide specification of all requirements for rotisserie and HOB simulator applicable to optical alignment</p> <p>MSSL provided LAM with latest version of interface drawing (issue 16).</p>	LAM	13-Sep-2002
A-03	HOB Alignment Plate	<p>LAM to review interface drawings and propose design for HOB alignment plate</p> <p>Height of optical bench debated. Needs to be similar height to telescope simulator optical benches because of size of LAM alignment tools.</p>	LAM	13-Sep-2002

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A-04	Optical Bench height	LAM to specify height of optical bench needed for integration.	LAM	13-Sep-2002
A-05	Cryostat alignment configuration	<p>LAM to propose new set-up of alignment tools in cryolab for cold alignment.</p> <p>Optical benches for integration to be discussed offline between LAM and RAL.</p> <p>Apex tools for 3D metrology are being retained. In order for measurements to be used they need to be compared with data in configuration file. With information from metrology Kjetil can calculate impact on optical alignment.</p>	LAM	13-Sep-2002
A-06	Metrology data	<p>Kjetil to specify content and format of data from 3D metrology measurements</p> <p>Alignment tools are in various stages of progress. Some have been completed while others are still to be finalised.</p> <p>M2-tool has been produced.</p> <p>Pupil quality verification – cold stop alignment. Some modification to procedure required. First part done during integration and then completed after integration.</p>	LAM	13-Sep-2002

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		<p>Image position stability test – no longer applicable since visible access to inside during cryostat is required.</p> <p>Photometer 2K box detector integration – no longer applicable. Refer to Bruce’s procedure (e-mail August ? 2002).</p> <p>Spectrometer detectors – D tool for each position to identify position of detector array.</p> <p>Final integration will now include integration of thermal bus bars.</p> <p>Spirit level to ensure that SOB is level wrt to MAT. This adds a requirement to be able to adjust rotisserie.</p>			
	Schedule	<p>Alignment to start end October depending on delivery of structure parts.</p> <p>3D metrology end October Integration and alignment – November Cold optical alignment mid December.</p> <p>Additional requirements have put emphasis on MGSE. Need requirements by end of next week 13th September.</p> <p>3D metrology requirements required by 13th September</p> <p>Alignment sequence to be tidied up and available by 13th September.</p>			

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		<p>Alignment tools required beginning November</p> <p>Mirrors delivered to RAL mid October at earliest.</p> <p>STM optical dummies required mid October.</p>		
	<p>AOB</p> <p>Problem areas</p>	<p>Even if all requirements are in, realistically MGSE work will not be started until October at the earliest due to other commitments. Need to take MGSE off critical path.</p>		
	SCAL box	<p>Ideally would prefer to have inside of box coated in black but not practical. MSSL propose baffle but current design would not reduce stray light efficiently.</p> <p>Need design to minimise stray light and keep mass down. Coating all inside of box would increase mass by 0.5kg.</p> <p>Pete and Berend to revisit internal snout concept</p>		
	Date of Next Meeting	<p>Depending on requirements for MGSE we should meet on 1st October (TBC).</p>		

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	<p>Action Items Raised</p>				
A-01	MSSL MGSE Specification	MSSL to check changes needed to meet new MGSE requirements to enable optical alignment verification.	MSSL	20-Sep-2002	
A-02	MGSE requirements	LAM to provide specification of all requirements for rotisserie and HOB simulator applicable to optical alignment	LAM	13-Sep-2002	
A-03	HOB Alignment Plate	LAM to review interface drawings and propose design for HOB alignment plate	LAM	13-Sep-2002	
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