SPIRE (ATC)	Monthly Report – Jan 2003	Date:	27.Jan.03

Work Package: BSM **SPIRE-ATC-REP-001789**

1. Subsystem Progress Since Project Inception

Baseline design accepted at Delta-PDR, including digital electronics control by MCU. CPP parts requested. Single axis prototyping complete. DDR held. 2 axis prototype tests complete. IBDR complete. **Development Model testing**

2. Subsystem Progress This Month

DM-2 re-build with Tayco flexitapes completed. 4K cryostat tests started, characterising basic performance. Date for vibration shake at RAL agreed, vibration level revised and interface plates in work..

3. Problem Areas	Remedial Action
❑ Full checks on repeatability/linearity in dewar to be achieved	❑ Complete except cold linearity on chop.
❑ Magnetic cross coupling	❑ Detailed investigation underway.
❑ Cold spring stiffness exceeds motor torque capability	❑ Could reduce motor air gap or change pivots.
❑ Appears LAM design has the redundant motor shorted when the launch latch is opened. The BSM cannot meet specification at all if this happens.	❑ Investigate, resolve.

4. Engineering Activities

Fitted and tested Tayco flexi-tapes. 4K cold tests started. Control loops closed, cold motor torque constants, accuracy, repeatability and linearity tests performed and all look good (a test setup problem still hinders the measurement of chop linearity). Problem with cross talk between jiggle and chop remains - a crude mumetal screen does not help - will try Niobium at 4K after vibration shake. Spring stiffness higher than expected and actually exceeds motor power capability in jiggle : power budget is thus closer to 5mW than 4mW at extreme angles of chop but this is encouraging after only 1 week of tests and optimisation. We have some margin to reduce air gaps which will help both overcome stiffness and reduce power .

5. Design Changes

Minor design changes at flexi-tape mounting area. Added clearance hole to structure for cold-shake accelerometer (a useful feature we will retain in flight design). Reviewing drawing call out for surface finish on mirror to comply with SSSD. LAM launch latch design received for comment: looks OK though we would make a minor clamping change to accommodate wiring.

6. PA/QA Activities

Update to the BSM SSSD complete pending only internal checking and telemetry specs. Niobium is now being considered for screening (already on the BSM declared materials list). Have select pivots for up-screen and started manufacture of an interface cube for cold shake.

7. Subsystem Management Issues

Project schedule revised to ensure that deliverable models can still be released on time, though still looking at option to eliminate QM as a cost saving exercise. The proposal that ESA procure the BSM directly is being negotiated by PPARC/ATC. Magnetic modelling to resolve cross talk/ power would be very helpful but we do not have resources to fund this.

8. Actions Requiring Immediate Attention

MSSL (CBB) to advise screw torques for PFTE loaded apeizon grease CBB …. Ongoing
ATC (TAP) to close out ICD with MSSL … ongoing but no tangible progress.
RAL (DG/BMS) advise tolerance requirement on PCAL hole and jiggle axis
LAM/ATC (DF/BS) resolve motor damping 'show stopper'

9. Status of Previous Actions

SW11MAR02.02 IP Place contract for Zeiss motors … ongoing. 'new proposal' being prepared by Zeiss.
ATC (IP) to confirm cold shake date for DM-2 … Confirmed for w.b 3rd Feb

10. Activities Yet to be Achieved

BSM SSSD update, BSM ICD update (launch latch, structure, MCU). Sign off of ATC PA plan.
Improvements to the drawing configuration data base are being made but not completed.

11. Milestones

Milestone	Status			
	Baseline	Scheduled	Actual	Change
20K test dewar available	N/A	Nov.02	Dec02	+1month
Integrate DM 2 at LAM	30 Mar 01	???		
DM release for manufacture	Oct.01	Nov.01	Dec.01	
DM-2 release for manufacture	N/A	Apr.02	Apr.02	
2 axis prototyping at ATC complete	N/A	Mar.02	Apr.02	
SPIRE IBDR	N/A	Mar.02	Mar.02	
DM-2 tests complete	30.Apr 02	21.Mar.03		
BSM STM del'y to RAL	01 Feb 00	5.Nov 02	5.Nov 02	

BSM CQM delivery to LAM	Jul.02	Mar03 TBC		
BSM CQM del'y to RAL	13 Mar 02	26.May.03		
BSM QM tests complete (flight design valid)	25.Apr.03	15.Aug.03		
BSM PFM delivery to LAM	03.Jun 03	15.Aug.03		