

UK Astronomy Technology Centre

Monthly Project Report

SPIRE-ATC-REP-000599

Project: SPIRE

January 2001

Author: IP

1. Summary

A programme review by RAL/PPARC provided constructive criticism, confirming that ATC will need to expand our plans for qualification model tests of the BSM in parallel to the CQM. Additionally, a launch lock (deployable end stop) mechanism will need to be designed in as a baseline, and tested accordingly as the long lead time for space rated flex pivots would provide no margin in the event of failures on vibration tests. The CDL systems design (currently 4-5 months late) was reviewed and will not be advanced as an alternative flight design except in a last gasp scenario.

Single axis lab prototype commissioned using the PACS chopper motor, and both open and closed loop control achieved using the D-space hardware simulation and representative ISOPHOT style sensors. This was a substantial milestone in recovery of the ATC schedule. Electronics diagrams were exchanged with LAM. Further work on motor characterization is needed to confirm servo loop parameters, but the ESA common parts procurement will proceed now on the basis of data provided to date. Mounting of PACS motors looks possible without increasing mass, and a foul between the baffle and motors can probably now be avoided.

Having reviewed the LWS Dewar and assessed problems in fitting this into the small SPIRE lab we have opted to discontinue this line of approach. A small wet dewar will be used in the short term for some limited tests and K.Wilson has started to commission this. However, for full life testing of DM and QM (up to 4 months cold continuously) will definitely require a 4K dewar with an extended hold time. Purchase of a suitable dewar with WFL funds will be requested.

SOFT Analysis

Successes:

MPIA motors integrated into single axis prototype. Chopping under closed loop control achieved (warm).

Opportunities:

PPARC funded ESA QA training offered via Ray Carvell

Failures:

Threats:

Dewar required.

Status of Project Milestones - as at 02.Feb.01

Baseline Agreed Milestone	Baseline	Scheduled	Actual	Change
Report on sensor stability to LAM	07 Jul '00	07 Feb '01		+1 month
Prototype Detail design release	24 Jan '01	09 Feb '01		+1 month
Update ICD structure	24 Oct '00	13 Feb '01		+1 month
Authorize WFL funding for dewar	NA	12 Feb '01		New
WFL dewar available	NA	27 Aug '01		New
Deliver draft Analog Brd Design Doc to LAM	14 Aug '00	25 Dec '00	Jan.01	
Select motors	30 Jan '01	22 Feb '01		+1 month
Deliver ICD WE to LAM	11 Aug '00	06 Feb '01		+1 month
Analog Brd Detailed design to LAM	26 Sep '00	23 Mar '01		
Deliver refined Simulink Model to LAM	14 Aug '00	18 Dec '00?		
Deliver d-space controller to LAM	31 Jan '01	08 Feb '01		
SMEC/BSM detailed design review (Descoped to programme review).	31 Jan 01	31 Jan '01	27 Jan '01	
Deliver Prototype (in place of DM 2) to LAM	30 Mar 01	06 Jun '01		
Detailed Design reviewR	30 Jan '01	04 Jul '01		

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DM tests complete		22 Mar '02		
BSM STM del'y to RAL	01 Feb 00	01 Jul '02		(AIV change)
BSM CQM del'y to RAL	13 Mar 02	Under review		(AIV change)