

# SPIRE

**SUBJECT: SPIRE Major Milestone List**

**PREPARED BY: K.J. King**

**DOCUMENT No: SPIRE-RAL-PRJ-000455**

**ISSUE: 1.2 Draft 2**

**Date: 12<sup>th</sup> April 2001**

**CHECKED BY: .....**

**Date: .....**

**APPROVED BY: .....**

**Date: .....**

## Distribution

Instrument Development Manager

Local Project managers

## Change Record

ISSUE	DATE	
Issue 1.0	17 <sup>th</sup> July 2000	Initial Issue for Delta PDR
Issue 1.1 (Draft1)	2 <sup>nd</sup> August 2000	Includes milestones for revised model philosophy
Issue 1.2 Draft1	25 <sup>th</sup> February 2001	Updated Milestones following MSSL delivery schedule
Issue 1.2 Draft 2	12 <sup>th</sup> April 2001	Updated following consolidation of Subsystem Schedules

## Glossary

AVM	Avionics Model
BDA	Bolometer Detector Array(s)
BSM	Beam Steering Mirror
CQM	Cryogenic Qualification Model
DM	Development Model
DPU	Digital Processing Unit
DRCU	Detector Readout and Control Unit
EGSE	Electrical Ground Support Equipment
FS	Flight Spare (Model)
FTB	FET Box
FPU	Focal Plane Unit
MCU	Mechanisms Control Unit
OGSE	Optical Ground Support Equipment
PCAL	Photometer Calibrator
PFM	Proto-Flight Model
QM	Qualification Model
SCAL	Spectrometer Calibrator
SMEC	Spectrometer MECHANISM
SPIRE	Spectral and Photometric Imaging REceiver
STM	Structural Thermal Model
TBD	To Be Determined
WE	Warm Electronics
WIH	Warm Interconnect Harness

## References

### **1. INTRODUCTION**

This document provides a list of the Major SPIRE milestones. This includes all delivery dates to ESA, all internal review dates and all delivery dates between SPIRE Responsible Organisations.

Once agreed this document will be the controlling document for the SPIRE instrument schedule and will be updated in line with agreed changes to the schedule.

#### **1.1 Applicable Documents**

#### **1.2 Reference Documents**

- RD1 Structure Subsystem Development Plan (SPIRE-MSS-PRJ-000426) Issue 1.2
- RD2 SPIRE Mirrors and Alignment Tools Development Plan (LAM.PJT.SPI.not.20000603 IND 3)
- RD3 SPIRE BSM Development Plan (SPIRE-ATC-PRJ-003) v 4.0
- RD4 JPL Receivables/Deliverables List 23/02/01
- RD5 Filters Subsystem Development Plan (SPIRE-QMW-PRJ-000453) 11 Jan 2001
- RD6 Calibrators Subsystem Development Plan (SPIRE-QMW-PRJ-000453) 12 Jan 2001
- RD7 Spectrometer Mirror Mechanism Subsystem Development Plan (LAM.PJT.SPI.NOT.200001 IND 9)
- RD8 SPIRE and PACS Sorption Cooler Development Plan (SPIRE-SBT-PRJ-000468) Issue 2.1
- RD9 SPIRE Shutter Development Plan (SPIRE-USK-DOC-000001) Draft 0.2
- RD10 DPU/ICU Subsystem Development Plan (IFSI/ICU/PL/2000-001) Issue 1.2
- RD11 Detector Readout Control Unit and Warm Interconnect Harness Development Plan (Sap-SPIRE-JLA-xxxx-00) Issue 2.0, 15 Dec 2001
- RD12 CEA Product Tree (Sap-SPIRE-JLA-xxxx-00) Issue 1.0, 14 Dec 2001
- RD13 Development Plan for the DRCU Simulator (SO-2000-12-21)
- RD14 SPIRE AIV Facilities Development Plan (SPIRE-RAL-PRJ-000477) Issue 1.0

## MILESTONES

### 1.3 Development programme

Milestone	Responsible	Need Date	Planned Date	Margin (days)	Comments
<b>Detector Array Selection</b>	<b>SPIRE</b>		<b>01/02/00</b>		<b>Complete</b>
<b>Delta PDR</b>	<b>SPIRE</b>		<b>26/06/00</b>		<b>Complete</b>
BSM Simulink Model Delivery to LAM	ATC	11/08/00			Complete
BSM Analogue Board Design Delivery to LAM	ATC	11/08/00			Complete
<b>Instrument Interface Review</b>	<b>SPIRE</b>		<b>30/11/00</b>		<b>Complete</b>
<b>ISVR</b>	<b>ESA</b>		<b>30/11/00</b>		<b>Complete</b>
BSM Analogue Board Detailed Design Delivery to LAM	ATC	01/01/01			Complete
<b>IIDR</b>	<b>ESA</b>		<b>23/04/01</b>		
<b>SMEC, BSM Detailed Design Review</b>	<b>SPIRE</b>	<b>31/01/01</b>	<b>May 01</b>		
<b>Structure, Optics, Cooler Detailed Design Review</b>	<b>SPIRE</b>	<b>19/03/01</b>	<b>May 01</b>		
EGSE#1 Delivery to IFSI	RAL	01/06/01	01/05/01	1 month	
DRCU Simulator#1 Delivery to IFSI	SO	01/06/01	01/06/01		(21/12/00) SO-2000-12-21, margin TBD
<b>BDAs Detailed Design Review</b>	<b>SPIRE</b>		<b>18/06/01</b>		
SMECm Simulator Delivery to Sap	LAM	09/07/01			
<b>IBDR</b>	<b>ESA</b>		<b>Nov 01</b>		

## 1.4 STM Programme

Milestone	Responsible	Need Date	Planned Date	Margin	Comments
Test Facility Available	RAL	16/08/02	30/06/02	1.5 months	(10/04/01) Issue 3 Rev 0
CQM Structure and MGSE Delivery to RAL	MSSL	01/07/02	27/06/02	4 days	(19/03/01) Issue 1.2
CQM Thermal Straps Delivery to RAL	MSSL	01/07/02	27/06/02	4 days	(19/03/01) Issue 1.2
CQM Mirrors + OGSE Delivery to RAL	LAM	01/07/02	01/07/02	40 days	(30/03/01) v20010330
STM Filters, Dichroics, Beamsplitters and OGSE Delivery to RAL	QMW	01/07/02	21/11/01	7 months	Status Report March 01
STM BSMm Delivery to RAL	ATC	01/07/02	01/07/02		(08/04/01) V 4.0, margin TBD
CQM BSMm Harness Delivery to RAL	ATC	01/07/02	01/07/02		(08/04/01) V 4.0 Agreed in email 23/02/01, margin TBD
Optical Dummy SMECM Delivery to RAL	LAM	01/07/02	01/07/02	5.5 months	(30/03/01) v20010330 - CCA tools
FOB Simulator Available	RAL	01/07/02	27/07/01	11 months	Dev. Plan & Schedule Issue 3 Rev 0 - 'Support Frame'
STM Cooler Delivery to RAL	Grenoble	01/08/02	22/02/02	5 months	Dev. Plan (SBT/CT/2000-19 Issue 2 Rev 1)
CQM Cooler Harness Delivery to RAL	Sap	01/08/02			(15/12/00) Issue 2.0 Identified in Product Tree, but not in schedule
STM BDAs Delivery to RAL	JPL	01/08/02	01/04/02	4 months	Rec/Del List (23/02/01)
CQM BDAs Harness Delivery to RAL	JPL	01/08/02	01/10/02		Rec/Del List (23/02/01) Agreed at teleconf 23/02/01 - date/margin TBD
STM Shutter Delivery to RAL	USK	01/08/02	05/03/02	5 months	Dev. Plan Draft 0.2 (15/06/2000) Assumes CQM usable as STM (TBC)
CQM Shutter Harness Delivery to RAL	USK	01/08/02	05/03/02	5 months	Dev. Plan Draft 0.2 (15/06/2000) Assumes CQM usable as STM (TBC)
STM SCAL Delivery to RAL	QMW	01/08/02	27/03/02	4 months	(29/03/01) Issue 2.0
STM SCAL Harness Delivery to RAL	QMW	01/08/02	27/03/02	4 months	(29/03/01) Issue 2.0 Assumes STM includes harness (TBC)
STM SMECM Delivery to RAL	LAM	01/08/02	01/08/02	3 months	(10/04/01) v20010410
STM SMECM Harness Delivery	LAM	01/08/02	01/08/02	3 months	(10/04/01) v20010410
CQM FPU RF Filter Modules Delivery	JPL	01/08/02	01/10/02		Rec/Del List (23/02/01) Agreed at teleconf 23/02/01 - date/margin TBD
CQM Cooler Delivery to RAL	Grenoble	01/09/02	22/02/02	6 months	Dev. Plan (SBT/CT/2000-19 Issue 2 Rev 1)

# SPIRE

## Project Document

### SPIRE Major Milestone List

Ref: SPIRE-RAL-PRJ-000455

Issue: 1.2 Draft 2

Date: 12<sup>th</sup> April 2001

Page: 8 of 12

Milestone	Responsible	Need Date	Planned Date	Margin	Comments
CQM FTB Enclosure Delivery to RAL	MSSL	01/08/02			(19/03/01) Issue 1.2 Not in schedule - agreed at teleconf 26/02/01, Date TBC, Margin TBD
STM JFET Modules Delivery to RAL	JPL	01/08/02	01/04/02	4 months	(23/02/01)
STM FTB RF Filter Modules Delivery to RAL	JPL	01/08/02	01/04/02	4 months	(23/02/01)
<b>STM Interim Review</b>			<b>09/10/02</b>		
<b>Cold Vibration Campaign Starts</b>	<b>ESA</b>		<b>28/11/02</b>		
<b>STM Review</b>			<b>14/02/03</b>		
<b>CQM Structure and FTBs available</b>			<b>17/02/03</b>		



## 1.5 CQM Programme

Milestone	Responsible	Need Date	Planned Date	Margin	Comments
CQM Cold Filters Delivery to JPL	QMW	01/02/02			(11/01/01) Issue 2.0 - not in QMW schedule
CQM PCAL Delivery to ATC	QMW	01/07/02	22/03/02	3 months	(11/01/01) Issue 2.0
CQM BSMm Delivery to LAM	ATC	01/09/02	23/08/02	7 days	(08/02/01)
CQM Filters Dichroics and Beamsplitters Delivery to RAL	QMW	11/01/03	01/10/02	3 months	(29/03/01) Issue 2.0
CQM BDAs Delivery to RAL	JPL	11/01/03	01/10/02	3 months	(23/02/01)
CQM SMECm Delivery to RAL	LAM	11/01/03	11/01/03	2 months	(10/04/01) v20010410
CQM SCAL Delivery to RAL	QMW	11/01/03	01/10/02	3 months	(29/03/01) Issue 2.0
CQM Shutter Delivery to RAL	USK	11/01/03	05/03/02	10 months	(15/06/2000) Issue 0.2 D
CQM BSMm Delivery to RAL	LAM	11/01/03	11/01/03	2 months	(10/04/01) v20010410
CQM FPU RF Filter Moduless Delivery to RAL	JPL	11/01/03	01/10/02	2 months	(23/02/01)
CQM JFET Modules Delivered to RAL	JPL	01/02/03	01/10/02	4 months	(23/02/01)
CQM FTB RF Filter Modules Delivered to RAL	JPL	01/02/03	01/10/02	4 months	(23/02/01)
QM1 MCU delivery to SAp	LAM	12/06/02	12/06/02	2 months	(10/04/01) v20010410, Margin TBC
DRCU-FPU Test Harness Delivery to SAp	RAL	12/06/02			To be purchased by SAp
AVM DPU Delivery to RAL	IFSI	01/06/02	02/04/02	2 months	(02/04/00) Issue 1.2
DRCU Simulator#2 Delivery to RAL	SO	01/06/02	01/06/02		(21/12/00) SO-2000-12-21, margin TBD
EGSE#2 Available	RAL	01/06/02	01/06/02		
QM1 DRCU Delivery to RAL	SAp	01/12/02	15/10/02	1.5 months	(19/01/01) v1.0, adjusted
QM1 WIH Delivery to RAL	SAp	01/12/02	15/10/02	1.5 months	(10/01/01) v1.0, adjusted
FPU Simulator#1 Delivery to RAL	SAp	01/12/02	01/11/02	1 month	(10/01/01) v1.0
EGSE#3 Available	RAL	01/12/02	01/12/02		
<b>CQM Test Readiness Review</b>			<b>21/03/03</b>		
<b>CQM Interim Review</b>			<b>22/04/03</b>		
PFM BDA (SSW) Delivery to RAL	JPL	01/04/03	01/02/03	2 months	(23/02/01) Agreed at teleconf 23/02/01 - date/margin TBC
<b>Critical Design Review</b>			<b>27/06/03</b>		
<b>CQM Delivery to ESA</b>	<b>RAL</b>	<b>01/04/03</b>	<b>15/07/03</b>		<b>Realistic Delivery Date 1<sup>st</sup> Oct 03</b>

## 1.6 AVM Programme

Milestone	Responsible	Need Date	Planned Date	Margin	Comments
AVM DPU Delivery to RAL	IFSI	01/06/02	02/04/02	2 months	(02/04/00) Issue 1.2
EGSE#4 Available	RAL	01/02/03	01/09/02		
DRCU Simulator#3 Delivery to RAL	SO	01/02/03			(21/12/00) SO-2000-12-21 Not in schedule, Date, Margin TBD
<b>AVM Delivery to ESA</b>	<b>RAL</b>	<b>01/04/03</b>	<b>25/03/03</b>		<b>Realistic Delivery Date 1<sup>st</sup> Jun 03</b>

## 1.7 QM Warm Electronics Programme

Milestone	Responsible	Required Date	Planned Date	Revised Need Date	Comments
QM2 MCU Delivery to SAp	LAM	01/11/02	10/09/02	1.5 months	(10/04/01) v20010410
QM DPU Delivery to RAL	IFSI	01/02/03	02/01/03	1 month	(02/04/00) Issue 1.2
QM2 DRCU Delivery to RAL	SAp	01/06/03	01/06/03		(19/01/01) v1.0, Margin TBD
QM2 WIH Delivery to RAL	SAp	01/06/03	01/06/03		(19/01/01) v1.0, Margin TBD
FPU Simulator#2 Delivery to RAL	SAp	01/06/03			(19/01/01) v1.0 Not in plan, Date, Margin TBD
<b>WE Critical Design Review</b>			<b>02/07/03</b>		

## 1.8 PFM Programme

Milestone	Responsible	Need Date	Planned Date	Margin	Comments
PFM Cold Filters Delivery to JPL	QMW	03/02/03			(11/01/01) Issue 2.0 - not in QMW schedule
PFM PCAL Delivery to ATC	QMW	01/09/03	14/05/03	2.5 months	(11/01/01) Issue 2.0
PFM BSMm Delivery to LAM	ATC	15/07/03	03/06/03	5 weeks	(08/04/01)
PFM Structure Delivery to RAL	MSSL	15/07/03	10/06/03	7 weeks	(19/03/01) Issue 1.2
PFM Thermal Straps Delivery to RAL	MSSL	15/07/03	10/06/03	7 weeks	(19/03/01) Issue 1.2
PFM Mirrors Delivery to RAL	LAM	15/07/03	15/06/03	2.5 months	(30/03/01) v20010330
PFM Filters Dichroics and Beamsplitters Delivery to RAL	QMW	01/08/03	15/05/03	2.5 months	(11/01/01)
PFM BSMm Delivery to RAL	LAM	01/10/03	01/10/03	1 month	(10/04/01) v20010410
PFM Cooler Delivery to RAL	Grenoble	01/08/03	01/03/03	5 months	01/2001 (SBT/CT/2000-19 Issue 2 Rev 1)
PFM BDAs Delivery to RAL	JPL	01/10/03	22/09/03	8 days	(23/02/01), margin TBC
PFM Shutter Delivery to RAL	USK	01/10/03	03/11/03		(15/06/2000) Issue 0.2 D, Date TBD
PFM SCAL Delivery to RAL	QMW	01/10/03	01/10/03	1 month	(11/01/01) Issue 2.0
PFM SMECm Delivery to RAL	LAM	01/10/03	01/09/03	1 month	(10/04/01) v20010410
PFM FPU RF Filter Modules Delivery to RAL	JPL	22/10/03	22/10/03		(23/02/01), Margin TBD
PFM FTB Enclosure Delivery to RAL	MSSL	22/10/03			(19/03/01) Issue 1.2 Not in schedule, Date TBC, Margin TBD
PFM JFET Modules Delivered to RAL	JPL	22/10/03	22/10/03		(23/02/01), Margin TBD
PFM FTB RF Filter Modules Delivery to RAL	JPL	22/10/03	22/10/03		(23/02/01), Margin TBD
PFM DPU Delivery to RAL	IFSI	01/03/04	01/03/04	1 month	(02/04/00) Issue 1.2, Margin TBC
PFM MCU Delivery to SAp	LAM	07/08/03	07/08/03	1 month	(30/03/01) v20010330, Margin TBC
PFM DRCU Delivery to RAL	SAp	16/03/04	16/03/04		(19/01/01) v1.0, Margin TBD
PFM WIH Delivery to RAL	SAp	16/03/04	16/03/04		(19/01/01) v1.0, Margin TBD
<b>Delivery of PFM FPU to Cold Vibration Facility</b>	<b>RAL</b>		<b>27/01/04</b>		
<b>Delivery of Cold-Vibrated PFM FPU to RAL</b>	<b>RAL</b>		<b>24/02/04</b>		
<b>PFM Test Readiness Review</b>			<b>09/12/03</b>		
<b>PFM Delivery to ESA</b>	<b>RAL</b>	<b>01/06/04</b>	<b>15/06/04</b>		<b>Realistic Delivery Date 1<sup>st</sup> Sep 04</b>

## 1.9 FS Programme

Milestone	Responsible	Need Date	Planned Date	Margin	Comments
FS Cold Filters Delivery to JPL	QMW	TBD			(11/01/01) Issue 2.0 - not in QMW schedule
FS PCAL Delivery to ATC	QMW	01/01/04	03/09/03	4 months	(11/01/01) Issue 2.0
FS BSMm Delivery to LAM	ATC	01/03/04	22/01/04	5 weeks	(08/04/01)
<b>Return of CQM from ESA</b>	<b>ESA</b>	<b>01/06/04</b>			<b>9 months after delivery to ESA</b>
FS Structure Available for Integration	MSSL	10/01/05	10/01/05	1 month	(19/03/01) Issue 1.2, adjusted 7 months refurbishment
FS Thermal Straps for Integration	MSSL	10/01/05	10/01/05	1 month	(19/03/01) Issue 1.2, adjusted 7 months refurbishment
FS Mirrors Delivery to RAL	LAM	10/01/05	10/01/05	18 months	
FS BDAs Delivery to RAL	JPL	10/01/05			Date TBD
FS Filters Dichroics and Beamsplitters Delivery to RAL	QMW	10/01/05			Date TBD
FS RF Filter Modules Delivery to RAL	JPL	10/01/05			Date TBD
FS SCAL Delivery to RAL	QMW	10/01/05	09/12/03	13 months	(11/01/01) Issue 2.0
FS SMECm Delivery to RAL	LAM	10/01/05	10/11/04	8 months	(10/04/01) v20010410
FS BSMm Delivery to RAL	LAM	10/01/05	10/11/04	8 months	(10/04/01) v20010410
FS Cooler Delivery to RAL	Grenoble	10/01/05	01/06/03	18 months	01/2001 (SBT/CT/2000-19 Issue 2 Rev 1) Only one cooler for SPIRE & PACS
FS Shutter Delivery to RAL	USK	10/01/05	01/11/04	2 months	(15/06/2000) Issue 0.2 D
FS FTB Enclosure Delivery to RAL	MSSL	10/01/05			(19/03/01) Issue 1.2 Not in schedule, Date TBC, Margin TBD Refurbished from CQM
FS JFET Modules Delivery to RAL	JPL	10/01/05			Date TBD
FS MCU Delivery to SAp	LAM	TBD	09/09/03		(10/04/01) v20010410
FS DRCU Delivery to RAL	SAP	10/01/05			Date TBD
FS WIH Delivery to RAL	SAP	10/01/05			Date TBD
<b>Delivery of FS FPU to Cold Vibration Facility</b>	<b>RAL</b>		<b>10/07/05</b>		
<b>Delivery of Cold-Vibrated FS FPU to RAL</b>	<b>RAL</b>		<b>10/08/05</b>		
<b>FS Test Readiness Review</b>			<b>06/06/05</b>		
<b>FS Available to ESA</b>	<b>RAL</b>	<b>01/07/05</b>	<b>29/11/05</b>		<b>Realistic Date 1<sup>st</sup> Jan 06</b>