

FIRST | ESA | M | 0010.1

SPICE-ESA MOM-0000103

Appendix 1

FIRST PWG meeting 12 December 1996
ESTEC, Db105, 14.00-17.30

=====

Proposed agenda:

1. Formalities

2. Instrument development schedules for model payload instruments

Qualification Model delivery 1/1/2003 to be assumed
Flight Model delivery 1/2/2004 to be assumed
Necessary assumptions e.g. required starting date
What are the most critical developments ?

3. PWG preference regarding spacecraft concept (cryo-cooler/cryostat)

4. Data downlink rates

In the PDD 25 kbps (max !) was allocated for each instrument

5. Observing modes

"Nodding" and "position switching" requirements cannot
realistically be met by "any" spacecraft

6. PHOC straylight action

7. AOB

FIRST PWG meeting minutes

from the meeting held at ESTEC on 12 December 1996

Participants:

PWG: M. Griffin, A. Poglitsch, H. van de Stadt, N. Whyborn
ESA: T. Paßvogel, G. Pilbratt, H. Schaap, J. Steinz, S. Volonte

1. The proposed agenda (Appendix 1, 1 page), was accepted. This PWG meeting has been convened at short notice, the primary purpose is to deal with point 2 on the agenda.

2. The FIRST Project has been asked by D/Sci whether it would be possible to schedule FIRST for a launch in the end of 2005. It is important to understand that this is a question from D/Sci which does not carry any obligations whatsoever to anyone. It is also true that in an extended SSAC meeting scheduled for 21-22 January 1997 the implementation of the whole of the 'original' Horizon 2000 programme will be addressed.

From an assessment made by the Project the conclusion is that the science payload will be the schedule driver for a 2005 launch. After a discussion of the status of each of the three (HET, PHOC, and BOL) model payload instruments, with respect to requested delivery dates by the Project (Appendix 2, 1 page), it was decided that:

Action: For each model payload instrument (responsible: Whyborn, Poglitsch, and Griffin, respectively) the following should be provided to the Project Scientist by 15 January 1997 at the latest:

(i) An instrument development schedule commensurate with the required delivery dates, if realistically possible.

(ii) A list of critical items subdivided into three categories: (a) fundamental technology ('physics'), (b) development ('hard work', but not 'fundamental' in the sense of (a)), and (c) long lead items ('throwing resources' at it does not speed it up).

(iii) A statement providing the assumptions behind the schedule and list of critical items, and giving a discussion of the schedule and a conclusion regarding the fundamental question: Can this instrument be developed on time for an end 2005 launch ?

3. The advantages/disadvantages of the cryostat and cryocooler spacecraft options were discussed from a payload accommodation point of view only.

HET. Probably more sensitive in the cryostat spacecraft because of a mixer temperature of order 2 K instead of 4.3-4.5 K.

PHOC. The choice of spacecraft option has a major impact. In the case of the cryocooler option the PHOC will need its own dedicated cooler to attain the operating temperature of the detectors of 1.7 K from the 4.3-4.5 K provided by the spacecraft.

BOL. The BOL will benefit from the cryostat spacecraft because the nominally 20 K level will be colder, and there will be more cooling power at 2 K than from a dedicated cooler.

For all instruments it is true that high instantaneous dissipations (e.g. from cold mechanisms) could be a major problem for the cryocooler option. There is also a feeling of being 'more comfortable' with building an instrument for a cryostat, e.g. if an instrument needs more cooling power than originally envisaged, this affects performance 'gracefully' in the case of the cryostat (decreased lifetime) but could be a catastrophe in the case of the cryocooler option.

The conclusion reached was that the cryostat spacecraft is better for all model payload instruments, much better in the case of the PHOC. However, there is a caveat: The cryostat spacecraft option is significantly worse from a straylight point of view; cf. point 6 below.

6. This item was addressed at this point in time. From the last PWG meeting the action on D.Lemke and A.Poglitsch to 'make a sensible assumption about the PHOC beam and calculate how much straylight is actually picked up by such a realistic beam' is still open. Albrecht has calculated the beam diffraction as a function of distance from an assumed stop at M4, Dietrich is to supply the emission values so that the energy 'seen' by the beam can be calculated. Albrecht to contact Dietrich, if necessary (spacecraft) information to conclude the task is missing, then a list is to be provided to ESA who will supply the missing input.

4. The Project Scientist reminded everyone of the fact that the values for science data rates used in the spacecraft system studies (64 kbps for 24/48 hour orbits, and 40 kbps for L2) have been derived from the PDD. The PDD values are: HET 24 kbps, PHOC 25 kbps, and BOL 15 kbps.

HET (would prefer more) and BOL (content) can live with the PDD values, however, it was pointed out that for the PHOC even the PDD value implied onboard data compression of a factor several. The PDD value is still considered feasible also for the PHOC, but any increase in the allocated data rate for the PHOC will simplify the necessary onboard data compression.

5. It was pointed out that on-the-fly mapping could usefully be employed in place of position switching for the HET for many observations. Nodding is likely to be important for both PHOC and BOL, the background level and stability will determine the required cycle time.

7. No AOB. It was decided that another meeting to address item 2 above is not necessary. The Project Scientist will organise the next meeting at a date TBD.

LAUNCH 2007

AI 6/1 H. Schaap to produce a "model" schedule including major instrument activities.

Response: For the purpose of an FSODG costing exercise the following "model" planning should be used

Activity	Period	Durations with Period
PLM/QM-EM debug of Electronics Units using FPU simulators	01.07.2004 - 30.09.2004	Debug 20 days
PLM/QM-EM testing	01.10.2004 - 31.12.2004	Debug + IMT EMC 25 days 20 days
PLM/FM testing	01.01.2006 - 31.03.2006	IST 20 days
FM system testing	01.04.2006 - 31.12.2006	TV EMC IST EE1 and 2 SFT's 2 x 20 days 20 days 20 days 20 days 10 days
Launch campaign + contingency	01.01.2007 - 28.07.2007	IST 20 days

Please note that: Durations are quoted for testing of three instruments and include pre- and post test reviews and cooling activities on the BOL and PHOC internal coolers.

The FIRST Project is analysing a schedule leading to a launch at end 2005, i.e. a general advance of \approx 18 months.

LAUNCH END 2005

Activity	Period	Durations with Period
PLM/QM-EM debug of Electronics Units using FPU simulators	01.01.2003 - 30.03.2003	Debug 20 days
PLM/QM-EM testing	01.04.2003 - 30.06.2003	Debug + IMT EMC 25 days 20 days
PLM/FM testing	01.07.2004 - 30.09.2004	IST 20 days
FM system testing	01.10.2004 - 30.06.2005	TV 2 x 20 days
		EMC 20 days
		IST 20 days
		EE1 and 2 20 days
		SFT's 10 days
Launch campaign + contingency	01.07.2005 - 30.11.2005	IST 20 days

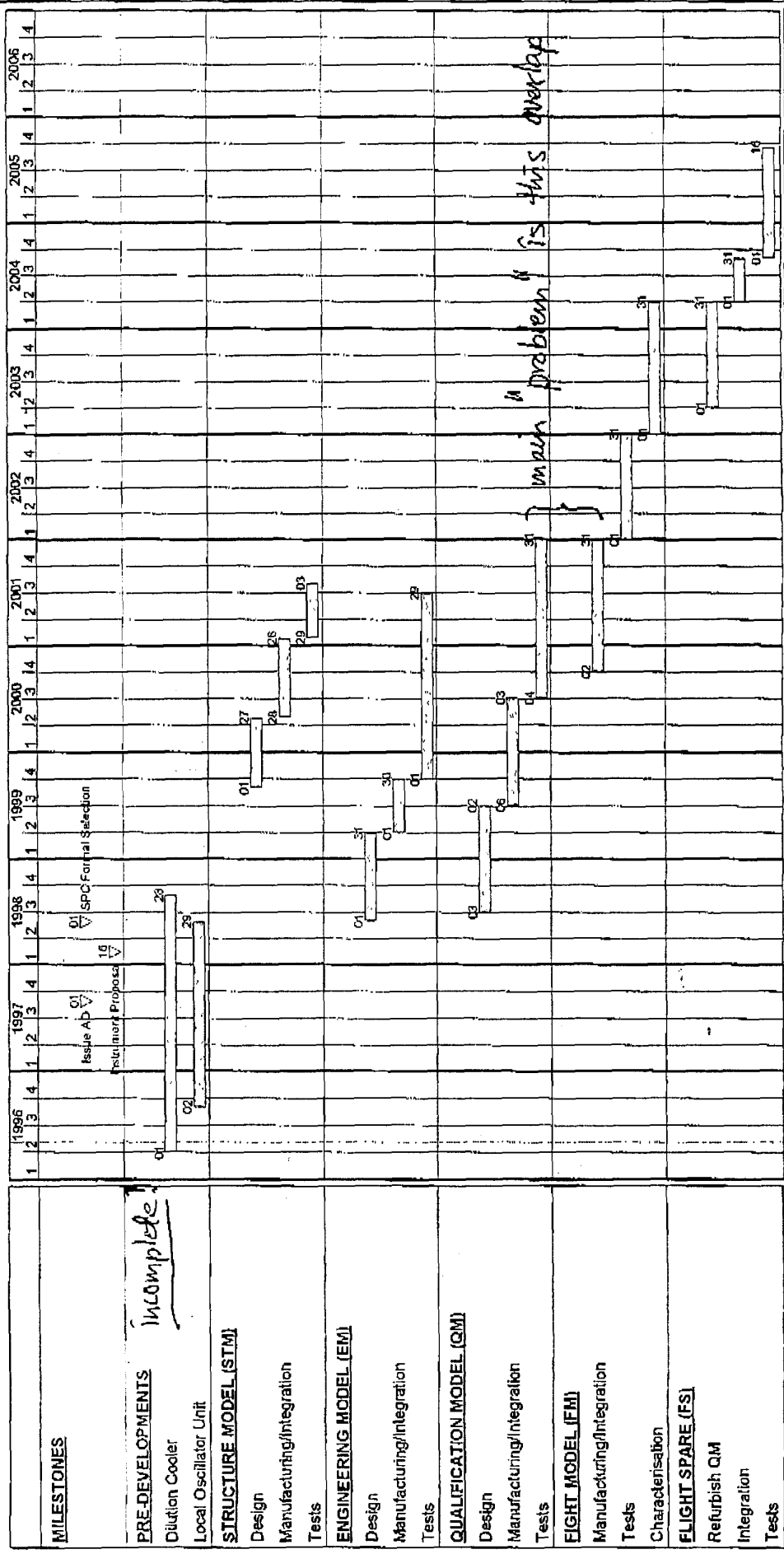
Please note that: Durations are quoted for testing of three instruments and include pre- and post test reviews and cooling activities on the BOL and PHOC internal coolers.

INSTRUMENT DELIVERIES

LAUNCH 2007		
Model	Cryostat	Cryocooler
STM/AMTM	01.03.2004	01.02.2004
EM/QM	01.11.2003	01.05.2004
FM	01.08.2005	01.08.2005

LAUNCH END 2005		
Model	Cryostat	Cryocooler
STM/AMTM	01.09.2002	01.08.2002
EM/QM	01.05.2002	01.11.2002
FM	01.02.2004	01.02.2004

FIRST - Scientific Instruments - Common Approach



Legend:

- Planned
- In Progress
- Completed
- Previous Plan (Back)
- Current Plan (Front)

Schedule Information:

Schedule Status : Draft

Issue No. : 0.4

Distribution : JAS, TP, RO

ESA/ESTEC - Scientific Projects Department

FIRST Project Office

Prepared by : R. Orenius

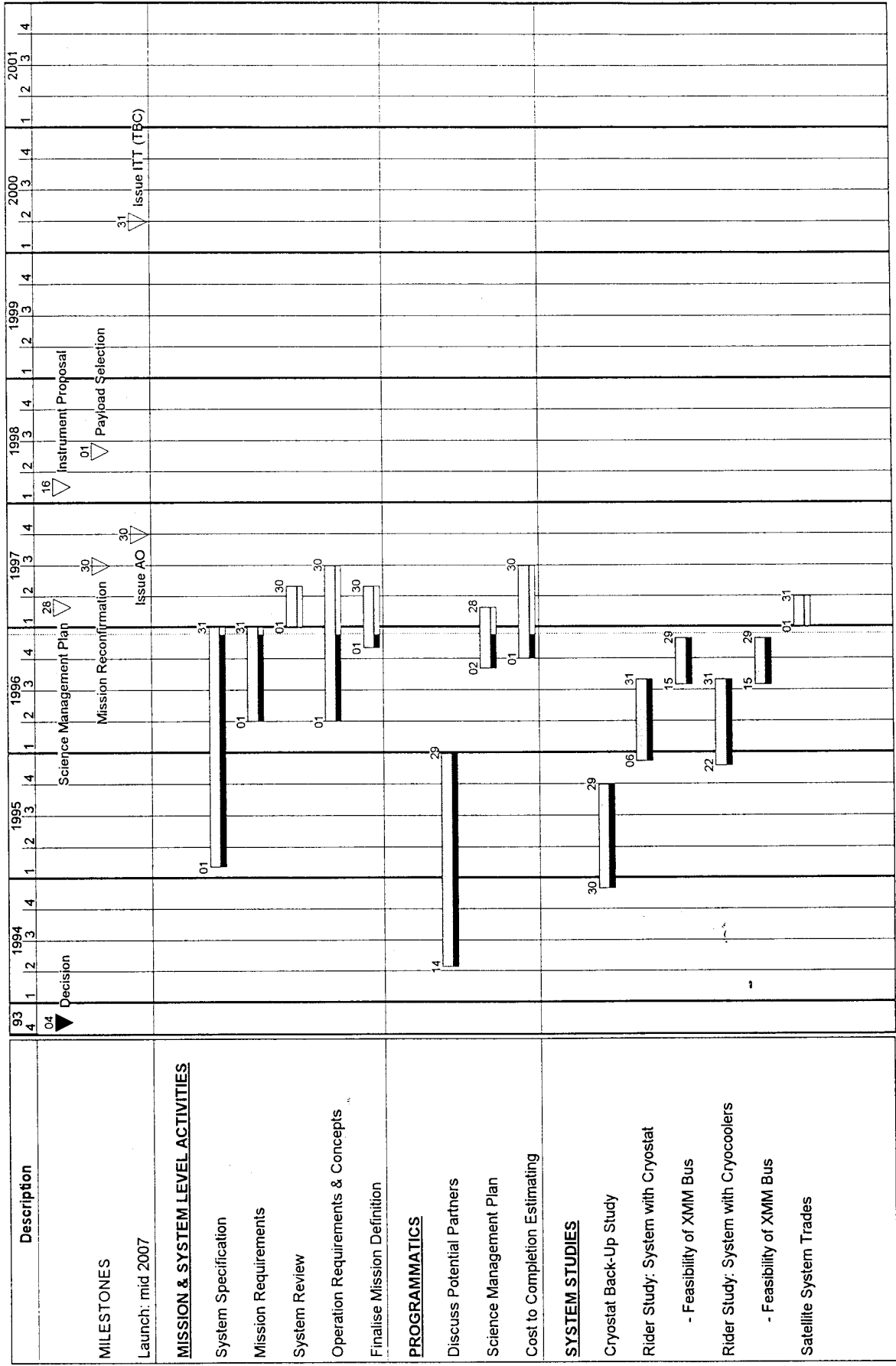
Approved by : T. Passvogel

Status date : 03-MAY-96

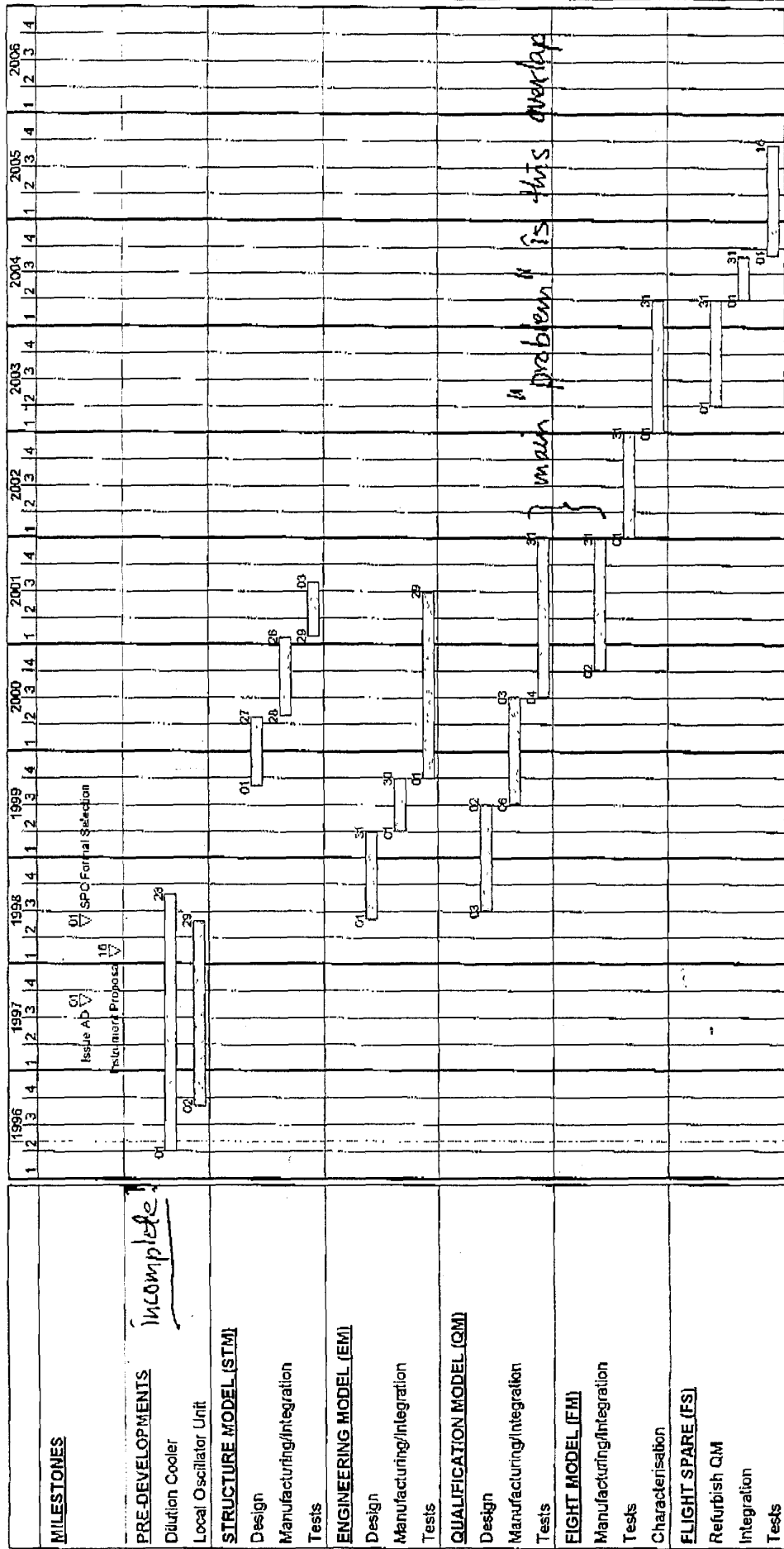
Print date : 03-MAY-96

**FIRST
PRE-PHASE B SCHEDULE**

SAG Mtg. 13 Dec. 96



FIRST - Scientific Instruments - Common Approach



Prepared by : R. Oremus
 Approved by : T. Passvogel
 Status date : 03-MAY-96
 Print date : 03-MAY-96

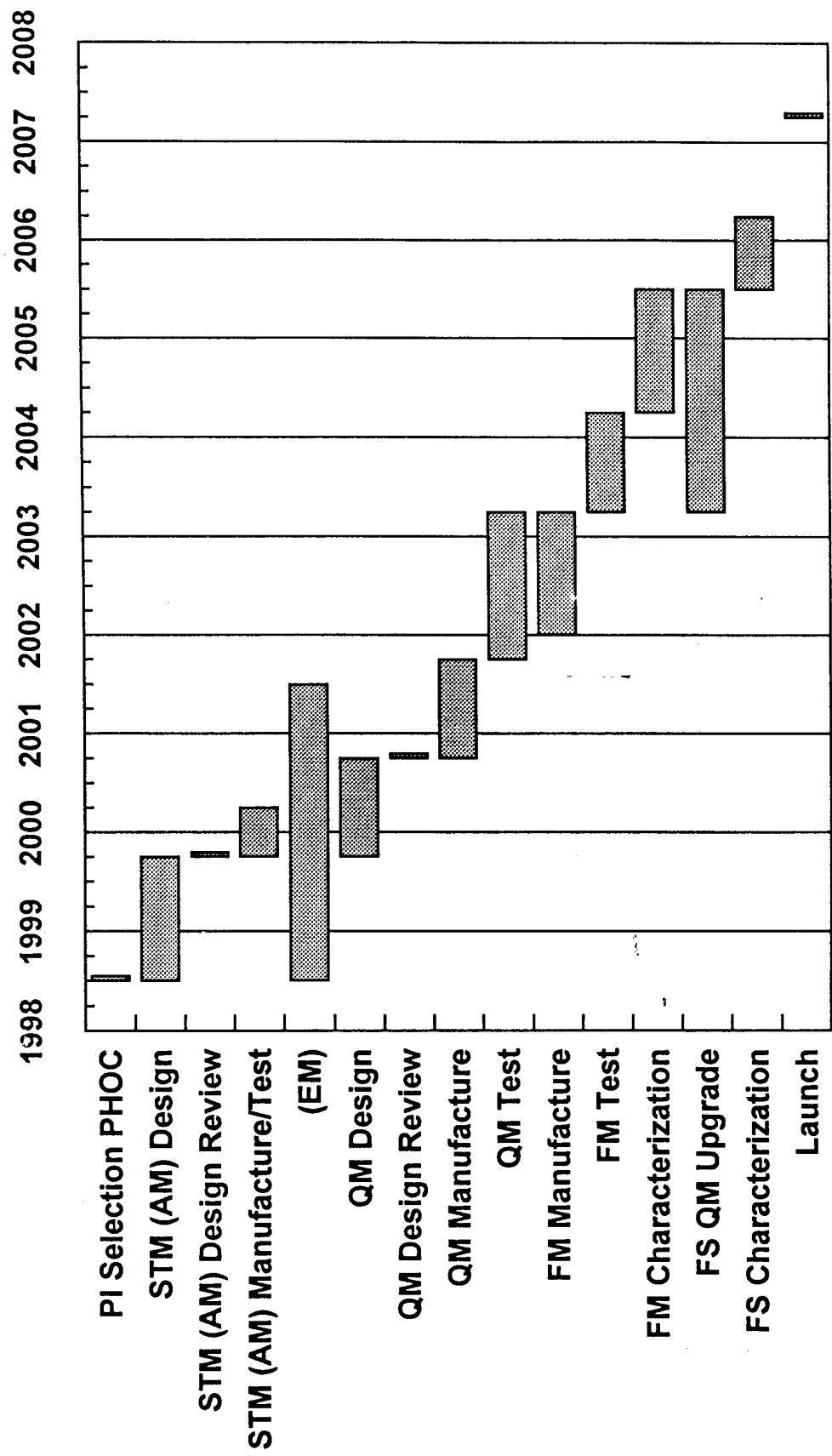
ESA/ESTEC - Scientific Projects Department
FIRST Project Office

Schedule information :
 Schedule Status : Draft
 Issue No. : 0.4
 Distribution : JAS, TP, RO

Legend:
 Planned: []
 In Progress: []
 Completed: []
 Previous Plan (Back): []
 Current Plan (Front): []

Delivery Milestone or Event (with current date): []

PHOC Instrument Development Schedule



TELEFAX MESSAGE

M



european space agency

astrophysics
divisioneuropean space research
and technology centre

From: Göran Pilbratt Astrophysics Division
Telefax: +31 - 71 - 565 4690 ESTEC / SA
Telephone: +31 - 71 - 565 3621 P. O. Box 299
(SPAN: ESTSA0 : : GPILBRAT) NL - 2200 AG Noordwijk
(EARN/Bitnet: GPILBRAT@ESTEC) The Netherlands
Internet: gpilbratt@astro.estec.esa.nl

Date : 16 December 1996

Total # of pages = 5

To the FIRST PWG:

P. Encrenaz, Obs. de Paris, Paris	+33-1-40512002
M. Griffin, Physics Dept., QMW, London	+44-181-9800986
J.-M. Lamarre, IAS, Orsay	+33-1-69858675
D. Lemke, MPI für Astronomie, Heidelberg	+49-6221-528246
A. Poglitsch, MPI für extraterrestrische Physik, Garching	+49-89-32993293
H. van de Stadt, SRON, Groningen	050-3634033
N. Whyborn, SRON, Groningen	050-3634033

Copy:

R. Genzel, MPI für extraterrestrische Physik, Garching	+49-89-32993601
R. Hills, Cavendish Lab., Cambridge	+44-1223-354599
T. de Jong, SRON, Groningen	050-3634033
E. Kollberg, Dept. Electron Physics, Chalmers, Göteborg	+46-31-164513
J. Martin-Pintado, Observatorio Astronómico Nacional, Madrid	+34-1-8855062
G. Tofani, Obs. di Arcetri, Firenze	+39-55-220039
E. van Dishoeck, Sterrenwacht Leiden	071-5275819
J.-L. Puget, IAS, Orsay	+33-1-69858675
R. Booth, Onsala Space Observatory, Onsala	+46-31-7725590
T. Phillips, Caltech, Pasadena, CA	+1-818-7968806
W. Gray, JPL, Pasadena, CA	+1-818-3939815
S. Volonte, LTPO, D/Sci, ESA-HQ	+33-1-53697236

Internal mail:

J. Steinz, PI; Th. Passvogel, PT

Subject: PWG meeting minutes

Dear Colleagues, I circulate the meeting minutes from our meeting Thursday last week. Comments to me within a month please.

Regards,

Göran