

Minutes of the 11th SOHO SWT Meeting

ESTEC, Noordwijk

26–28 January 1994

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1 Action Items and Resolutions SWT 11

Note: this list is summarized from the SWT 11 minutes below

1.1 Action Items

Action 11.1 on PI's: To provide plans/wishes for cruise phase activities (first 145 days). Input to PS before Feb. 14, 1994.

Action 11.2 on PI's: To fill out their part of Table 1 in data rights document. Deadline: Feb. 14, 1994. (This Table will be included in the next SOP. Without PI input it will be assumed the PS is trusted to fill out the table reasonably.)

Action 11.3 on PI's: To comment on the first draft of the SOHO GI programme AO, before Feb. 14, 1994. In particular we need the PI Team's view on how they see GI participation for their instrument, since the "30% of observing time" criterion is meaningless or even unreasonable for some instruments.

Action 11.4 on PI's: To write up and distribute the "Instrument Science Report" (e.g. CDS "Blue Book") before July 1, 1994.

Action 11.5 on PI's: To provide input for Annex 1 (list of "Institutions involved in data processing and analysis") of SOP before Feb. 14, 1994.

1.2 Resolutions

CDS Underperformance:

The SOHO Science Working Team notes with alarm that the CDS telescope performance is outside specification. In particular, the point spread function FWHM of 7 arcsec in the spatial dimension is of concern, being a factor of 2.33 greater than the stated goal. It is recognized that CDS is a unique and valuable tool for studying the solar corona, even with the current FM telescope. However, it is felt that the gains in achieving a few arcsecond resolution are such that we support the CDS PI in taking all steps necessary to realize this goal.

SOHO Archive

The SWT strongly recommends that a "live" SOHO archive, for observations planning, coordinated and correlative data analysis, and for campaign coordination, be implemented at the EOF before the SOHO launch, with, if possible, an identical copy in Europe.

In-Flight Calibration

The SWT recommends that several radiometric updates of the instrument calibrations be provided during the SOHO mission. This should be done by calibration rockets or any other suitable means with the following specific requirements – see annex 12 for requirement table.

2 Agreed Agenda and Actions Revision

2.1 Final Agenda

Agenda – annex 1

List of Participants – annex 2

2.2 Actions Revision

Action 9.5 on GOLF and LASCO to report before 1 October 1993 of the results of the solar flare test. Input to T. Appourchaux.

Status: closed at SWT10

Action 10.1 on PI's: to comment before 1 October 1993 on drafts of data rights (annex 5), GI programme (annex 7), and campaign organization (annex 8). Input to PS.

Status: closed

Action 10.2 on PI's: to provide input for table 1 in data rights document (annex 5), including a definition of level 1 and level 2 of their data (before 1 October 1993).

Status: new action for SWT 11

Action 10.3 on PS: to write an AO for a GI programme before 1 December 1993.

Status: closed

Action 10.4 on PS: to work out a structure of campaign organization before 1 December 1993.

Status: ongoing concern for Science Operations Coordinator, see minutes item 16.

Action 10.5 on PI's: (at least VIRGO, GOLF, EIT, and SWAN) to provide an updated instrument description for the SOHO booklet to be distributed at the Elba workshop. Input to PS before end of August.

Status: closed

Action 10.6 on Project: to include the sun-shield of SUMER in the interface drawings in EID-A.

Status: closed

Action 10.7 on PI's: to evaluate the survey of ground-based observatories (annex 15, SWT 10) and send detailed requirements on synoptic data to PS before 1 October 1993.

Status: closed

3 Status of the Project

3.1 Project Status: F. Felici

See handout – annex 3

- M-CDR conclusion: need to understand spacecraft/experiment/operations interactions. Study by Culhane taskforce.
- EM tests near successful completion
- Flight model: system schedule margins nearly depleted. Problems with mass, power, and pointing budgets.

3.2 Engineering Review: F. C. Vandebussche

See handout – annex 4

- Spacecraft: EM program to be completed on Feb. 10, 1994
- Attitude and orbital control: third gyro being implemented
- Power: subsystem to be delivered middle Feb. '94
- Launcher: First Atlas IIAS (AC 108) successfully launched
- Pointing: concerns about 4th reaction wheel, UVCS imbalance, inter experiment jitter. Need to establish time lining for experiments.

Input request: Info for update S/C payload thermal model and load analysis

3.3 Payload & Operations Development Status: C. Berner

See handout – annex 5

- Organization: Heinrich Schröter appointed SOHO AIV engineer. Helmut Schweitzer will focus on ground Ops together with Sergio Vaghi
- Power-thermal problem: optical properties of OSR too wide. Solutions reviewed, PI's asked to endorse EID-A updated temperature limits
- LASCO, UVCS, SUMER, and EIT must deliver structural model updates at ESTEC **by Feb. 7, '94**
- Updated FM thermal models requested at ESTEC **by Feb. 15, '94**
- Scientific data recorded during EMC test to be picked up and assessed by experimenters. ESA requires status report **by Feb. 7, '94**. Experimenters desire visibility of their data during test. Project will forward request to Matra

- FM programme: delivery schedule now critical, PI's must adhere to schedule henceforth. ESA recommends that core team be put together **now**, to fulfil FM PLM and S/C system test obligations
- Two options presented for SWT request that instrument EGSE's not be put in cleanroom at KSC

3.4 SOHO Cleanliness: R. Thomas

See handout – annex 6

4 Status of Experiments

See hardcopies – annex 7

4.1 GOLF: A. Gabriel

Off-set pointing (OSP) potential problem. Results of OSP available in 7-10 days.

4.2 VIRGO: C. Fröhlich

Need to exchange 292 faulty British Aerospace supplied capacitors.

Solar tests performed at Davos.

Science meeting to be held in March.

4.3 MDI: P. Scherrer

CCD contamination detected. Thomas: source is likely Silicon.

Gradient in continuum image detected, caused by polarizing beam splitter. Beam splitter will be exchanged.

Instrument has successfully measured P-modes from the ground.

4.4 SUMER: U. Schuehle

All requirements met with XDL detectors, except total count rate.

More power needed with XDL.

Problems with telescope and grating focus mechanism.

4.5 CDS: R. Harrison

Ground testing being performed.

Serious violation of 3" (arcsecond) resolution criterion for Zeiss mirror: 7" measured in spatial dimension.

With this resolution 40% scatter contribution expected in coronal hole, so valid science can still be done.

4.6 EIT: J-P Delaboudiniere

Problem with leaky door. Tightness to be verified in vibration test. Refurbishment of two qualification motors.

4.7 XDL Detectors: D. Machi

No schedule change for XDL since M-CDR review in Nov. '93. Delivery scheduled for Sept., Oct. '94.

4.8 UVCS: J. Kohl

Problem in OVI spectrometer: low efficiency in grating.
Roll rate reduction might reduce induced jitter to acceptable level. Study needed.
Spartan-201-1 data on polar coronal hole successful.

4.9 LASCO: D. Michels

Problems with 6 flight motors and doors.
Schedule getting very tight.

4.10 SWAN: J-L Bertaux

SWAN cannot meet ESA integration schedule. MMS delivery for integration expected by end of April '94.
Overall instrument efficiency factor 3 too low. Cause still unknown.

4.11 CELIAS/SEM: H. Hovestadt

STOF FM unit delivery delayed by more than one month, due to technological problems and illness of key personnel.

4.12 COSTEP: H. Kunow

Problems: (1) outgassing of p-tolualsulfonamide. Source needs to be identified and removed before S/C testing.
(2) EPHIN Si(Li) semiconductors need be replaced. FS not available until June '94.

4.13 ERNE: J. Torsti

ESU delivered without mechanical qualification due to failure in vibration test. Must be returned in Feb. for qualification tests.
CEPAC TV contamination problem: see COSTEP report.

5 CDR Task Force: L. Culhane and A. Smith

See terms of reference, and handout – annex 8

Len Culhane and Alan Smith presented overview of their strategy and schedule to contribute to a “Robust Mission Operations Plan”.

6 Microvibration: G. M. Coupe

See handout – annex 9

Project will take action to improve balancing of 4th reaction wheel, the major cause of S/C jitter.

7 On Board Memory: F. C. Vandenbussche

See handout – annex 10

No number for the reliability of the on board tape recorder is actually available, therefore it is difficult to have a comparison with the reliability of the solid state recorder. Confidence in the reliability of the tape recorder shall be achieved by other means, such as life testing. A value of unity for the reliability of the tape recorder has been assumed to relieve MMS from the necessity to calculate a figure, necessarily imprecise, to use for spacecraft calculations.

Nevertheless, the SWT feels that the assumed reliability of unity for the on board tape recorder is misleading. Bertaux reiterates SWT recommendation that mission be protected against systemic on board memory failure by choosing for mixed solution of one tape recorder and one solid state memory device. SWT agrees.

8 Report on Science Planning Working Group: A. Gabriel

See hardcopies – annex 11

SPWG meeting on Jan. 25 & 26, prior to SWT.

4 observing programmes studied:

1. Emerging Flux Region (J. Gurman)
2. Temperature Profile in Coronal Holes (A. Gabriel)
3. Coronal Mass Ejection Study (R. Harrison)
4. Intercalibration Sequence – from SIBC (R. Harrison)

Detailed plans available mid-March.

No agreement whether EOF/ECS software impedes coordinated observations (Gabriel vs. Gurman).

Antonucci emphasizes first SOHO observations must be devoted to primary science goals of mission.

9 Science Intercalibration Working Group Report: J. Kohl

See hardcopies – annex 12

A recommendation from SICWG on in-flight calibration was carried by SWT – see Section 1 for the recommendation and annex 12 for the instrument requirements

10 STSP Coordination: A. Pedersen

See hardcopies – annex 13

Presentation of coordinated SOHO - Cluster activities.

11 Plasma Modeling for Cluster and SOHO: A. Roux

See hardcopies – annex 14

Overview of the European network for numerical simulations of space plasmas (see hardcopies).

Scientific presentation on magnetotail particle simulation results for Cluster.

12 Early Operations and Interinstrument Calibration: V. Domingo et al.

See hardcopies – annex 15

Animated discussion between project representatives and scientists on feasibility of cruise phase science operations:

Hovestadt: wants general statement during SWT exec. meeting on desirability of pointing during cruise phase.

Domingo in answer to Bertaux: quality of pointing during cruise phase cannot be guaranteed, but probably most of the time, except during S/C maneuvers, it will be sufficient for most experiments to operate in nominal conditions. In some parts of the trajectory telemetry may be reduced.

Berner: During cruise phase operations should concentrate on switch on/off, and functional verification monitoring, since in Transfer Orbit the S/C environmental and pointing performances are less stringent than in halo orbit.

Action item on PI's: produce cruise phase desired timelines. Deliver to Domingo or Martens (SOC).

Berner: during cruise phase spacecraft operations **must** have priority.

See hardcopies of presentation by Kohl and Raymond on in-flight calibration and preliminary cruise phase timeline.

13 Data Rights and Obligations: V. Domingo

See handout of draft for data rights section in SOP – annex 16

V. Domingo proposes that VIRGO data policy be used as upper limit for all SOHO instruments. (original VIRGO policy, here referred to, was to release first year of data two years after commissioning, and from there on to release the next 6 months of data every 6 months).

V. Domingo also proposes to streamline data input into NASA/ESA archive, (i.e. input of data in a continuous manner, not large amounts at great intervals).

V. Domingo requests comments to data rights draft in writing (see action item 11.2) before Feb. 14.

P. Martens notes that the STSP AO states that in addition to the data access policy described in the draft, ESA and NASA can request data from the PI's for PR purposes, and proposes to include that in the data rights section of the SOP.

14 SOHO Data Archive Requirements: L. Sanchez

See handout draft of requirements document – annex 17

L. Sanchez goes through requirements documents, and explains backgrounds. Fröhlich emphasizes that European and US archives should be completely identical, to avoid unnecessary efforts, and that a European archive is only needed when transatlantic archive access is too taxing for the network.

Gurman: additional funding for the EOF archive may be found through GSFC Co-I's.

15 Guest Investigator Programme: P. Martens

See handout of comments and decision items – annex 18

SWT discusses comments in writing to first draft of AO for SOHO GI programme distributed to SWT member prior to meeting.

Comments on several minor issues will be worked into the next draft for the SOHO GI AO. From the discussion it appears that the major issue is the definition of the participation of GI's in the SOHO teams. The criterion of making available for GI's 30% of observing time or data may be relevant for the coronal experiments, but is meaningless, or even harmful, for the helioseismology and particle experiments. An action item is put on the PI Teams to react in writing to this AO draft, and in particular to define the GI participation for their instrument.

On the other decision items, the SWT had the opinion that it would be impossible to provide the major PI Team objectives in writing before the AO, that there is no need for a ceiling for the number of Guest Investigations per instrument, and that an annual GI round is more appropriate than biannual rounds.

16 Campaign Organization: P. Martens

See handout – annex 19

P. Martens points out that there may be 6 spacecraft simultaneously observing the Sun during the SOHO mission, creating a unique opportunity for joint observing campaigns.

17 Science Operations Plan: B. Fleck

Next version of Science Operations Plan will be published spring '94, exact date depending on the arrival of Fleck Jr.

18 Workshops and Conferences: V. Domingo

V. Domingo draws attention to the next meeting of the Inter Agency Consultative Group for Space Science (IACG) at ISAS in Tokyo, May 31 - June 2 1994. The subject will be “Solar Events and their Manifestations in Interplanetary Space and Geospace”. Project scientists and PI's from SOHO, CORONAS, Yohkoh, Ulysses, Wind, Geotail, Polar, Cluster, Interball, ACE, and UARS will be present.

The third SOHO workshop will be held in Estes Park (Colorado) in the week of 25 September 1994. The subject will be “Solar Dynamic Phenomena & Solar Wind Consequences”, which includes CME's, filament eruptions, and flares. There will be a one day session on campaigns of joint observations with other spacecraft and ground based observatories.

19 Science Working Team Executive Meeting

19.1 Action Items SWT 11

– See section 1

19.2 Project Matters: F. Felici

It was agreed that the project will investigate the possibility and consequences of reducing the interval between wheel desaturation (baseline is 8 weeks) in order to have a potential improvement in wheel jitter at hand if necessary in orbit.

It was also agreed that the Project will propose a review of the medium term pointing stability interval (baseline 6 months) after investigating the length of the thermal and thermoelastic transient of the spacecraft induced by the thermal subsystem reset.

It was agreed that the new thermal limits proposed in the December fax (PL xx) will be in principle implemented in updating EID-A to define complementary testing if found necessary. For possible jitter tests under investigation the SM of EIT will not be available until August/September. Only CDS will be able to provide flight representative mechanisms (EM).

The Project agreed to report on the status of the software for experiments HK and service data retrieving. This capability was declared indispensable by the PI's to authorize switch on of FM experiments.

C. Fröhlich expressed the general need to know degradation data for thermo-optical surfaces after 6 years, even if the baseline mission is 2 years.

The Project stressed the extreme criticality of the overall program schedule and noted that the new model updates and deliveries discussed in the SWT cover to a very large extent the need for calibration expressed by some PI's until today. Some PI's maintained however a generic request to be allowed to recalibrate instrument if schedule changes in the future would allow it. The Project insisted that SWAN and EIT take the necessary actions to meet the need dates presented by ESA at the SWT.

19.3 STSP Coordination: A. Pedersen

STSP coordination group needs 2 new members:

Don Michels volunteers.

Hovestadt proposes Alfred Bürgi. J. Kohl endorses him for UVCS.

K. Wilhelm will propose third candidate.

19.4 SOHO Archive: V. Domingo

SWT exec. endorses the archive plans presented L. Sanchez. See Section 1 for text of resolution.

19.5 CDS Mirror Underperformance

R. Harrison points out that there are two reports on this issue, one detailing the performance tests, and one with a recovery plan. Martin Hueber wants SWT to make comment on impact on science, and request all steps possible to remedy situation. SWT exec. fully agrees. An action item was put on the CDS-PI to determine the exact wording of the resolution: see Section 1 for the final version.

19.6 A.O.B.

P. Scherrer wants recommendation on how to address jitter performance.

19.7 Next SWT

Agreed: 15/16/17 June 1994 at ESTEC.

21 Annex 2: List of Participants

22 Annex 3: Project Status – F. Felici

**23 Annex 4: Engineering Review – F. C.
Vandenbussche**

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Status – C. Berner**

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