Minutes of the Seventh Meeting
of the
HIPPARCOS SCIENCE TEAM
ESTEC, 19-20 July 1983

Attendance:

HST: Dr M.A.C. Perryman, Chairman
Prof. F. Donati
Dr M. Grenon
Prof. M. Grewing
Dr E. Høg
Prof. J. Kovalevsky
Dr L. Lindegren
Mr C.A. Murray
Mr R.S. Le Poole
Dr C. Turon
Prof. C.G. Wynne

ESA: Mr L. Emiliani (part time)
Mr R. Bonnefoy (part time)
Mr H. Eggel   (part time)
Mr G. Ratier   (part time)
Mr M. Schuyer
Dr S. Vaghi
Dr R. Wills

Drs Brosch and Coleman were unable to attend.

1. Adoption of the Agenda

The agenda as shown in Annex I was adopted.

2. Report by Project Manager

Emiliani explained the structure of the remainder of Phase B2
(Industrial Proposal for Phase C/D expected in mid-October,
Sub-System PDR at the end of 1983) and confirmed the expected
beginning of Phase C/D at the start of 1984.

3. DCN No. 12

DCN No. 12 was distributed. The following facts were
pointed out: (a) Michelstadt had been selected as the ground
station, (b) the original ITT GCR formula had been modified
following the discussion of the June Inter-Consortia Meeting,
and (c) the TYCHO specification remained unchanged.

4. Input Catalogue Consortium Activities

Turon gave a short report of the status of INCA. A more
detailed report would be given at the next meeting of the HST.

Turon stressed that, contrary to the assumptions that con-
tinue to appear in the MATRA documentation, INCA cannot under-
take to provide colours for all programme stars.

A meeting of the Selection Committee would be scheduled for
December. Once the first iteration of the Catalogue had been
constructed it would be available for distribution to
interested parties.

The idea of establishing a Consortium to link 'non-essential'
data acquired in the future to the HIPPARCOS Catalogue was
discussed. This proposal could be taken up at the
1985 IAU Assembly.

5. Observing Strategy

Kovalevsky reported that results of further simulations run
within FAST, indicated that the present SOS was basically
highly acceptable. A joint FAST/INCA paper on remaining
areas of concern was distributed which concluded that
(a) the target observing time was a SOS driver requiring more
than the presently allocated 3 or 4 bits for adequate
flexibility, (b) stars entering or leaving the FOV should
have the highest priority (rather than the low priority
proposed by MATRA), and (c) cases of high-stellar density
were treated inadequately at present, but a change of priority
index between frames could be easily implemented to account
for this.

Kovalevsky proposed an allocation of 6 bits to the target time, 3 bits to the minimum slot paramter, and 3 to the priority index.

Vaghi presented some preliminary results of the simulations run in ESTEC, confirming certain of the inadequacies identified by Kovalevsky. Further runs should lead to a better picture of the drawbacks of the present SOS.

Caution in defining a minimum observing time was urged by Vaghi, Kovalevsky and Lindegren. As shown by Vaghi, for fainter stars the present SOS leads to the observation of only 1 star per frame. Donati and Lindegren confirmed that their phase-extraction algorithms were based at the frame-level (without short-term dynamical smoothing) so that for fainter stars a degraded performance (with respect to the C-R limit) would have to be accepted if a 'geometrical' reduction was to be utilised.

6. Veiling Glare

Great concern was expressed about the treatment of veiling glare in the PDR documentation (see appropriate RIDs). Bonnefoy informed HST members that the IDT ordered from ITT was delayed within the USA so that there had been no developments since March. Bonnefoy suggested that significant improvements in the hardware should not be expected, although the specifications from ITT tend to be conservative.

It was stressed that the problem cannot be solved by imposing constraints on the Input Catalogue, as assumed by MATRA.

7. Concerns of HST communicated as RIDs

(a) Ghost images generated in the relay lens assembly (Wynne). The complexity of the relay lens assembly was questioned and HST recommended Ratier to investigate the specifications to which the relay lens was originally defined (an aberration-free image subsequently defocussed was not required!). Le Poole suggested that the number of air-glass interfaces could be reduced, Wynne adding that the resulting degrees of freedom for the design should remain sufficient.

(b)   Separation between TYCHO chevron slits to be reduced
to zero (Høg.

(c) TYCHO photomultipliers to be chosen as bialkali (B_T)
and S20 (V_T), as recommended unanimously at the March HST,
to maximise by a significant amount the determination of the
colour index.

8. Star Distribution Models

Schuyer presented the note ESA/MAT-HIP-3951 on star
distribution models. Recommendations were:

(a)   RTAD.   Distribution was possibly conservative, but
Perryman explained that it could not be changed before a
first version of the Input Catalogue was available. The
colour distribution will be taken from the OGAR.

(b) Photometric Standards. Grenon presented some
complications that would need to be investigated before
the present provisional specification could be enlarged
significantly, in particular concerning the precise
applications that the stars would be used for (ITF, TYCHO,
long or short-time scale response monitoring) and the overlap
between and transformations from the various available
photometric systems and B_T, V_T and H. Grenon would provide a
technical note on the subject. On the assumption that the
H, B_T, V_T responses were sufficiently well-behaved the
following assumptions could be used by MATRA "The availability
of 2000 stars with H, B_T and V_T known to 0.02 mag, assuming
these stars to have the same distribution in magnitude and
colour index as the programme stars but down to 11 mag only."

Until Grenon could provide updated values and the approximate
transformation laws, it was considered that the calibration
plans could not be affected by these assumptions.

(c) Parasitic Stars. The analytical or tabular form of
Lindegren's model of star distribution as a function of b and
l was again recommended. The Project Team would decide whether
or not to include the dependence on l.

9. ESOC Proposal on Data Format

Kovalevsky would submit a response in the near future to
the ESOC note. At present it was recommended that:

(a) decommutation should be performed by ESOC
(b) some pre-processing would be required, but not on
everything (IDT and SM data in 8-bits would be acceptable)
(c) the OBC package should be synchronised to the record
header
(d) internal star names (1-255) should be replaced by the
INCA description
(e) OGAR results be supplied, possibly with the SM data.

10. Scientific Model

FAST AND NDAC welcomed the proposal of dynamic testing of
the system made by Perryman. Bonnefoy would investigate
the possibilities of such a test.

11. Global Observing Programme

Possible enhancements of the star distribution within the
Input Catalogue to take account of requirements on parallax
and (first-epoch) proper motion were discussed. The subject
would be tackled in detail once the form of the first iteration
of the Input Catalogue is known.

12. Publicity

A publicity leaflet to be issued before December 1983 and a
more detailed booklet on all aspects of the Project (for
distribution within the scientific community) to be brought
out within the next year were discussed.

Perryman would distribute further proposals for these items
in the near future.

13. <u>Consortia Reports to ESA</u>

Reports would continue to be submitted quarterly, the next reports will be submitted end of September.

14. <u>Next HST Meeting</u>

Scheduled provisionally for November 3-4.

Seventh Meeting

of the

HIPPARCOS SCIENCE TEAM

19-20 July 1983

AGENDA

Status Report (L. Emiliani/M. Perryman)

DCN No. 12

Observing Strategy (J. Kovalevsky/S. Vaghi)

PDR - review of ESTEC 'System Panel' RIDs

PDR - open discussion of MESH documentation:
- System Technical Report (Accuracy Analysis & Calibration)
  App. 1 (Main Mission Accuracy Assessment Report)
  App. 2 (Star Mapper Accuracy Simulation Report)
  App. 3 (OGAR)
  App. 4 (On-Orbit Calibration Report)
- Accuracy Verification Plan
- Overall System Specification
- Payload System Specification
- Software System Specification
- Subsystem Specifications

Global Observing Strategy

Miscellaneous items:
- grid status
- availability of photometric standards
- satellite spin reversal
- choice of photomultipliers
- effects of great circle interruptions
- 'absolute time' requirements

Comments on ESOC Data Format Document

HIPPARCOS 'Booklet'

Next meeting of the HST (date/objectives)

Any other business

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HIPPARCOS

MEETING HIPPARCOS

REF. HST #7

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PLACE ESTEC

ACTION No	DESCRIPTION (not more than 4 lines)	CLOSING DATE	ACTIONNEE Person/firm	INITIATOR Person/firm
1	ESA to pass map of IDT response to NDAC & FAST	Nov. HST	EGGEL/ESA	E. Høg
2	HST to advise ESA whether satellite time to be linked with TAI (or UTC) to better than 1msec for any reason, in particular for analysis of the metric.	Nov. HST	C. MURRAY	PERRYMAN
3	Provision of technical note on photometric calibration.	Nov. HST	CRENON	CRENON
4	Investigate the possibility of dynamic testing of the IDT/SM Payload by matra or ESA.	Nov. HST	BONNEFOY	PERRYMAN

Signatures