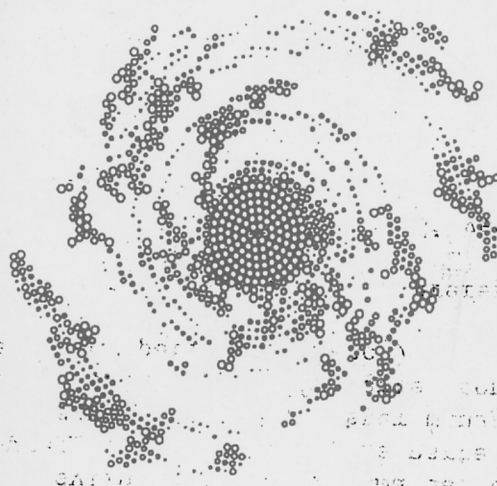# CONSIGLIO NAZIONALE DELLE RICERCHE

ISTITUTO PER RICERCHE IN FISICA COSMICA E TECNOLOGIE RELATIVE

Zebra Data Stripping

Outline of requirements

Prepared by:

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IFCTR

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ZEBRA Data Stripping
Outline of requirements

Prepared by: L.Chiappetti, A.Della Ventura & A.Rampini (IFCTR)

a) Overview of telemetry format

The basic unit of the telemetry is the **scientific record**
(SR). At the nominal telemetry rate one SR is collected every 100
sec. One SR consists of 524288 bytes, and is organized as
follows:

```
1 SR       = 128 sub-frames (SF)
1 SF       = 64  frames
1 frame    = 32 16-bit words (=64 byte)
```

Therefore 1 SF is 4096 bytes. This seems a natural unit for the
blocksize of the flight tapes. Every 100 sec one will have 128
such blocks + 1 extra block containing the **ground frame**. Although
the content of the ground frame will be much shorter (8 bytes),
we feel necessary to use a single blocksize on tape. The unused
part of the ground frame block will be filled with a TBD pattern.

With the assumptions above, one can estimate the tape fil-
ling efficiency and the number of tapes required for a typical
duration of the mission of 24 hrs. The tape efficiency is com-
puted using the industry standards for a 1600 bpi tape, and
assuming each file contains a single file (and is terminated by a
double tape mark).

Tape efficiency	78.6 %	
One tape contains	7740	blocks
being	84 %	full
covering	60	SRs
for a duration of	100	minutes
Tapes required	15	for a 24-hr flight

b) Data stripping process flow

1) Copy tape to disk (via separate process or simulta-
   neously with Pass One below)

2) Pass One : determine missing frames/subframes (either
   fill with a marking pattern, if simultaneous with step
   1, or keep track via software, pointers etc.). Also
   monitor relevant HK parameters and perform limit
   checking. Build a disk directory (**input directory**).

For our internal use we have also computed the amount of work disk space needed in IBM cylinders (1 cyl = 465 1024-byte blocks) to process a single flight tape.

```
Input flight tape      31703040 bytes     67 cylinders
1 image file             592128 bytes    1.3 cylinders
1 image tape (up to)          8 files     11 cylinders
1 timing file (*)       3542016 bytes    7.5 cylinders
1 timing tape for            60 SRs       25 cylinders
Directories approx.                     << 1 cylinders
Total space needed                       103 cylinders
```

(*) for a typical duration of 30 min.

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                                    Milano, 20 december 1985

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