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# Off-line controls for the ECAL tests at CERN in summer 1986

Previous tests of the ECAL prototypes have suffered from the lack of a fast off-line analysis. The following notes are preliminary ideas on the possible organization of an off-line effort during the forthcoming tests in summer 1986; these ideas have to be discussed during the meeting in Glasgow.

## I. What will be written on tape?

After discussion with on-line experts, and in order to save VAX 750 CP time, it has been decided to write only 32-bit integer words on tape in the VAX format. This allows all the triggers compatible with the data acquisition speed to be written on tape. However, as a consequence, these tapes cannot be read without conversion on computers which are not DEC.

Several types of records will be written, for instance:
- A run header, containing all the relevant information for a complete run (to be discussed).
- Pedestal read-out of the ADCs, pulsing wires, etc.
- Event containing raw ADC data (not zero-suppressed).
- End of run, with scaler contents from the on-line computer or from hardware.

## II. Possible off-line strategies

As the raw tapes have to be converted in order to be analysed on e.g. IBM computers, we propose a two-step analysis:

1. *Filtering of events and writing of new tapes*
   This step may consist of: - an event filtering in which beam parameters are computed (threshold Cerenkov signature, beam position at the entrance of the calorimeter, beam momentum) after determination of some alignment parameters. Events corresponding to unsatisfactory conditions (beam interaction before the calorimeter, inefficiencies of

MWPCs, etc. ...) could be rejected.
This can result, for a given run, into the updating of a data base where some parameters relative to this run have to be recorded.
Several off-line surveys can be done at this level, which will not be done by the on-line computer: long term stability of pedestals, etc...
After a zero-suppressing algorithm has been chosen, the ADC data may be transformed, using calibration constants, into energy in the corresponding storeys. These results can be added to the raw data, converted into BOS banks and written via the EP I/O package onto compatible 6250 b.p.i. tapes.
These tapes will be therefore readable either on IBM or VAXes, and will contain the runs from 3 to 4 initial raw tapes.

2. *Further off-line analysis*
This analysis will be done on the tapes defined above, all useful information being in BOS banks. A program will be provided to read these tapes; other facilities could be implemented, e.g. standard histograms, clusterization algorithm in the calorimeter, etc...
Further users of this program should think about these possible facilities, in order to discuss them during the forthcoming meeting in Glasgow.