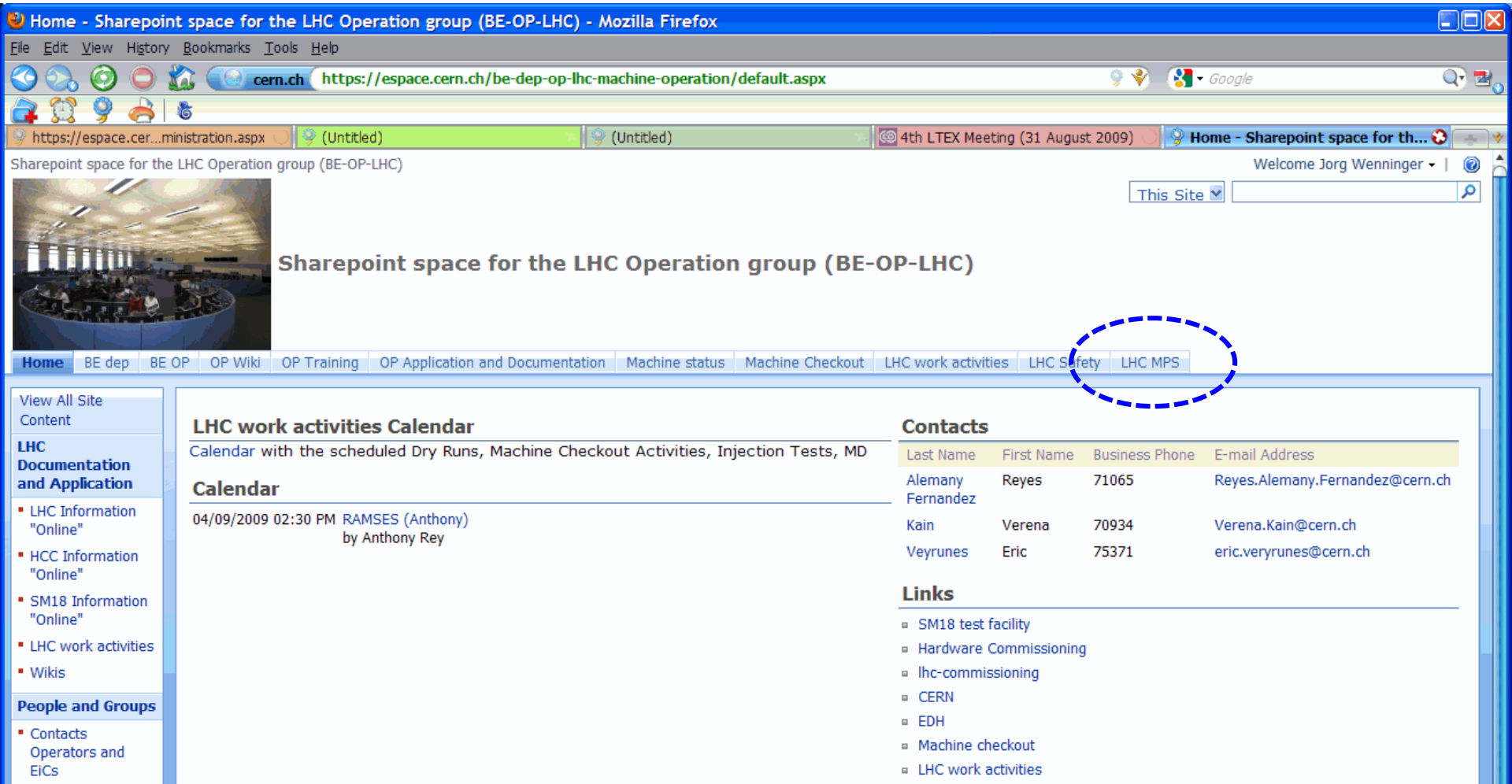
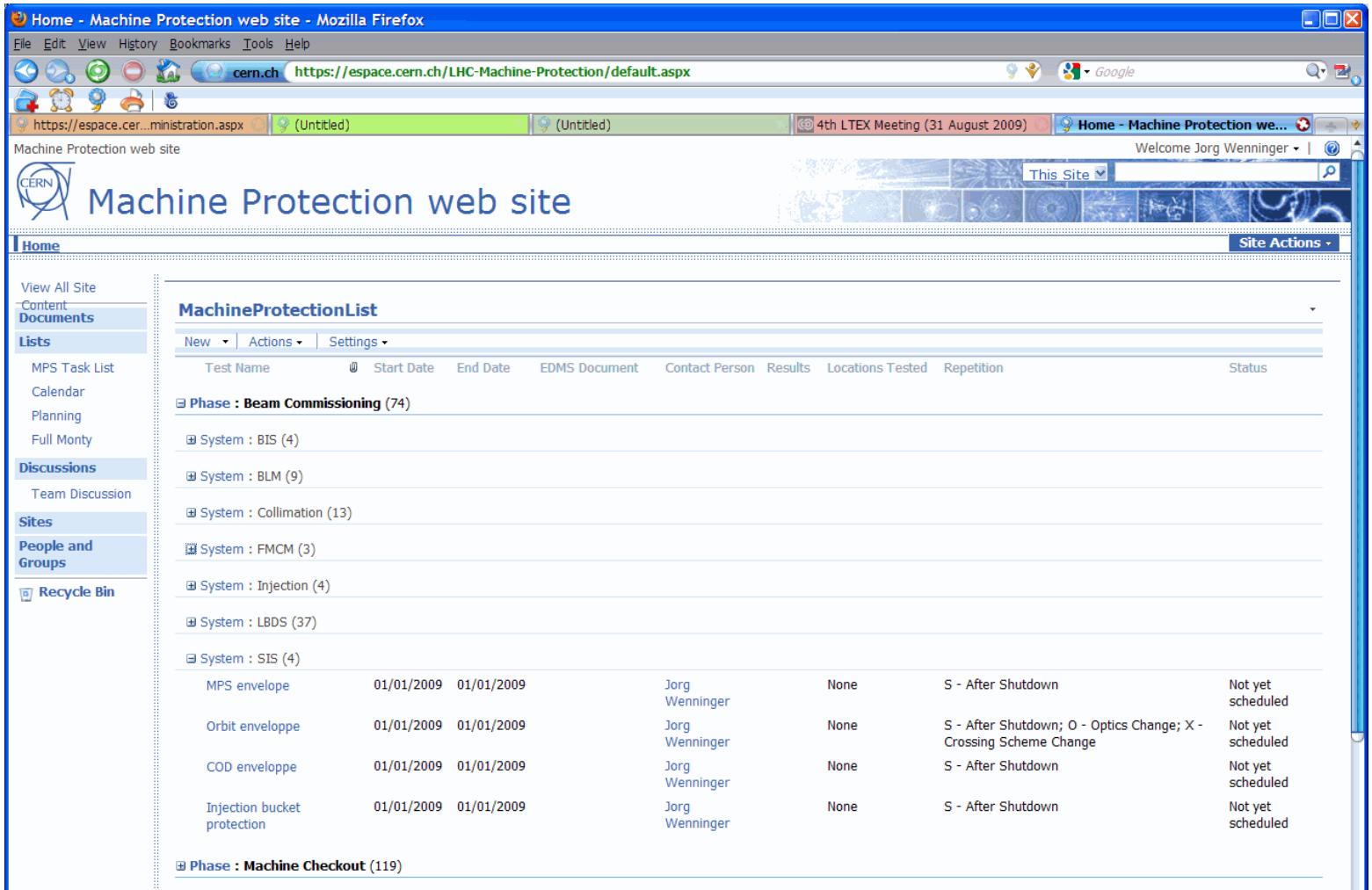
MPS commissioning documentation

- WEB pages for LHC MPS commissioning have been prepared by A. Macpherson. Accessible from LHCOP web site.



MPS commissioning documentation

- Majority of tests defined in the procedure have been defined.
- Write access for concerned people to be checked.



RF & MPS

A. Butterworth, E. Carlier, V. Kain
R. Schmidt, J. Wenninger & others

RF & MPS : fRF interlock

- RF frequency interlock implementation:
  - Connected to maskable BIS input.
  - Frequency measurement is running at 20 Hz.
  - Fixed frequency tolerance (200 Hz).
  - Frequency reference will be obtained from the safe energy.
  - To be defined for the frequency reference:
    - calculated on the fly from energy.
    - obtained from a table (fRF – E).
- RF frequency status:
  - Software ready, hardware will be installed in IR4 in a few weeks.

RF & MPS : beam1/2 mixing in the LBDS

- The abort gap for the LBDS is defined wrt to the revolution frequency (fRev) signal obtained through private links to the RF system.
- Private links between LBDS and injection kicker ensure that no beam is injected into the abort gap ('Abort gap keeper').
- If the fRev signals of the 2 beams are inverted and the frequencies are not identical for beam1 and beam2, then the beams will slip wrt to abort gaps. Every dump becomes an asynchronous dump !

>> Risk of signal inversion during interventions (RF, LBDS ?).

Possible protection (before injection) – under investigation :

- Provoke an interlock on the LBDS trigger synchronization units for each beam by removing fRev signal. Check beam correspondence.

  Seems to be ok on LBDS side, to be confirmed on RF side.

RF & MPS : beam quality before extr.

- Beam quality monitor (BQM) in the SPS is approaching operational state (G. Pappoti) . Check of:
  - Bunch length (mean and spread).
  - Beam intensity spread (not absolute value).
  - Bunch count, spacing. Ghost bunches.
  - Bunch position wrt SPS-LHC common frequency (check of rephasing).
- RF group was encouraged to connect the system to the SPS BIS asap (will dump the beam before extraction). Can be masked in case of trouble.
- Tests could be possible with beam during the next SPS MDs.