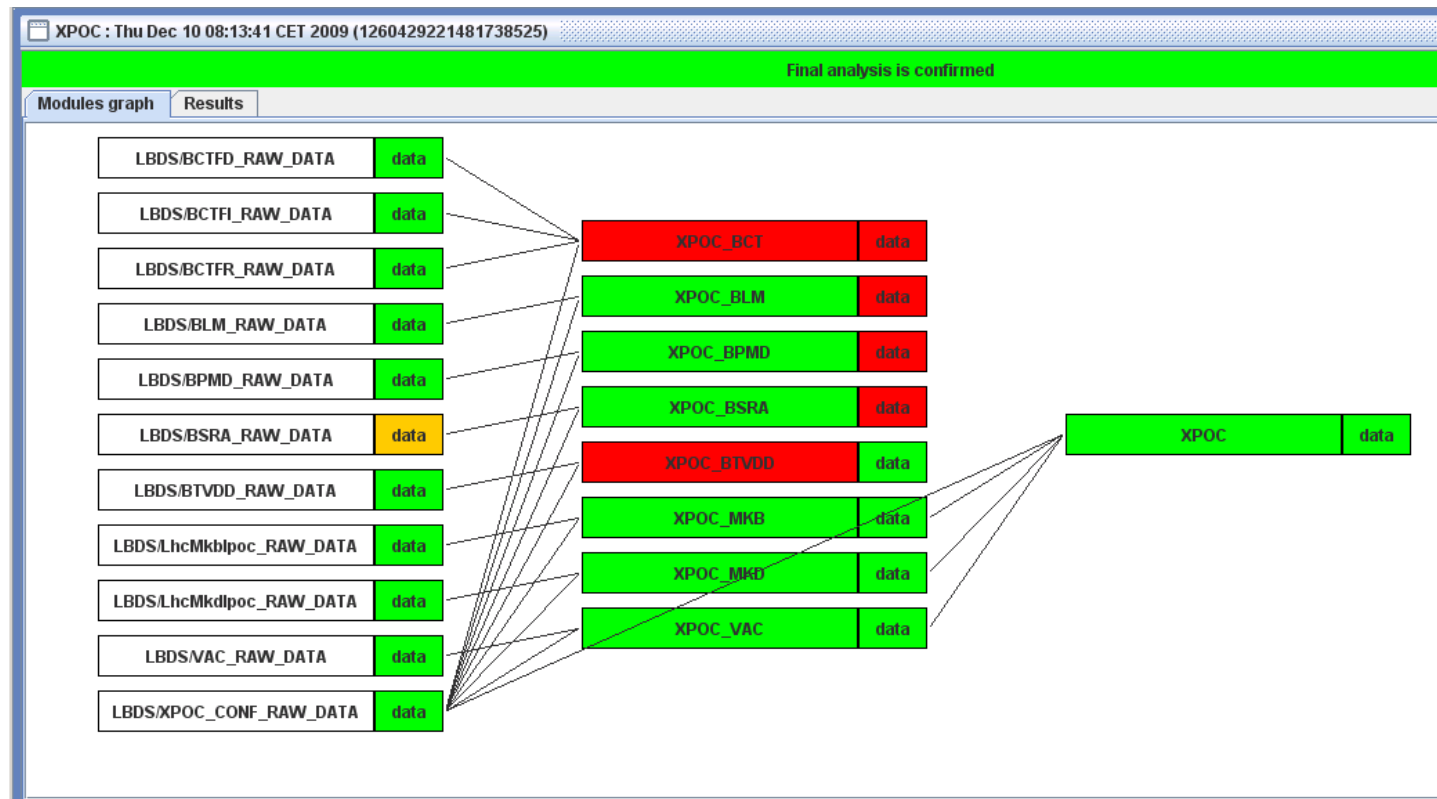


Experience with the LBDS XPOC-Checks

- XPOC checks that the last beam dump was executed correctly
 - Kicker waveforms (operational)
 - Vacuum (operational)
 - BLMs (operational as of today)
 - Other beam Instrumentation: BTVDD, BPMD, BCT (being put in operation)
 - Abort gap monitor (to be put in operation)



Functionality of XPOC

- XPOC has to guarantee the ‘as-good-as-new’ status of the LBDS before each new fill
- No injection should take place if last XPOC has not been ok
 - If XPOC not OK need expert to give the green light
 - All anomalies should be understood
 - Might require some dumps with safe beams to re-qualify the beam dumping system for higher intensities
- If kickers really ‘fail’:
 - Backed-up by IPOC, which requires reset on the equipment level (IPOC explorer)

Signaling a bad XPOC

- Sequencer
 - Sequencer task which checks latest XPOC result and time stamp of latest relative to last time the kickers have been pulsed (IPOC)
 - Easily skipped if it has already failed some times, often due to other reasons
 - Will get bad XPOC after sending out dumped event without loops closed
 - Also needs to be skipped after an 'acknowledge' of the SIS
- Latch bit used by the SIS
 - After bad XPOC the latch turns bad
 - Stops the beam via SIS
 - Can be masked in SIS – but this is disciplined
 - However, the XPOC result stays bad and needs to be skipped

Reset button under RBAC

The screenshot shows the XPOC GUI interface. At the top, there are status indicators: 'BEAM 1 IS PERMITTED', 'BEAM 1 DUMP MONITORING ON', 'BEAM 2 DUMP MONITORING ON', and 'BEAM 2 IS PERMITTED'. Below these are buttons for 'BEAM 1', 'BEAM 2', 'XPOC Server Errors Log', and 'XPOC Server Events Log'. The main area contains a grid of status indicators for various components: MKD, MKB, BPMD, BSRA, VAC, BLM, and BTVDD. Below this is another row of indicators for 'CHECKS', 'VALUES', 'THRESHOLDS', 'I', and 'T'. The bottom section is a table with the following columns: MKD, DumpEnergy, DumpTime, Ref100% OK, RiseTime Ok, Delay OK, OS1 OK, OS2 OK, End OK, Analysis OK, and XPOC Passed. The table contains 10 rows of data, all showing 'OK' status for the 'XPOC Passed' column.

MKD	DumpEnergy	DumpTime	Ref100% OK	RiseTime Ok	Delay OK	OS1 OK	OS2 OK	End OK	Analysis OK	XPOC Passed
MKD.UA63.IPOC2.AB1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.BB1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.CB1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.DB1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.EB1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.FB1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.GR1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.HB1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.IC1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK
MKD.UA63.IPOC2.JB1	3751.0	10-12-09 08:13:41.013	OK	OK	OK	OK	OK	OK	OK	OK

Experience so far / Conclusions

- Some initial problems which caused XPOC tasks in the sequencer to fail
 - Noisy signals -> enlarge limits
 - Check of energy between different modules too tight -> adjusted
 - Time stamps between different IPOCs, to be compared with XPOC -> fix in sequencer task this morning
 - General controls / communication problems which result in negative XPOC results
- Now this is (almost?) all sorted, but does the operator not skip the XPOC task out of convenience?
- How can we be sure that the task is executed for each fill ?



- With the present 'habits' and possibilities to skip sequencer tasks, the SIS latching is mandatory
- At some point the SIS interlock of the XPOC will have to become unmaskable
- We will need to converge to a more standard way of running sequences and clear instructions which tasks are mandatory to be run before each injection or each fill and under which conditions tasks can be skipped: **PROCEDURES**