OP scenarios
Status 26/10/2018

=> Someone else to take over this (important) follow-up?: EliasM did it in the past: 2015 (http://cds.cern.ch/record/2016811/files/CERN-ACC-NOTE-2015-0009_2.pdf) and 2018 (http://cds.cern.ch/record/2301292/files/CERN-ACC-NOTE-2018-0002.pdf).

1. Check the possibility for ALICE new configuration with change of spectrometer without change of the crossing angle. **Done. It should be more explicitly mentioned in the text that this is the case now as it was during Run 2.**
2. Combined ramp and squeeze should be included in the operational scenario. Need to check that this is feasible aperture wise and from the point of view of power converters (e.g. sextupoles). Impact on cycle duration. **Confirm after detailed verification of dynamic and mechanical apertures without and with beam-beam and check of coherent effects to be performed.**
3. Define crossing angle/separation at injection and through all the phases based on input from aperture, corrector strength and alignment of the beam at the crab cavities, beam-beam considerations. **Confirm after detailed verification of margins in terms of mechanical and dynamic apertures and of potential issues with injection oscillations transferring to other beam to be verified.**
4. Following presentation on 23/05/2017 at WP2 meeting (https://indico.cern.ch/event/640686/) it might be good to reduce the beta* at IP8 to obtain the same luminosity with a larger separation and therefore reduce the beam-beam tune spread. **Use 1.5 m for the next version.**
5. Should we consider an updated scenario for 8b+4e with interleaved 25 ns beams as a back-up instead of the 8b+4e based on 2016 experience? **To be formalized but idea presented in the Chamonix 18 meeting by G. Iadarola with some performance estimates.**
6. **Update the scenario with the variation of the crossing angle during the fill (during luminosity levelling and at the end of the luminosity levelling)**
7. Add in the Tables:
    a. Min. Normalized beam beam long range separation
    b. Total number of protons
    c. Beam Current
    d. Possibly explain which parameters are used for the estimate of IBS lifetimes
    e. Add the following parameters for the tables for stable beams
    f. Piwinski parameter
    g. Total reduction factor R0 without crab cavities at min. beta*
    h. Total reduction factor R1 with crab cavities at min. beta*
    i. Beam–beam tune shift/IP [10-3]
    j. Peak luminosity without crab cavities Lpeak [1034 cm−2 s−1]
    k. Peak luminosity with crab cavities Lpeak×R1/R0 [1034 cm−2 s−1]
    l. Events/crossing without levelling and without crab cavities
    m. Maximum line density of pile-up events during fill [events/mm]
    n. Levelling time [h] (assuming no emittance growth)

Clarify whether the peak-to-peak RF phase modulation xx must be interpreted as +/-xx or the total excursion.

8. Define the voltage programme based on H. Timko's presentation in Madrid (https://indico.cern.ch/event/647714/contributions/2646158/attachments/1556707/2453084/HL-LHC_2017_Timko.pdf) and based on the results of the MDs. Update correspondingly the settings at injection for tune, chromaticity and octupoles.
9. Include the settings for operation with LHCb at high luminosity with possibly different external crossing angles according to the polarity (see meeting on 20/03/2018 - https://indico.cern.ch/event/713478/) and presentation at the Annual meeting 2018 (https://indico.cern.ch/event/742082/contributions/3085158/attachments/1736226/2808306/nkarast_HLCollab_18102018.pptx)
10. Shall we increase the crossing angle during ramp and squeeze up to collision to reduce the compensation of the octupole spread by the long range?
11. Use the BCMS normalized emittance for the Operational scenario in the collision process
12. Define the maximum separation in IP1 and 5 that should be achieved at the end of the collision process to avoid instabilities
13. Define the maximum separation possible for levelling in IP1 and 5