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Failure scenarios at beam transfer

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LHC operation in 2016 was limited by the constraints on the maximum allowed intensity in the SPS due to the vacuum leak at the internal dump. The present baseline foresees the replacement of the TIDVG with a new upgraded hardware during the upcoming EYETS. This would allow providing nominal 25 ns to the LHC as well as beams with a brightness well beyond design. Nevertheless, the consequences of an accidental impact of such beams on the intercepting devices in the SPS-to-LHC transfer lines and in the LHC injection regions have to be carefully evaluated. At the same time potential dangers related to faults during the extraction of high intensity beams at top energy have to be taken into account.
The survival of all the protection elements and the downstream machine components have to be insured for every operational scenario. Past and present assumptions on possible failure scenarios, their likelihood and effects are reviewed together with the estimated damage limits. Potential intensity and performance limitations are therefore derived for the 2017 run in view of the specific beams available.

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