

**Subject:** Re: [[Eic-projdet-tic-l] ] TIC meeting , May19, 2025 (QA, common scenarios - luminosity, radiation doses, background), summary version2

**From:** Silvia Dalla Torre <Silvia.DallaTorre@ts.infn.it>

**Date:** 6/6/2025, 3:36 PM

**To:** elke-caroline aschenauer <elke@bnl.gov>, Simon Gardner <simon.gardner@glasgow.ac.uk>, Nathaly Santiesteban <nathaly.santiesteban@unh.edu>, thomas ullrich <thomas.ullrich@bnl.gov>, Ernst Sichtermann <EPSichtermann@lbl.gov>, Oleg Tsai <tsai@physics.ucla.edu>, "Landgraf, Jeffery M." <jml@bnl.gov>, Barbosa Fernando <barbosa@jlab.org>, "jhuang@bnl.gov" <jhuang@bnl.gov>, "eic-projdet-tic-l@lists.bnl.gov" <eic-projdet-tic-l@lists.bnl.gov>, "tamponi@to.infn.it" <tamponi@to.infn.it>, Markus Diefenthaler <mdiefent@jlab.org>, Barak Schmookler <baraks@ucr.edu>  
**CC:** "Lajoie, John" <lajoiejg@ornl.gov>, matt posik <posik@temple.edu>, "Hartbrich, Oskar" <hartbricho@ornl.gov>, "Garg, Prakhar" <prakhar.garg@yale.edu>

Dear Colleagues,

version2 in the following.

this e-mail is to underline the main outcomes of the May 12, 2025 TIC meeting dedicated to preTDR matters: (i) QA; (ii) common scenarios - luminosity, radiation doses, background.

DSCs are kindly asked to dedicate their attention to the material presented because of it is relevant to progress towards the preTDR draft, Version2.

### **Communications on May12:**

- from TC-office:

Reminders about the proposal of WFs at the July ePIC meeting, about the requests of old simulation

data samples for quick direct access is requested.

Underlining the request of accompanying preTDR figures with the appropriate metadata.

### **(i) QA**

In his report, Walt Akers presented the overall project approach to Quality Assurance.

The overall structure to organize and store the information is being put together, while the specific aspects related to the different subsystems are going to be collected by the CAMs.

The source of the information are the DSCs. When the material is organized in the overall scheme, the DSCs will be invited to crosscheck it. The information is needed for CD2.

These documents are not part of the preTDR. In the preTDR the following has to be shortly mentioned:

- short description of the QA process indicating which components and which fraction of samples will be tested;
- short description of the setups for QC and justification of multiple setups, when they are more than one  
(different function/amount of work/...).

### **(ii) common scenarios - luminosity, radiation doses, background**

The topics and their present status have been presented in an ample report by Elke Aschenauer.

Here the highlights are recalled, while the full picture can be obtained thanks to the slides and the meeting recording.

*Background* - The progress in background studies are illustrated and they include all the expected effects apart

inelastic hadronic beam-gas interactions, which require hadron tracking and, therefore, an extra major effort.

There is a strong correlation between vacuum quality and beam currents. The complete understanding

of this picture requires a set of simulations, not available in short time.

For the preTDR, the indicated reference scenario is for the energy configuration 18 GeV - 275 GeV and vacuum as obtained

after 10000Ah. The relative background data should be finalized within a few weeks.

Core studies to be performed with background are indicated; they include:

separating DIS events from background when both are present in the detector simultaneously, identifying

events where a "real" low-Q2 event in presence of beam-gas background, rate of mistaking "pure" background

for a DIS event.

*Luminosity* - The luminosity evolution from early operation till full capabilities is recalled. For the pre-TDR one should use 10 GeV x 275 GeV as it will be the highest luminosity combination and will impact occupancy and radiation.

*Radiation Doses* - A detector lifetime has to be defined: 15 y is assumed, 5 of them in the initial operation conditions

and 10 in full capability with a realistic mixture of beam energies and h beam species corresponding to an integral of . The corresponding complete information is posted at [https://](https://wiki.bnl.gov/EPIC/index.php?title=Radiation_Doses)

[wiki.bnl.gov/EPIC/index.php?title=Radiation\\_Doses](https://wiki.bnl.gov/EPIC/index.php?title=Radiation_Doses) .

All questions to the experts about the above matter should be directed using e-mails to the address: [eic-ir-bckgr-l@lists.bnl.gov](mailto:eic-ir-bckgr-l@lists.bnl.gov) .

Best greetings, Silvia

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Silvia DALLA TORRE

<http://wwwusers.ts.infn.it/~dallator/SilviaDALLATORRE/>

INFN - Sezione di Trieste

<http://www.ts.infn.it>

Via Valerio, 2

34127 Trieste ITALY

tel. +39.040.558 3360 - +39.040.375 6227

fax +39.040.558 3350 - +39.040.375 6258

e-mail: [silvia.dallatorre@ts.infn.it](mailto:silvia.dallatorre@ts.infn.it)