

$x > 1$ and EMC Effect (XEM2) Run Plan

October 26, 2022

1 Target Boiling Studies - Part I

- This study requires stable high current. It will be postponed if high current beam is unavailable at the moment.
- **DAQ:** Single Arm
- **SHMS/HMS Trigger:** PS2 (ELREAL)/PS2 (ELREAL)
- **SHMS Settings:** -4.0 GeV & 20°
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- Adjust the prescales (SHMS PS2 and HMS PS2) to keep the rates below 3 kHz. All the other prescales should be set to **-1**.
- The goal number of events is 50K-100K for each target at every current.

1.1 Boiling studies - LD2 target

- Move target to LD2 and take one run with each current setting.

Table 1: Boiling Studies - LD2 Target

Target	I (μA)	est. time	Done ?
LD2	80 μA	10 min	
LD2	60 μA	10 min	
LD2	40 μA	10 min	
LD2	30 μA	10 min	
LD2	20 μA	10 min	
LD2	10 μA	10 min	

1.2 Boiling studies - LH2 target

- Move target to LH2 and take one run with **each current setting**.

Table 2: Boiling Studies - LH2 Target

Target	I (μA)	est. time	Done ?
LH2	80 μA	10 min	
LH2	60 μA	10 min	
LH2	40 μA	10 min	
LH2	30 μA	10 min	
LH2	20 μA	10 min	
LH2	10 μA	10 min	

1.3 Al dummy target data for target wall subtraction

- Move target to Al dummy and take a 10 min run at 40 μA .
- Since this data will be used for the target wall subtraction, no current scan will be performed. We will take data only with 40 μA current.

Table 3: Al dummy target data for target wall subtraction

Target	I (μA)	est. time	Done ?
dummy	40 μA	10 min	
dummy	30 μA	10 min	
dummy	20 μA	10 min	
dummy	10 μA	10 min	

1.4 Boiling studies - Beryllium target

- Move target to Beryllium and take one run with each current setting.

Table 4: Boiling Studies - Beryllium Target

Target	I (μA)	est. time	Done ?
Beryllium	70 μA	10 min	
Beryllium	60 μA	10 min	
Beryllium	40 μA	10 min	
Beryllium	30 μA	10 min	
Beryllium	20 μA	10 min	
Beryllium	10 μA	10 min	

1.5 Boiling studies - Carbon target

- Move target to Carbon and take one run with each current setting.

Table 5: Boiling Studies - Carbon Target

Target	I (μA)	est. time	Done ?
Carbon	70 μA	10 min	
Carbon	60 μA	10 min	
Carbon	40 μA	10 min	
Carbon	30 μA	10 min	
Carbon	20 μA	10 min	
Carbon	10 μA	10 min	

Total estimated time for section 1.5 including the momentum and target changes: **7 hrs** with 100% efficiency.