

Machine and Run Status

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12-March-2021
Run 2021

- **7.7 GeV Collisions**
- **Projections**



Review of the Past Week

Day	Hours of data taking	Number HLTgood Events	Issues	Hours down
Friday, Mar 05	11.9	0.81 M	CeC 10AM-4PM	6 H
Saturday, Mar 06	17.6	1.27 M	none	
Sunday, Mar 07	18.3	1.28 M	none	
Monday, Mar 08	5.6	0.39 M	CeC 7:30 – 6:00	10.5 H
Tuesday, Mar 09	13.5	0.89 M	Power Dip	4.5 H
Wednesday, Mar 10	9.5	0.74 M	APEX, Beam Development	10 H
Thursday, Mar 11	6.0	0.50 M	CeC 7:30 – 7:30 PM	12 H
Friday, Mar 12	TBD	TBD	3 PM Damper Commissioning	2 H

Averaging 11.8 hours per day
 Averaging 0.84 M events per day

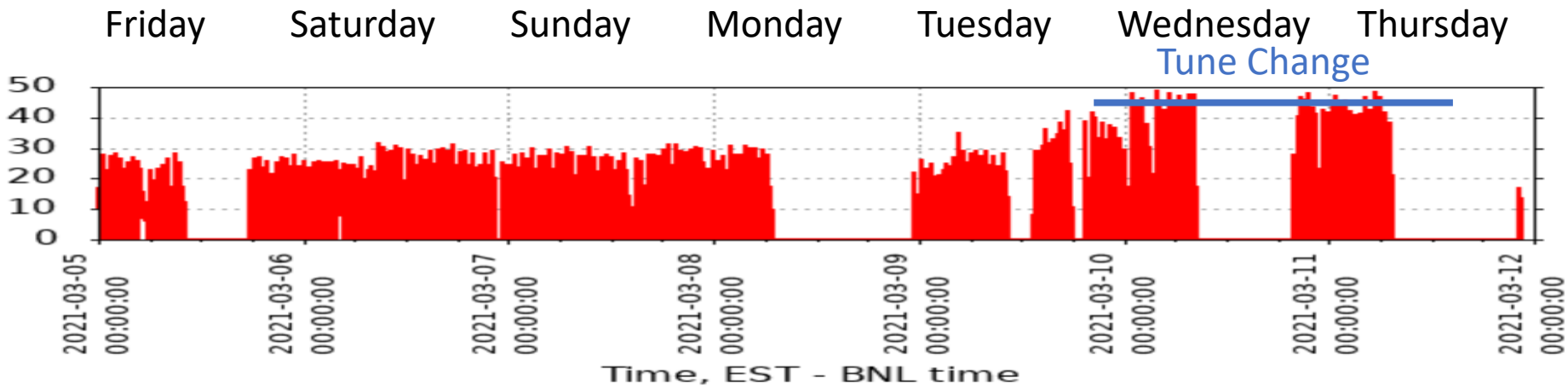
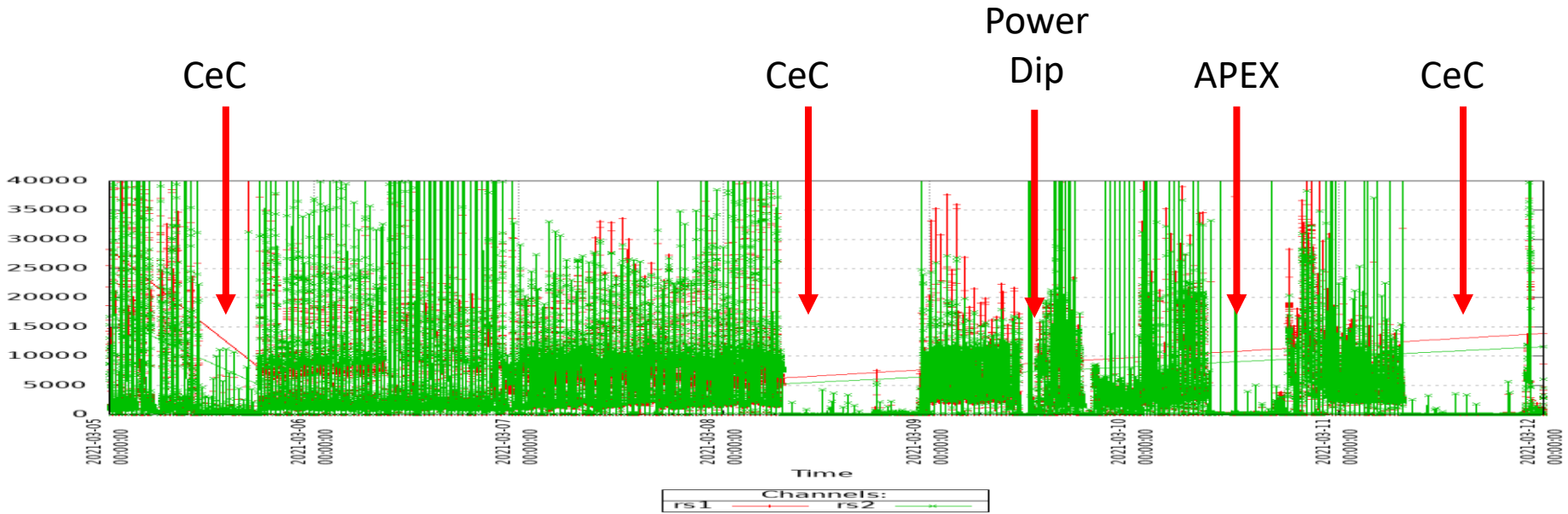


← Worse than last week

Tune change on Wednesday

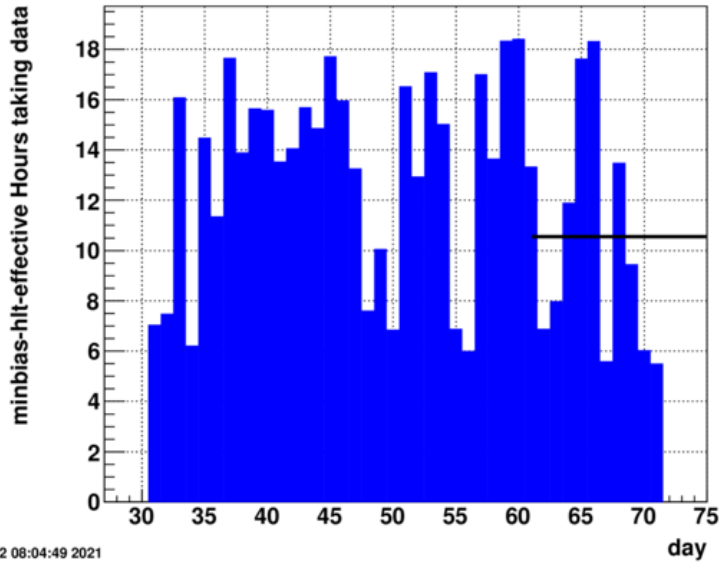
Performance is pretty much optimized, at this point... now trying to maintain this performance

7.7 GeV Collider Running



7.7 GeV collisions Run Overview

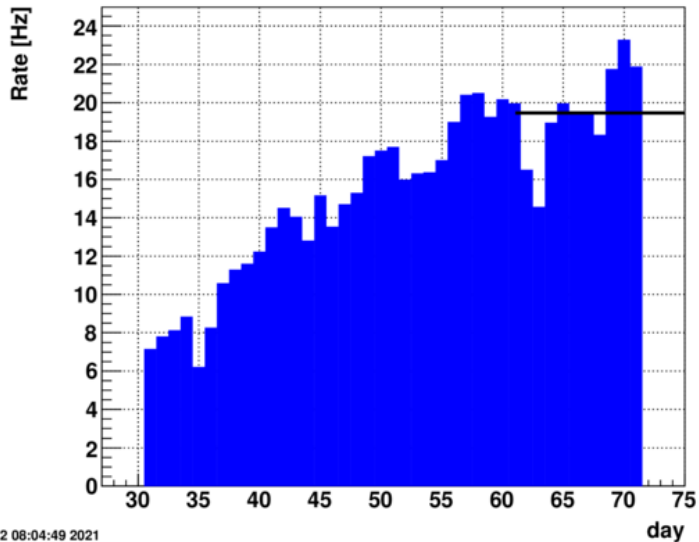
hours_perday_mb_hlt-effective.txt



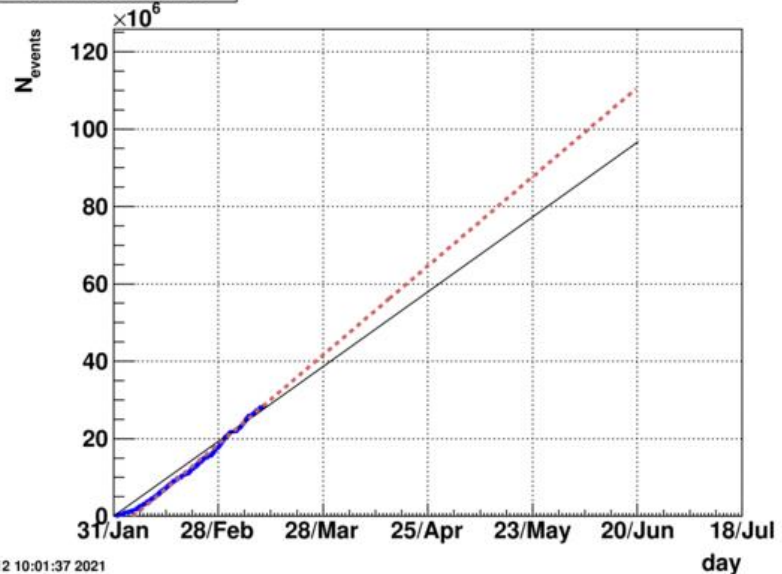
- Average over the past week was 11.8 H
- We are likely to only reach 13.5 H average due to CeC (10%), APEX and maintenance (5%)
- BUR estimate was 12-15 Hours/day
- HLTgood rate is currently 19 Hz.
- BUR estimate was 16-24 Hz
- Currently at 28.6 (+3.2) M HLTgood events. Project to complete around May 31st.

Last week this was May 21st

minbias-hlt-effective Average Rate [Hz]



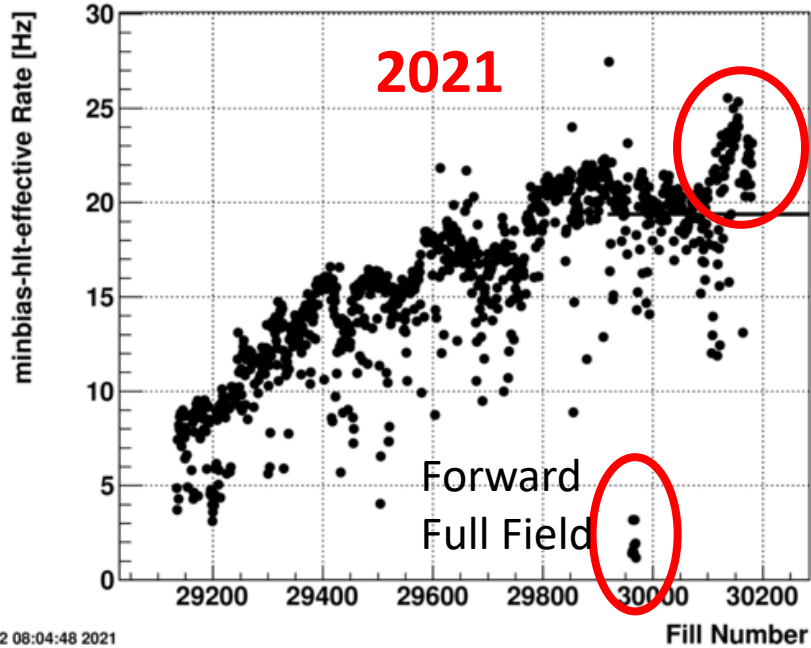
minbias-hlt-effective



HLT Good Event Rate:

Recent change to operating procedures

nev_rate_perfill_mb_hlt-effective.txt



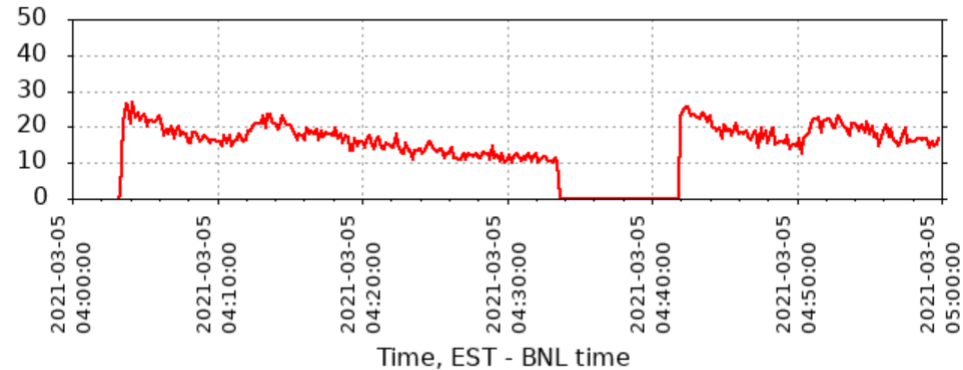
Still evaluating this change

Last week – “High Tune”

30 minute fills

Intensity $\sim 100E9$

LEReC working well

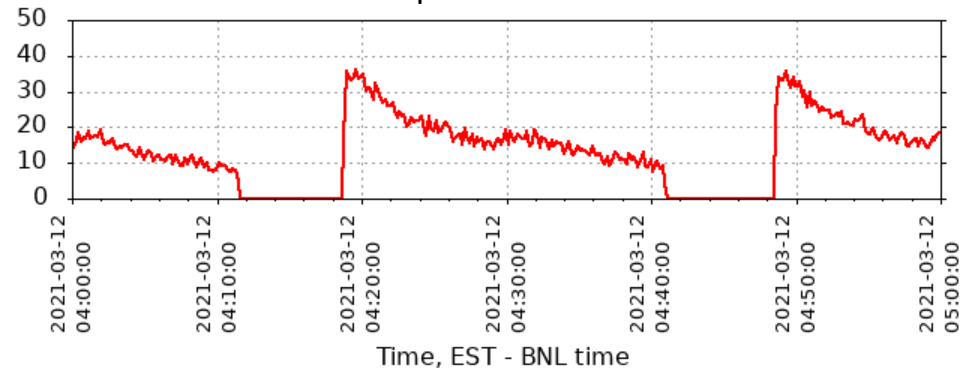


This week – “Low Tune”

25 minute fills

Intensity $\sim 150E9$

LEReC not optimized



HLT good (70cm vtx) —

Projections for the full Run 21 physics agenda:

Run-21:

Single-Beam Energy (GeV/nucleon)	$\sqrt{s_{NN}}$ (GeV)	Run Time	Species	Events (MinBias)	Priority
3.85	7.7	11-20 weeks	Au+Au	100 M	1
3.85	3 (FXT)	3 days	Au+Au	300 M	2
44.5	9.2 (FXT)	0.5 days	Au+Au	50 M	2
70	11.5 (FXT)	0.5 days	Au+Au	50 M	2
100	13.7 (FXT)	0.5 days	Au+Au	50 M	2
100	200	1 week	O+O	400 M 200 M (central)	3
8.35	17.1	2.5 weeks	Au+Au	250 M	3
3.85	3 (FXT)	3 weeks	Au+Au	2 B	3

Table 2: Proposed Run-21 assuming 24-28 cryo-weeks, including an initial one week of cool-down, one week for CeC, a one week set-up time for each collider energy and 0.5 days for each FXT energy.

24 Weeks (How much of the program are we likely to complete:

7.7 GeV : 6 weeks spent, 11 weeks to go.

CeC : concurrent (10%)

APEX/maintenance: concurrent (5%)

Priority 2: 1 week → Highly Likely (Late May)

Priority 3a: 1 week → Highly Likely (Early June)

Priority 3b: 2.5 weeks → Likely (Late June)

Priority 3c: 3 weeks → 50/50 for completion by end of operations in mid-July

Priority X: 1 week → TBD (CeC parasitic → 7.2 GeV FXT)

} Highly Likely

Summary

- Performance has seen a recent change
- HLTgood rate is averaging 19 Hz, which is in the middle of our range of projections
- Hours per average was 11.8 last week, also in the middle of our range of our CeC corrected projections
- We are on track to complete 7.7 GeV collisions by May 31st.
- Likely also to complete most of the priority 2 and 3 items in our BUR.
- With continued performance at this level, or with improvements to rates, we could complete our entire physics program.
- May start considering “**opportunity physics**” for end of run.

Overall Run Status

Energy	Start	Finish	First Run	Last Run	HLTgood	Target
7.7 GeV	Jan 31 st	TDB	22031042	TDB	22.7 M	100 M
3.0 FXT						
9.2 FXT						
11.5 FXT						
13.7 FXT						
O+O 200						
17.1 GeV						
3.0 FXT						
26.5 FXT						
53 GeV						