

Run 20 RHIC Machine/Experiments Meeting

August 25, 2020

Agenda:

- General discussion of Run 20 status, progress, and end - W. Christie
- RHIC Status - C. Liu
- STAR Status - JH Lee
- CeC Status - V. Litvinenko
- All Other Business (AOB)

BLUEJEANS CONNECTION INFO

Meeting URL

https://bluejeans.com/806756566?src=join_info

Meeting ID: **806 756 566**

Want to dial in from a phone?

Dial one of the following numbers:

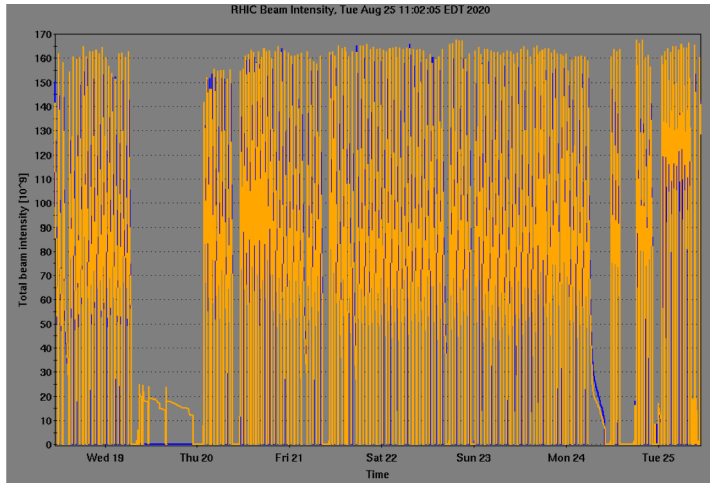
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+1.408.915.6290 (United States(San Jose))

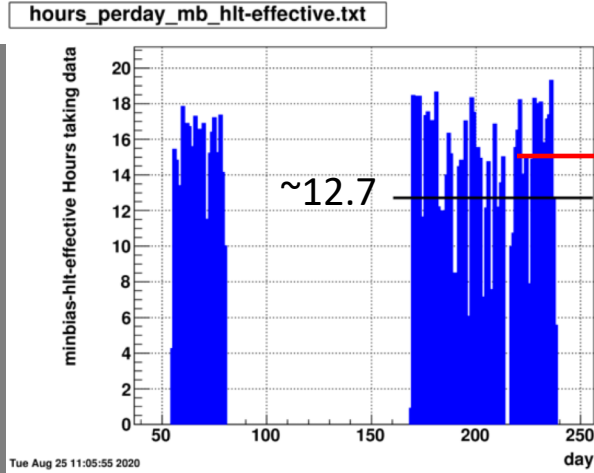
(see all numbers - <https://www.bluejeans.com/premium-numbers>)

Enter the meeting ID and passcode followed by #

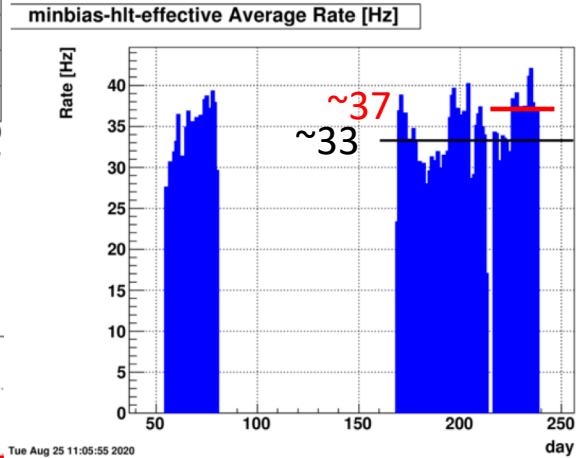
Some Performance Plots for the past week's Operations



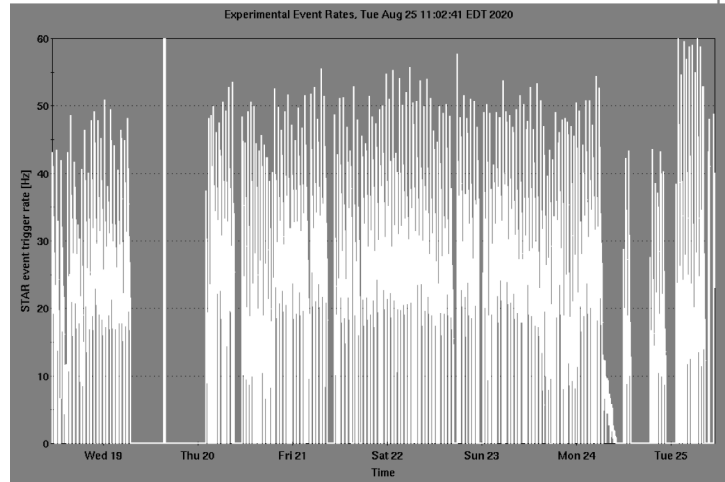
RHIC Store Intensities



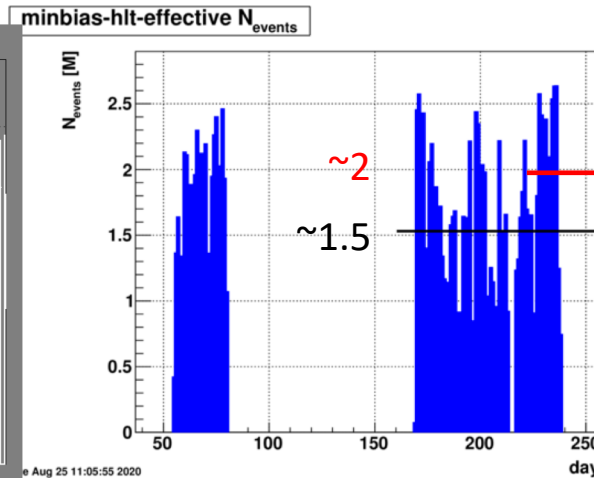
STAR DAQ hrs/day



Store averaged "good" evt rates



STAR "Good" Event rates

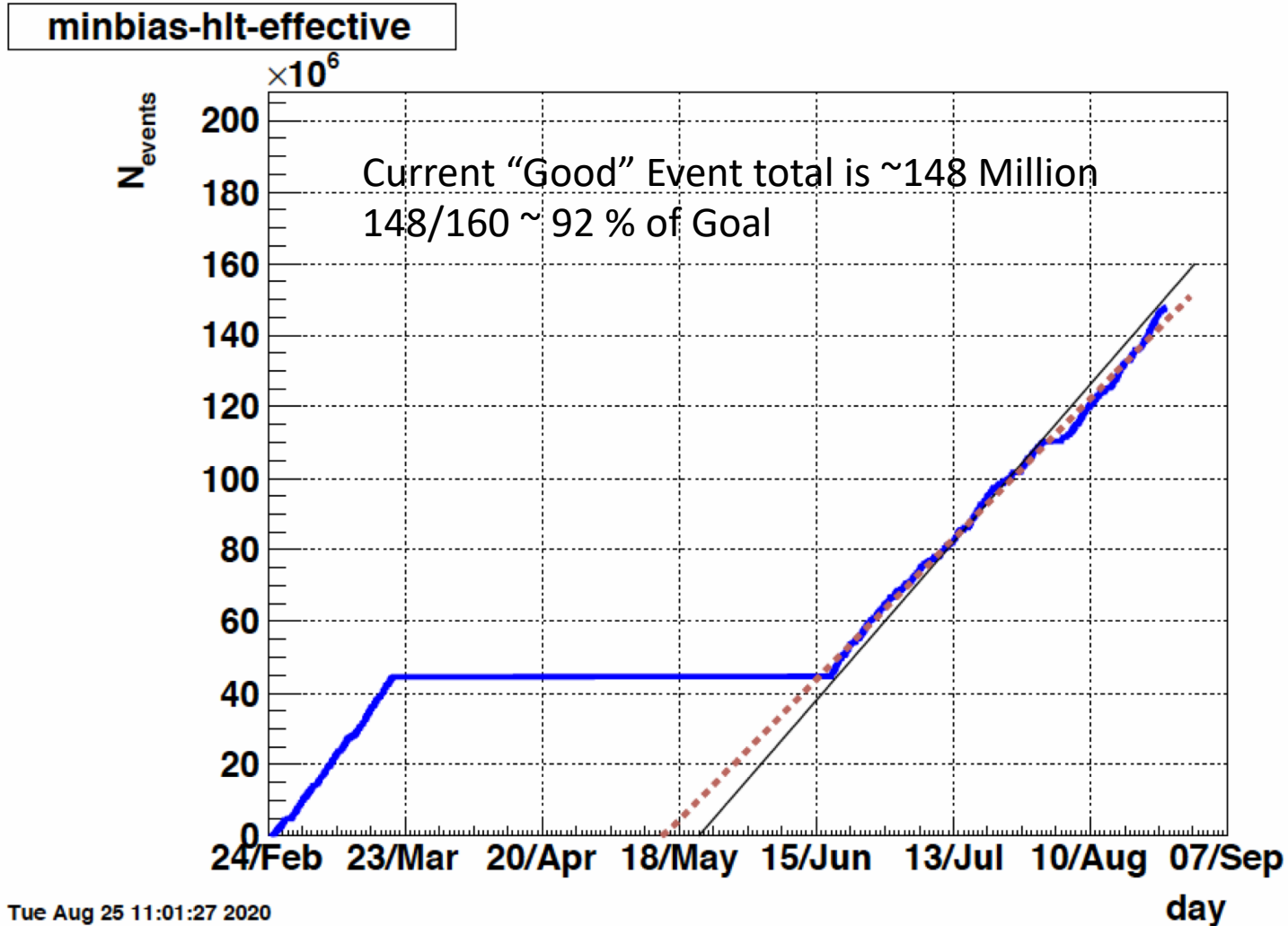


"Good" Evts/day

Black # = Average since restart
Red # = Average for past week

Increased mean event rates, and average of ~ 2.5 Mevts/day over the weekend

Current STAR Projections






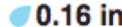

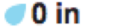













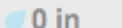



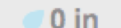




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At this point it appears likely that the data set goal will be reached ~ 1st of September (Tuesday). Please recall that CeC running as well as 7.7 GeV commissioning time is included in the run program. Beam Operations will end at 8 am on Monday September 14th, followed by ~ a shift of High current and High Pot checks, and then the warm up.

A Long range Forecast for coming weeks

August

23  Mostly Cloudy Actual: 81° 70° 	24  Partly Cloudy Actual: 87° 74° 	25  PM Thunderstorms Forecast: 89° 62° 	26  Sunny Forecast: 78° 66° 	27  PM Thunderstorms Forecast: 89° 72° 	28  Mostly Sunny Forecast: 84° 72° 	29  Scattered Thunderstorms Forecast: 79° 68° 
30  Partly Cloudy Forecast: 77° 61° 	31  Sunny Forecast: 74° 63° 	1  Partly Cloudy Forecast: 75° 67° 	2  Partly Cloudy Forecast: 77° 66° 	3  Mostly Sunny Forecast: 77° 67° 	4  Partly Cloudy Forecast: 80° 68° 	5  Partly Cloudy Forecast: 80° 68° 

In general the weather ahead of us dynamic, with a few days with possible thunder storms, and a trend of cooler nights.

We've already seen the worst we'll experience in terms of Temperature and humidity.
 After today, Thursday is the most problematic day forecast for the next week and a half.

The end date for Cryo Operation for RHIC Run 2020

Estimate for date when STAR Data set goal gets reached:

- 12 Mevts left to reach goal
- At 1.7 Mevts/day average this means 7 days ->> ~Sept 1st (Tues.)
- At 1.8 Mevts/day average this means 6.7 days ->> Sept 1st (Wed.)

The average over the past week has been ~ 2.0 Mevts/day. As we discussed at the Monday 9 am mtg, Tuesday, Sept. 1st projects to be the date for ending the 9.2 GeV running, and starting the transition to 7.7 GeV Commissioning. **As a proposal, we could/should decide that 9.2 GeV operations end no later than at 9 am Sept. 1st**

September						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19

An incentive to cease 9.2 GeV running no later than the morning of Sept. 1st is to get through the staff intensive portion of the LEReC plan, including all Controller and HV supply testing, prior to Labor day Weekend, and then run with 7.7 GeV collisions through the long weekend.

LEReC tests and running at 3.85GeV:

Does not include any RHIC machine development with ions if needed.

Day 1: Tuesday Sept. 1st ?

DAY shift, 8am-4pm:

- 1.) access to IP4 to tune 9MHz RF: 6 hours
- 2.) access to IP2 to exchange Gun HVPS (install new inverter #1): 1-2 hour
- 3.) after IP2 access, 10am: establish e-beam operation at 1.6MeV, check e-beam optics in cooling sections

EVE shift, 4pm-12am (ions in RHIC should be ready for this shift)

- 4.) finish e-beam work, LLRF for electrons first, then tuning and sync of electron/ions at new energy
- 5.) check cooling with ions if ready

Owl shift, 12am-8am (**ions in RHIC must be available, otherwise no shift**)

- 6.) cooling optimization of ions

Day 2: Wednesday Sept. 2nd ?

DAY shift:

- 7.) access to IP2 to exchange Gun HVPS (install new inverter #2): 1-2 hour
- 8.) switch to new HVPS controller: 1-2 hours
- 9.) Check Gun operation with new controller: 2 hours
- 10.) Establish and check performance at high-current running
- 11.) Access to IP2 to exchange Gun HVPS (install new inverter #3): 1-2 hour

EVE shift, 4pm-12am

- 12.) optimize cooling of ions (cooling/heating studies)

Owl shift, 12am-8am

- 13.) cooling of ions with detectors ON (full stores)

STAR Online and taking data (Thursday Owl shift)

Day 3: Thursday Sept. 3rd ?

STAR taking data

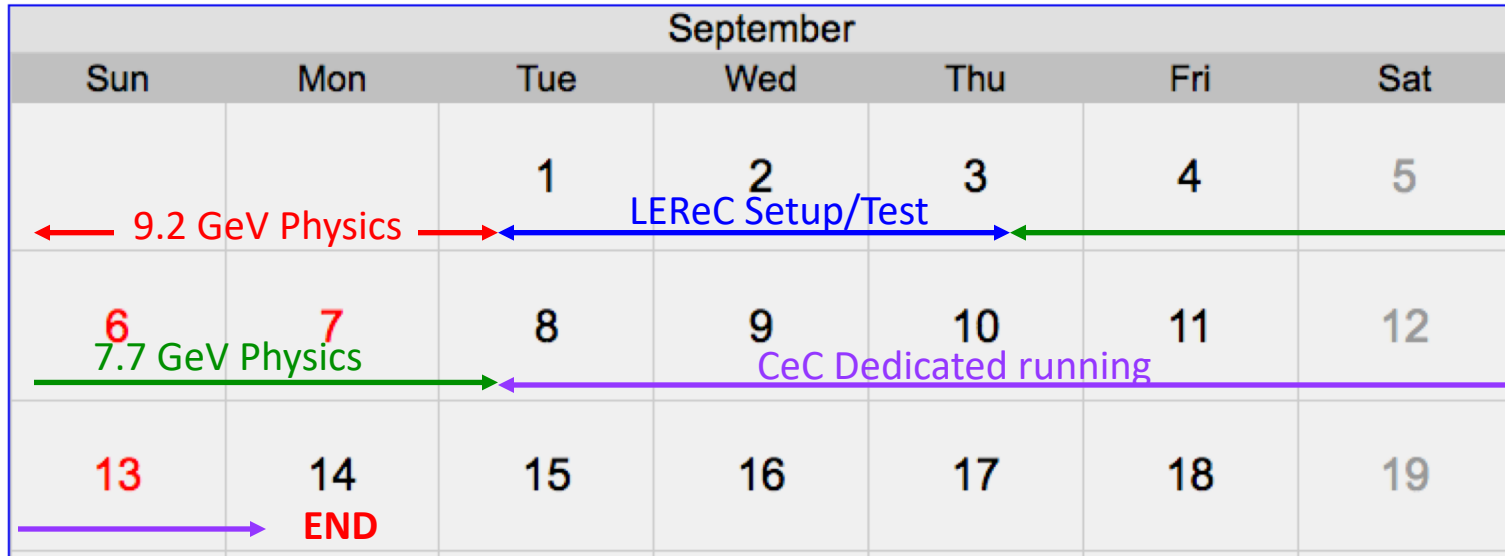
DAY shift, 8am-4pm:

- 14.) optimize cooling of ions, if needed
- 15.) optimize ions lifetime and luminosity with cooling

EVE, OWL shift: Physics running with cooling

Day 4,5,6,7 (possibly more if needed by STAR) Fri, Sat, Sun., Mon, STAR taking data (~ 4.5 days)

Proposed End Game



From Tuesday morning, Sept. 8th, through 8 am Monday Sept. 14th:

- Further 7.7 GeV studies/optimizations
- CeC dedicated running (~ 6 days possible)
- Mix of the two when CeC wants to step back

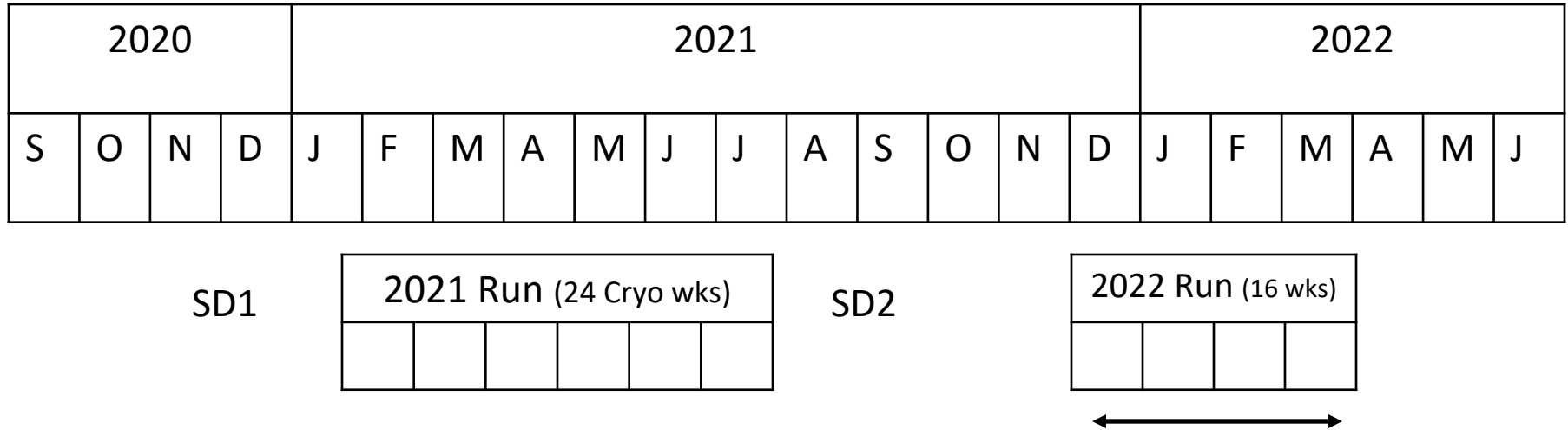
Beam Operations end at 8 am on Monday, September 14th. High current and High Pot testing for about a shift, and then RHIC Run 2020 Ends. First Helium offload (truck) Tuesday morning.

The Cryo plant would have been operating for 41 weeks if we end on Sept. 14th.

AOB

A brief summary from the Schedule meeting

View of the next 22 months



A few key outcomes from the Scheduling meeting that was held on July 22nd:

- The consensus from the meeting was that the upcoming shutdown (aka SD1) should have a duration of 4 months, extending from Oct. 1st to Feb. 1st
- Run 2020 should end as soon as all 2020 program goals are met. An end earlier than Oct. 1st would add time to the SD1 duration.
- The effort that will likely determine the duration of SD2 is the Cryo Controls upgrade.
- LEReC needs an estimated one week, after cold, to commission the 1.4 GHz cavity.
- CeC plans to request 2 weeks of dedicated time in the 2021 run.
- The upcoming PAC mtg in early September may cast some light on the length of the 2021 run.
- There is ongoing discussion of the time needed for the SD2 Cryo effort.

Calendars as a possible aid for discussion

2020

September							October						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5				1	2	3	
6	7	8	9	10	11	12	4	5	6	7	8	9	10
13	14	15	16	17	18	19	11	12	13	14	15	16	17
20	21	22	23	24	25	26	18	19	20	21	22	23	24
27	28	29	30				25	26	27	28	29	30	31

November							December						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7			1	2	3	4	5
8	9	10	11	12	13	14	6	7	8	9	10	11	12
15	16	17	18	19	20	21	13	14	15	16	17	18	19
22	23	24	25	26	27	28	20	21	22	23	24	25	26
29	30						27	28	29	30	31		

Calendar for Year 2021 (United States)

January							February							March						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
					1	2		1	2	3	4	5	6		1	2	3	4	5	6
3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13
10	11	12	13	14	15	16	14	15	16	17	18	19	20	14	15	16	17	18	19	20
17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27
24	25	26	27	28	29	30	28							28	29	30	31			
6:○	13:●	20:○	28:○				4:○	11:●	19:○	27:○				5:○	13:●	21:○	28:○			

April							May							June						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3						1				1	2	3	4	5
4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12
11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19
18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26
25	26	27	28	29	30		23	24	25	26	27	28	29	27	28	29	30			
4:○	11:●	20:○	26:○				3:○	11:●	19:○	26:○				2:○	10:●	17:○	24:○			

July							August							September						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3		1	2	3	4	5	6	7			1	2	3	4
4	5	6	7	8	9	10	8	9	10	11	12	13	14	5	6	7	8	9	10	11
11	12	13	14	15	16	17	15	16	17	18	19	20	21	12	13	14	15	16	17	18
18	19	20	21	22	23	24	22	23	24	25	26	27	28	19	20	21	22	23	24	25
25	26	27	28	29	30	31	29	30	31					26	27	28	29	30		
1:○	9:●	17:○	23:○	31:○			8:●	15:○	22:○	30:○				6:●	13:○	20:○	28:○			

October							November							December						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
				1	2			1	2	3	4	5	6			1	2	3	4	
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
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17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
6:●	12:○	20:○	28:○				4:●	11:○	19:○	27:○				4:●	10:○	18:○	26:○			

2022

January							February							March						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
						1		1	2	3	4	5		1	2	3	4	5		
2	3	4	5	6	7	8	6	7	8	9	10	11	12	6	7	8	9	10	11	12
9	10	11	12	13	14	15	13	14	15	16	17	18	19	13	14	15	16	17	18	19
16	17	18	19	20	21	22	20	21	22	23	24	25	26	20	21	22	23	24	25	26
23	24	25	26	27	28	29	27	28						27	28	29	30	31		
30	31																			
2:●	9:○	17:○	25:○				1:●	8:○	16:○	23:○				2:●	10:○	18:○	25:○			

April							May							June						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
				1	2		1	2	3	4	5	6	7			1	2	3	4	
3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11
10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25
24	25	26	27	28	29	30	29	30	31					26	27	28	29	30		
1:●	9:○	16:○	23:○	30:●			8:○	16:○	22:○	30:●				7:○	14:○	20:○	28:●			