Run 20 RHIC Machine/Experiments Meeting

August 18, 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

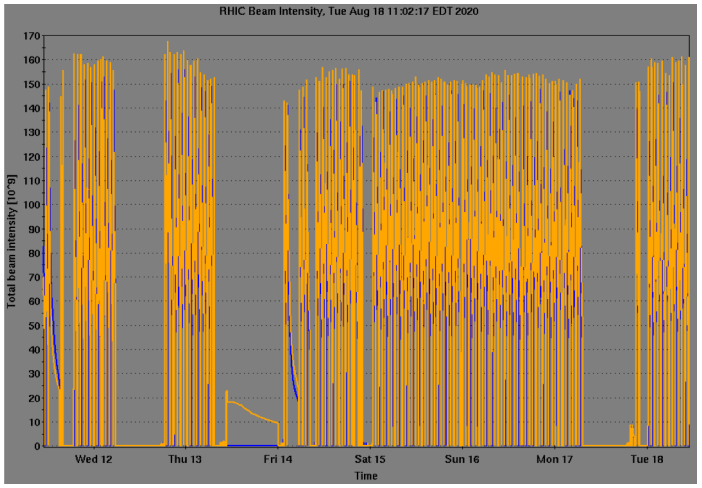
Meeting URL
https://bluejeans.com/806756566?src=join_info

Meeting ID: **806 756 566**

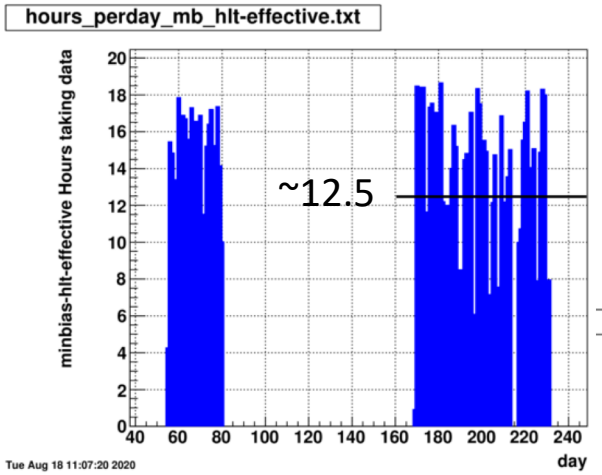
Want to dial in from a phone?
Dial one of the following numbers:
+1.408.419.1715 (United States(San Jose))
+1.408.915.6290 (United States(San Jose))
(see all numbers - https://www.bluejeans.com/premium-numbers)

Enter the meeting ID and passcode followed by #

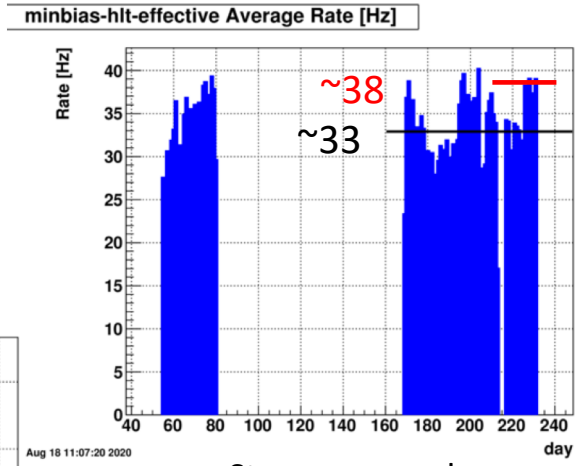
Some Performance Plots for the past week's Operations



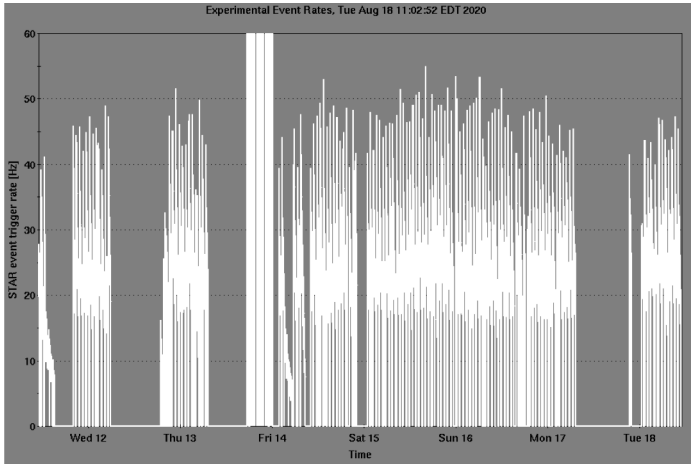
RHIC Store Intensities



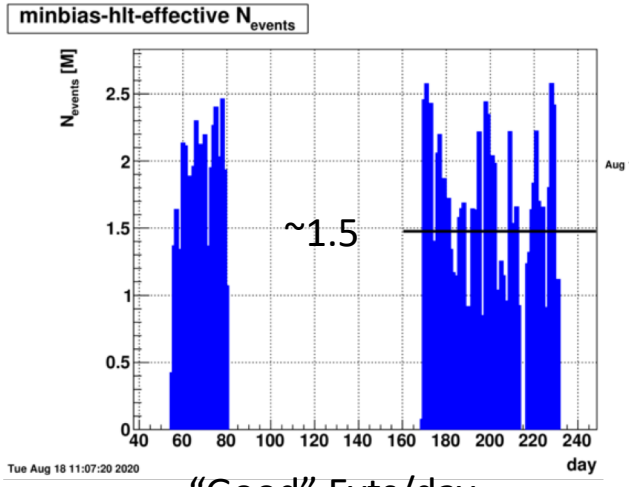
STAR DAQ hrs/day



Store averaged
"good" evt rates



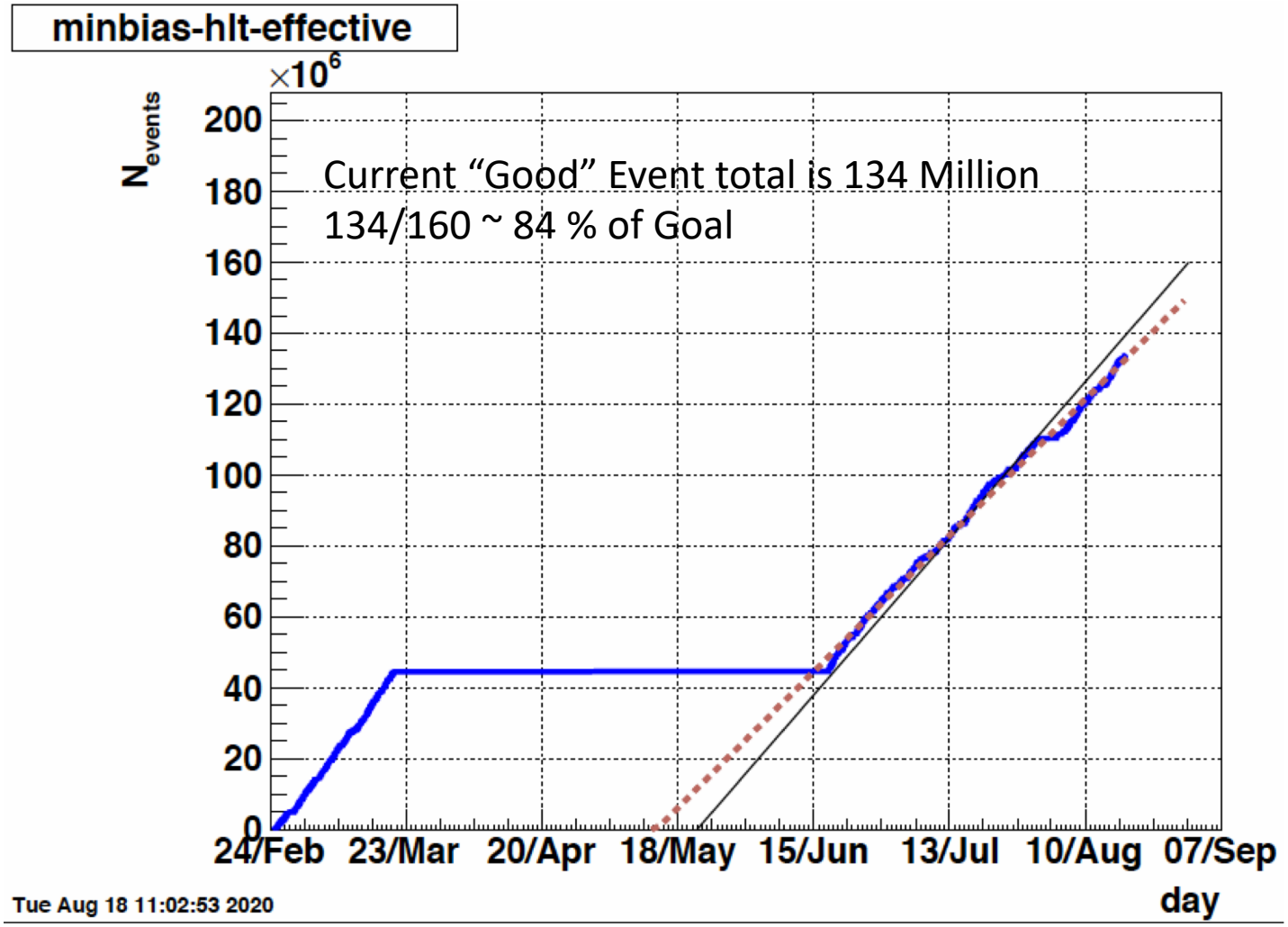
STAR "Good" Event rates



"Good" Evts/day

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

Current STAR Projections



Many things, in particular weather related, can occur over the next three weeks which could impact the progress of the run. At this point it appears likely that the data set goal will be reached ~ 2nd to 4th of September. Please recall the ~ 4 days of CeC running as well as 7.7 GeV commissioning time is included in the run program.

A Long range Forecast for coming weeks

August

16	17	18	19	20	21	22
Cloudy Actual: 70° | 65° 0.05 in	Mostly Sunny Actual: 78° | 63° 0.75 in	Mostly Sunny Forecast: 81° | 66° 0 in	Partly Cloudy Forecast: 79° | 63° 0 in	Sunny Forecast: 78° | 66° 0 in	Partly Cloudy Forecast: 82° | 69° 0 in	Mostly Cloudy Forecast: 82° | 71° 0.03 in
23	**24**	**25**	**26**	**27**	**28**	**29**
Scattered Thunderstor Forecast: 81° | 71° 0.13 in	Mostly Sunny Forecast: 83° | 71° 0 in	Mostly Sunny Forecast: 83° | 69° 0 in	Mostly Sunny Forecast: 80° | 66° 0 in	Mostly Sunny Forecast: 79° | 66° 0.16 in	Partly Cloudy Forecast: 76° | 65° 0.17 in	Showers Forecast: 76° | 65° 0.12 in
30	**31**	**1**	**2**	**3**	**4**	**5**
AM Showers Forecast: 77° | 66° 0.09 in	Showers Forecast: 77° | 66° 0.18 in	Partly Cloudy Forecast: 76° | 66° 0.08 in	Average: 78° | 63° 0 in	Average: 78° | 62° 0 in	Average: 77° | 62° 0 in	Average: 77° | 62° 0 in

In general the weather ahead of us looks cooler, with fewer thunder storms, than the weather we've already experienced.

We've already seen the worst we'll experience in terms of Temperature and humidity.

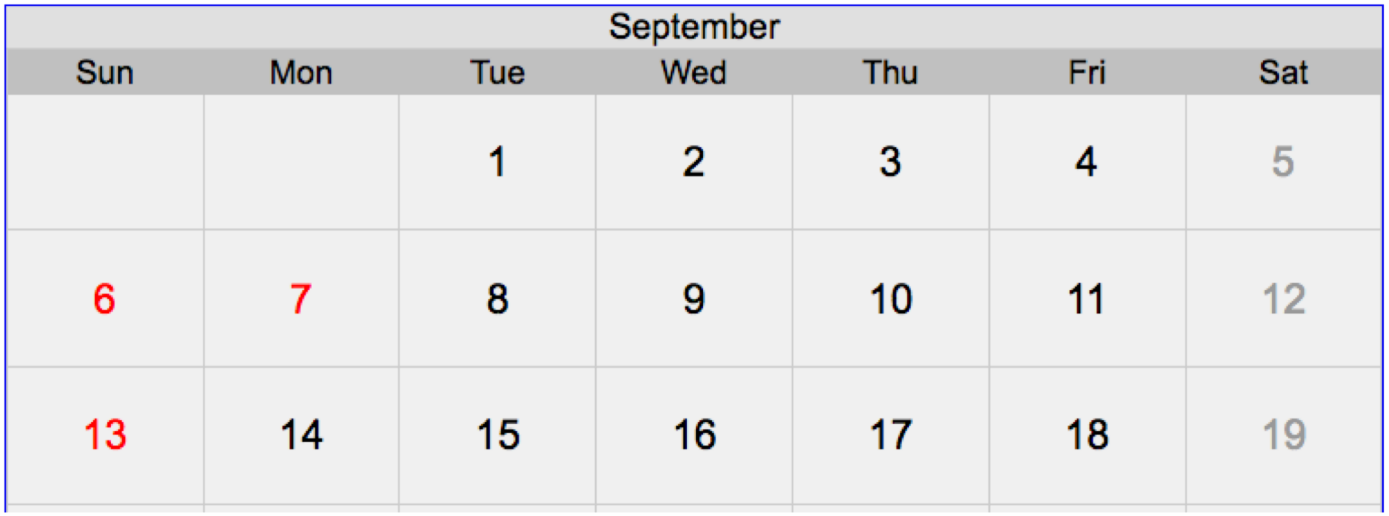
Only one Thunderstorm forecast for the next few weeks

Time to settle on the end date for Cryo Operation for RHIC Run 2020

Estimate for date when STAR Data set goal gets reached:

- 26 Mevts left to reach goal
- At 1.7 Mevts/day average this means 15.3 days ->> Sept 2nd (Tues.)
- At 1.6 Mevts/day average this means 16.3 days ->> Sept 3rd (Wed.)

The average rate since coming back online June 18th is 1.5 Mevts/day. With the worst of the weather behind us, the optimizing of operations, and the 10% recent increase in rate, I'm confident we can reach the goal no later than Sept. 3rd. **As a proposal, we could decide that 9.2 GeV operations end no later than at 8 am Sept. 3rd**



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. 3rd is to get through the staff intensive portion of the LEReC plan 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: Thursday Sept. 3rd ?

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: Friday Sept. 4th ?

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

Day 3: Saturday Sept. 5th ? STAR taking data

DAY shift, 8am-4pm:

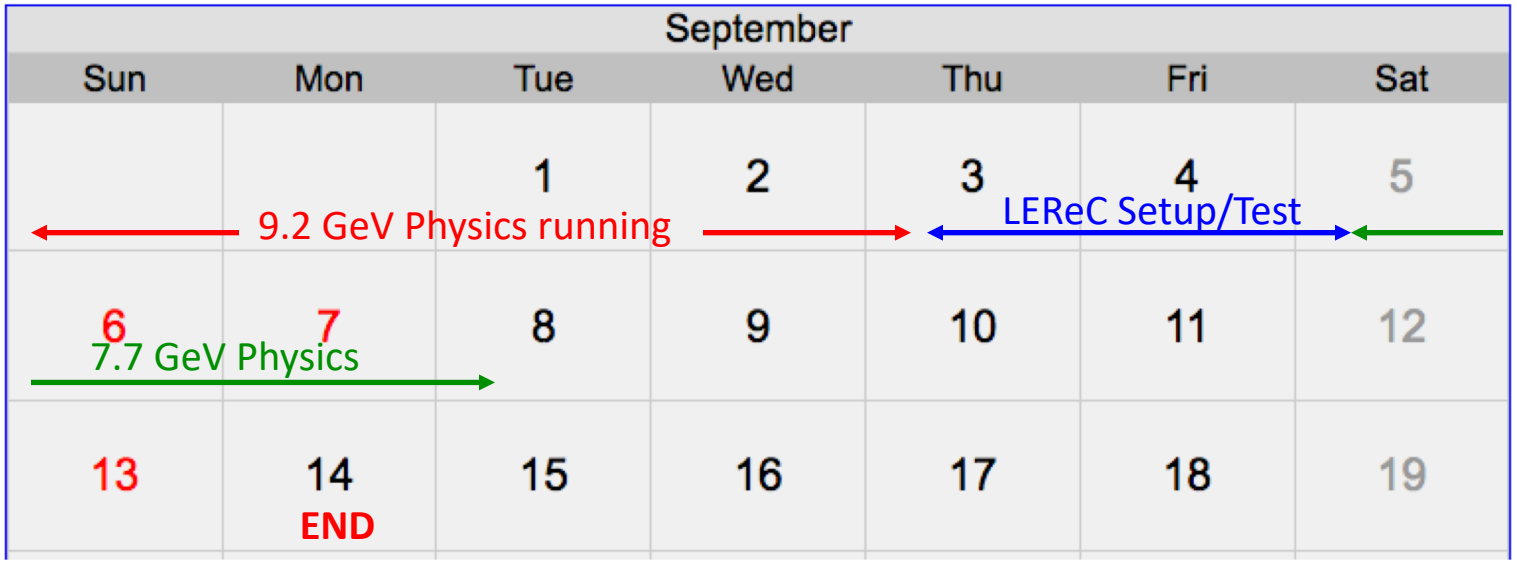
14.) optimize cooling of ions, if needed

15.) optimize ions lifetime and luminosity with cooling

EVE, OWL shift: Physics running with cooling

Day 4,5,6 (possibly more if needed by STAR) Sun., Mon, STAR taking data

Proposed End Game



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

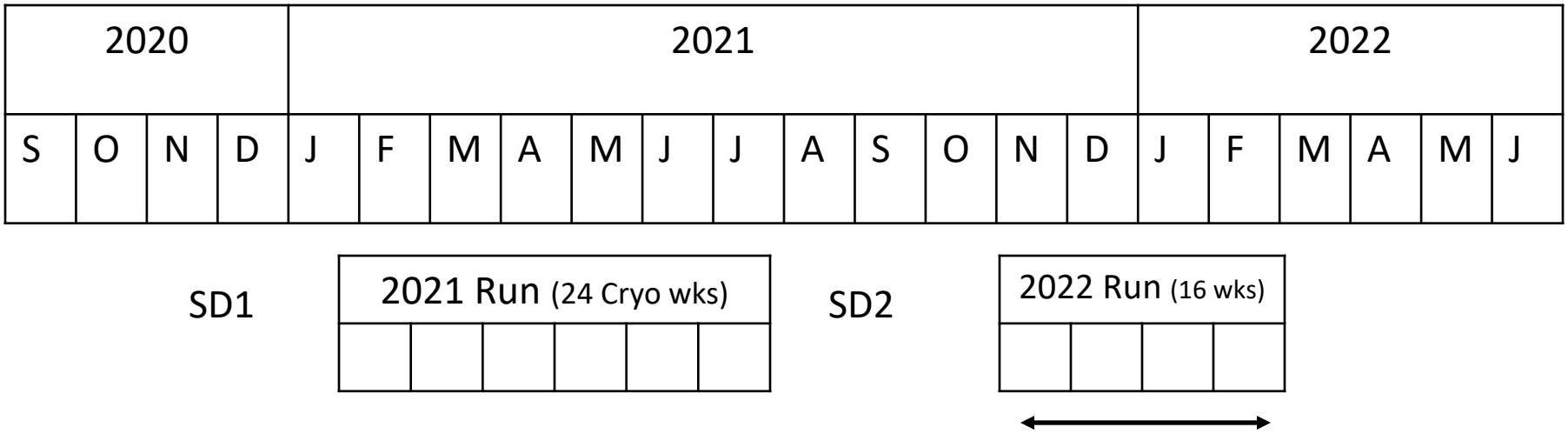
- Further 7.7 GeV studies/optimizations
- CeC dedicated running
- 2.5 GeV commissioning (STAR Online?)
- Cold diode testing
- ???

Cryo Operations end at 8 am on Monday, September 14th. RHIC Run 2020 Ends.

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

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

October

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

November

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

December

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

2022

January

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

2:● 9:◐ 17:○ 25:◑

February

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

1:● 8:◐ 16:○ 23:◑

March

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

2:● 10:◐ 18:○ 25:◑

April

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

1:● 9:◐ 16:○ 23:◑ 30:●

May

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

8:◐ 16:○ 22:◑ 30:●

June

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

7:◐ 14:○ 20:◑ 28:●

Calendar for Year 2021 (United States)

January

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

6:◑ 13:● 20:◐ 28:○

February

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

4:◑ 11:● 19:◐ 27:○

March

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

5:◑ 13:● 21:◐ 28:○

April

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

4:◑ 11:● 20:◐ 26:○

May

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

3:◑ 11:● 19:◐ 26:○

June

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

2:◑ 10:● 17:◐ 24:○

July

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

1:◑ 9:● 17:◐ 23:○ 31:◑

August

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

8:● 15:◐ 22:○ 30:◑

September

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

6:● 13:◐ 20:○ 28:◑

October

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

6:● 12:◐ 20:○ 28:◑

November

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

4:● 11:◐ 19:○ 27:◑

December

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

4:● 10:◐ 18:○ 26:◑