Lunar Calendar Analysis of the Years Around 30 AD

When using the Observed Calendar of the Second Temple, when were the Holy Days between 30 AD and 33 AD ? We do not live in a perfect world. Neither is the calculation of the dates for Holy Days. Here is the analysis of each year:

In 30 AD the new crescent of Thursday night March 23 was very difficult, if not impossible, to see (about 45 minutes to see a 1.0% crescent). Most would agree to use the Friday night March 24 evening as the new crescent sighting. But remember that we were not there, so keep in the back of your mind that some lucky person may have sighted the new crescent on the night of March 23. In 30 AD the Holy Day was most likely Friday night April 7 through Saturday night April 8, that is, a "Saturday Holy Day".

In 31 AD the new crescent of Wednesday night April 11 was easy to see. Most would agree to use this evening as the new crescent sighting. However, this evening was a 29th day, meaning that if observation was obscured by clouds or haze, and no one could see the new crescent, then the priests would have waited and declared the next evening, Thursday night April 12 as the new month. Remember that we were not there, so keep in the back of your mind that Thursday night is possible too. In 31 AD the Holy Day was most likely Wednesday night April 25 through Thursday night April 26, that is, a "Thursday Holy Day". However, it could be that it was the next day, a "Friday Holy Day".

In 32 AD the new crescent of Sunday night March 30 was very difficult to see. Most would agree to use the Monday night March 31 evening as the new crescent sighting. But remember that we were not there, so keep in the back of your mind that some lucky person may have sighted the new crescent on the night of March 30. In 32 AD the Holy Day was most likely Monday night April 14 through Tuesday night April 15, that is, a "Tuesday Holy Day".

In 33 AD there was a "close call" for the Spring Equinox (March 22 about 6:21 p.m.) and the new crescent of Friday evening March 20. Since we were not there, we have to discuss all possibilities:

Possibility A. If the new crescent was sighted on March 20, then March 21 would be "Day 1", and March 22 would be "Day 2", **but** 6:21 p.m. March 22 would be into lunar "Day 3". In this Possibility A they would have declared an Addar II and waited for the next crescent to begin the year.

Possibility B. If the new crescent was NOT sighted on March 20, then the evening of March 21 would begin "Day 1", March 22 daylight would have been "Day 1", **but** 6:21

p.m. March 22 would be into lunar "Day 2". In this Possibility B they STILL would have declared an Addar II and waited for the next crescent to begin the year.
(For those unfamiliar with why I say this, I invite them to study my papers "08Months.doc" and "CloseCalls.xls". In these I provide the 37 ancient data-points which had a similar situation, that is, the equinoxes were within one-day of the rules of intercalation. Over a span of 144 years (from -521 through –377), the Second Temple priests only had 37 very close calls, 22 close calls for Nissan and 15 close calls for Tishri. In each circumstance they never deviated, never allowing a winter beginning of the new year, and never allowing the Day of Atonement to begin while it was still summer.)

Thus, I conclude that there is no circumstance whereby they could have declared the new crescent circa March 20 to begin the new year. It is the next month which would have been declared Nissan.

Possibility C. The next new crescent was on Saturday night April 18, and was easy to see. Most would agree to use this evening as the new crescent sighting. However, this evening was a 29th day, meaning that if observation was obscured by clouds or haze, and no one could see the new crescent, then the priests would have waited and declared the next evening, Sunday night April 19 as the new month. Remember that we were not there, so keep in the back of your mind that Sunday night is possible too. If the new year was in April in 33 AD, then the Holy Day most likely began Saturday night May 2 through Sunday night May 3, that is, a "Sunday Holy Day". However, it could be that it was the next day, or a "Monday Holy Day".

SUMMARY:

30 AD	"Friday Holy Day", not very likely, probably impossible.
	"Saturday Holy Day", most probable.
31 AD	"Thursday Holy Day", or perhaps a
	"Friday Holy Day".
32 AD	"Monday Holy Day", not very likely, probably impossible.
	"Tuesday Holy Day", most probable.
33 AD	An April Holy Day:
	"Sunday Holy Day", or perhaps a
	"Monday Holy Day".

Computer Printout of new crescents observable from Jerusalem:

Years 25 AD through 34 AD

TABLE NOTES:

The Julian Day Number, followed by the Date, Weekday, and time of the Spring Equinox at the LMT location of the table, and the year according to the Seleucid Era.

The Julian Day Number, followed by the Date, Weekday, and time of the Autumn Equinox.

The number of days after the Spring Equinox.

The local mean time (LMT) the moon sets.

"Mn/Dy Wk Time" is the Month/Day, Weekday, and Time.

The Weekday has Sunday as day #1, and Sabbath as day #7, thus w2 is a Monday.

The number of minutes after the sun sets that the moon will set.

The amount of the moon which is reflecting light. 100% is a full moon, 0% is a solar eclipse. Typically you need at least 1% before you can hope to see a crescent moon.

The number of days in the previous month. Understand that 31 day months are occasionally listed, but only because the program is calculating, not observing. The observed calendar never allows 31 day months.

Example: On 01/19 the [b>] 11th month started on [w6] Friday evening, as the moon sat around 18:50 pm LMT. They had about 92 minutes to see the 2.64% illuminated crescent before the moon dipped below the horizon. This made the previous month have 30 days.

A flag: 'S' is for solar and 'L' is for lunar eclipse.

Signals that an eclipse of "that" type is likely to be visible somewhere on the earth, location is not calculated. This "flag" does not mean that an eclipse actually occurred, nor that it could be seen at the location of the table.

Year:: 25 Spring Equinox jd= 1730270.32 03/23 w6 06:00, Selucid=335
Fall Equinox jd= 1730456.74 09/25 w3 06:00, 186 days later
01/18 w5 17:45, 28m 0.23
b> 01/19 w6 18:50, 92m 2.64 30d
c> 02/17 w7 18:43, 60m 1.25 29d SL
03/18 w1 18:36, 34m 0.47
d> 03/19 w2 19:45, 102m 3.88 30d S
1> 04/17 w3 19:38, 78m 2.54 29d
2> 05/16 w4 19:30, 52m 1.49 29d
06/14 w5 19:17, 23m 0.67
3> 06/15 w6 20:14, 80m 3.64 30d
4> 07/14 w7 19:44, 47m 1.83 29d

08/12 w1 19:03, 23m 0.52
5> 08/13 w2 19:40, 61m 3.03 30d L
6> 09/11 w3 18:48, 41m 1.09 29d S
10/10 w4 17:53, 23m 0.17
7> 10/11 w5 18:26, 56m 1.66 30d
11/09 w6 17:36, 35m 0.38
8> 11/10 w7 18:14, 74m 2.21 30d
12/09 w1 17:38, 45m 0.59
9> 12/10 w2 18:26, 93m 2.96 30d
Year:: 26 Spring Equinox jd= 1730635.56 03/23 w7 06:00, Selucid=336
Fall Equinox jd= 1730821.99 09/25 w4 06:00, 186 days later
a> 01/08 w3 18:07, 59m 1.06 29d
02/06 w4 17:55, 21m 0.14
b> 02/07 w5 18:57, 83m 2.38 30d SL
c> 03/08 w6 18:50, 54m 1.16 29d
04/06 w7 18:43, 30m 0.53
1> 04/07 w1 19:52, 98m 3.80 30d
2> 05/06 w2 19:48, 77m 2.61 29d
3> 06/04 w3 19:42, 53m 1.58 29d
07/03 w4 19:28, 29m 0.69
4> 07/04 w5 20:23, 85m 4.10 30d
08/01 w5 19:01, 12m 0.11
5> 08/02 w6 19:47, 58m 2.26 29d SL
08/31 w7 19:00, 39m 0.86
6> 09/01 w1 19:35, 76m 3.96 30d
7> 09/30 w2 18:40, 57m 1.73 29d
10/29 w3 17:46, 36m 0.42
8> 10/30 w4 18:21, 71m 2.34 30d
11/28 w5 17:36, 43m 0.57
9> 11/29 w6 18:18, 85m 2.75 30d
12/28 w7 17:49, 49m 0.74
a> 12/29 w1 18:40, 99m 3.35 30d L
Year:: 27 Spring Equinox jd= 1731000.80 03/23 w1 06:00, Selucid=337
Fall Equinox jd= 1731187.23 09/25 w5 06:00, 187 days later
b> 01/27 w2 18:24, 60m 1.26 29d SL
02/25 w3 18:11, 23m 0.29
c> 02/26 w4 19:10, 81m 2.57 30d
1> 03/27 w5 19:01, 53m 1.32 29d
04/25 w6 18:54, 29m 0.60
2> 04/26 w7 20:01, 96m 3.69 30d
3> 05/25 w1 19:59, 76m 2.49 29d
4> 06/23 w2 19:52, 55m 1.48 29d L
07/22 w3 19:31, 37m 0.67
5> 07/23 w4 20:22, 88m 4.32 30d S
08/20 w4 18:56, 23m 0.18
6> 08/21 w5 19:38, 66m 2.59 29d

7> 09/19 w6 18:46, 49m 1.15 29d
10/18 w7 17:52, 30m 0.30
8> 10/19 w1 18:26, 66m 2.19 30d
11/17 w2 17:37, 40m 0.55
9> 11/18 w3 18:17, 80m 2.90 30d
12/17 w4 17:42, 47m 0.78
a> 12/18 w5 18:30, 95m 3.44 30d L
Year:: 28 Spring Equinox jd= 1731366.04 03/22 w2 06:00, Selucid=338
Fall Equinox jd= 1731552.47 09/25 w7 06:00, 186 days later
b> 01/16 w6 18:10, 55m 1.16 29d S
02/14 w7 17:53, 14m 0.19
c> 02/15 w1 18:48, 68m 1.85 30d
03/15 w2 18:33, 32m 0.62
d> 03/16 w3 19:29, 88m 3.09 30d
1> 04/14 w4 19:18, 59m 1.56 29d
05/13 w5 19:11, 34m 0.61
2> 05/14 w6 20:16, 99m 3.64 30d
3> 06/12 w7 20:11, 78m 2.38 29d L
4> 07/11 w1 19:56, 58m 1.42 29d S
08/09 w2 19:25, 42m 0.70
5> 08/10 w3 20:09, 87m 4.32 30d
6> 09/08 w4 19:18, 68m 2.65 29d
7> 10/07 w5 18:23, 49m 1.17 29d
11/05 w6 17:30, 26m 0.22
8> 11/06 w7 18:10, 67m 2.33 30d
12/05 w1 17:30, 38m 0.61
9> 12/06 w2 18:20, 88m 3.42 30d L
Year:: 29 Spring Equinox jd= 1731731.29 03/23 w4 06:00, Selucid=339
Fall Equinox jd= 1731917.71 09/25 w1 06:00, 186 days later
a> 01/04 w3 17:58, 53m 1.20 29d
02/02 w4 17:43, 13m 0.22
b> 02/03 w5 18:39, 68m 1.90 30d
03/04 w6 18:22, 29m 0.55
c> 03/05 w7 19:16, 82m 2.70 30d
1> 04/03 w1 18:58, 47m 1.01 29d
05/02 w2 18:44, 15m 0.18
2> 05/03 w3 19:42, 72m 1.92 30d
06/01 w4 19:34, 47m 0.76
3> 06/02 w5 20:35, 107m 3.90 30d SL
06/30 w5 19:24, 26m 0.19
4> 07/01 w6 20:21, 82m 2.51 29d
5> 07/30 w7 19:51, 61m 1.48 29d
08/28 w1 19:06, 42m 0.70
6> 08/29 w2 19:43, 81m 4.05 30d
7> 09/27 w3 18:48, 61m 2.33 29d
10/26 w4 17:54, 41m 0.89

8> 10/27 w5 18:35, 83m 4.65 30d
11/24 w5 17:07, 14m 0.08
9> 11/25 w6 17:57, 63m 2.27 29d SL
12/24 w7 17:33, 35m 0.74
a> 12/25 w1 18:35, 96m 3.97 30d
Year:: 30 Spring Equinox jd= 1732096.53 03/23 w5 06:00, Selucid=340
Fall Equinox jd= 1732282.95 09/25 w2 06:00, 186 days later
b> 01/23 w2 18:24, 63m 1.76 29d
02/21 w3 18:12, 27m 0.52
c> 02/22 w4 19:09, 83m 2.75 30d
03/23 w5 18:52, 47m 0.97
1> 03/24 w6 19:46, 100m 3.70 30d
04/21 w6 18:34, 12m 0.12
2> 04/22 w7 19:29, 66m 1.58 29d
05/21 w1 19:17, 36m 0.40
3> 05/22 w2 20:14, 93m 2.69 30d SL
4> 06/20 w3 20:01, 65m 1.26 29d
07/19 w4 19:36, 40m 0.46
5> 07/20 w5 20:20, 84m 2.90 30d
6> 08/18 w6 19:33, 58m 1.55 29d
09/16 w7 18:37, 36m 0.55
7> 09/17 w1 19:09, 69m 3.54 30d
8> 10/16 w2 18:13, 49m 1.80 29d
11/14 w3 17:25, 27m 0.58
9> 11/15 w4 18:15, 77m 4.13 30d S
a> 12/14 w5 17:54, 60m 2.16 29d
Year:: 31 Spring Equinox jd= 1732461.77 03/23 w6 06:00, Selucid=341
Fall Equinox jd= 1732648.20 09/25 w3 06:00, 187 days later
01/12 w6 17:47, 36m 0.87
b> 01/13 w7 18:58, 106m 4.38 30d
c> 02/11 w1 18:51, 73m 2.18 29d
03/12 w2 18:39, 41m 0.74
d> 03/13 w3 19:38, 99m 3.57 30d
1> 04/11 w4 19:22, 66m 1.52 29d L
05/10 w5 19:09, 35m 0.37
2> 05/11 w6 20:07, 92m 2.57 30d S
3> 06/09 w7 19:54, 62m 1.05 29d
07/08 w1 19:32, 34m 0.30
4> 07/09 w2 20:16, 78m 2.03 30d
08/07 w3 19:31, 47m 0.76
5> 08/08 w4 20:03, 79m 3.34 30d
6> 09/06 w5 19:04, 50m 1.54 29d
10/05 w6 18:01, 24m 0.38
7> 10/06 w7 18:32, 56m 3.06 30d L
11/04 w1 17:41, 36m 1.41
8> 11/05 w2 18:27, 83m 5.78 30d S

12/03 w2 17:06, 14m 0.45
9> 12/04 w3 18:07, 75m 3.64 29d
Year:: 32 Spring Equinox jd= 1732827.02 03/22 w7 06:00, Selucid=342
Fall Equinox jd= 1733013.44 09/25 w5 06:00, 186 days later
a> 01/02 w4 18:05, 61m 1.99 29d
01/31 w5 18:07, 39m 0.82
b> 02/01 w6 19:19, 111m 4.44 30d
02/29 w6 18:04, 14m 0.18
c> 03/01 w7 19:12, 80m 2.37 29d
03/30 w1 19:01, 52m 0.95
1> 03/31 w2 20:05, 115m 4.41 30d L
04/28 w2 18:52, 26m 0.20
2> 04/29 w3 19:55, 88m 2.35 29d S
3> 05/28 w4 19:47, 61m 1.00 29d
06/26 w5 19:31, 33m 0.29
4> 06/27 w6 20:19, 81m 1.97 30d
07/26 w7 19:38, 45m 0.64
5> 07/27 w1 20:10, 78m 2.88 30d
6> 08/25 w2 19:10, 43m 1.03 29d
09/24 w4 18:29, 39m 1.66
7> 09/25 w5 18:57, 68m 5.34 31d L
10/23 w5 17:28, 13m 0.39
8> 10/24 w6 18:02, 48m 2.92 29d S
11/22 w7 17:24, 30m 1.30
9> 11/23 w1 18:19, 85m 5.25 30d
a> 12/22 w2 18:17, 79m 3.21 29d
Year:: 33 Spring Equinox jd= 1733192.26 03/23 w2 06:00, Selucid=343
Fall Equinox jd= 1733378.68 09/25 w6 06:00, 186 days later
b> 01/20 w3 18:21, 62m 1.66 29d
02/18 w4 18:22, 39m 0.61
c> 02/19 w5 19:33, 109m 4.16 30d
d> 03/20 w6 19:28, 84m 2.43 29d SL
1> 04/18 w7 19:23, 63m 1.24 29d
05/17 w1 19:22, 43m 0.53
2> 05/18 w2 20:29, 109m 3.31 30d
3> 06/16 w3 20:14, 79m 1.72 29d
07/15 w4 19:42, 45m 0.57
4> 07/16 w5 20:19, 82m 2.87 30d
5> 08/14 w6 19:21, 42m 1.01 29d
09/13 w1 18:39, 35m 1.47
6> 09/14 w2 19:03, 60m 4.68 31d SL
10/13 w3 18:00, 33m 2.11
7> 10/14 w4 18:32, 66m 5.89 30d
8> 11/12 w5 17:50, 51m 3.15 29d
12/11 w6 17:29, 36m 1.34
9> 12/12 w7 18:33, 99m 4.97 30d

Year:: 34 Spring Equinox jd= 1733557.50 03/23 w3 06:00, Selucid=344
Fall Equinox jd= 1733743.92 09/25 w7 06:00, 186 days later

01/09 w7 17:25, 16m 0.34
a> 01/10 w1 18:35, 85m 2.81 29d
b> 02/08 w2 18:36, 61m 1.32 29d
03/09 w3 18:33, 36m 0.45
c> 03/10 w4 19:43, 106m 3.84 30d SL
1> 04/08 w5 19:43, 88m 2.51 29d
2> 05/07 w6 19:45, 73m 1.53 29d
06/05 w7 19:45, 55m 0.78
3> 06/06 w1 20:48, 117m 4.06 30d
4> 07/05 w2 20:16, 78m 2.25 29d
08/03 w3 19:27, 39m 0.81
5> 08/04 w4 19:57, 70m 3.72 30d L
09/02 w5 18:52, 33m 1.52
6> 09/03 w6 19:16, 59m 4.90 30d SL
10/02 w7 18:11, 30m 2.18
7> 10/03 w1 18:39, 60m 5.85 30d
8> 11/01 w2 17:48, 40m 2.80 29d
11/30 w3 17:13, 20m 0.90
9> 12/01 w4 18:05, 72m 3.57 30d
a> 12/30 w5 17:56, 54m 1.41 29d