

## Prediction of the Start of Month of Muharram 1435 Hejriah

The Calculations are done for the Longitude and Latitude of  
Makkah AlMukarramah Area and the times are for the Local Time of Saudi Arabia (GMT+3)

Makkah Al-Mukarramah: Latitude = 21.45 ° N , Longitude = 39.82 ° E

Prediction: [ Monday 30 DhuHejjah 1434 Hejriah, 4 November 2013 ]  
[ Tuesday 01 Muharram 1435 Hejriah, 5 November 2013 ]

New Moon of Month of Muharram (geocentric conjunction) occurs on Sunday 3 November 2013 at 3:51 p.m.  
New Moon of Month of Muharram (topocentric conjunction) occurs on Sunday 3 November 2013 at 5:09 p.m.

Day	(2013) Date	Sun Rise	Moon Rise	Sun Set	Moon Set	Crescent altitude & azimuth at sunset	According to:		
							Umm UIQura	Prediction	
Sun	3 / 11	6:25	6:06	17:44	17:44	-0.19 ° , 254 °	29 Dhuhejjah	29 Dhulhejjah 1434 H	
Mon	4 / 11	6:25	7:07	17:43	18:36	10.4 ° , 246 °	01 Muharram	30 Dhulhejjah 1434 H	
Tue	5 / 11	6:26	8:09	17:43	19:33	21.4 ° , 237 °	01 Muharram	01 Muharram 1435 H	
Wed	13 / 11	A'ashura (عاشوراء) according to Umm UIQura						10 Muharram	09 Muharram 1435 H
Thu	14 / 11	A'ashura (عاشوراء) according to possibility of sighting						11 Muharram	10 Muharram 1435 H

According to the astronomical calculations, the new moon (geocentric conjunction) occurs at about four o'clock (3:51) on the afternoon of Sunday 3 November 2013 and the Moon sets approximately with the Sun (about 21 seconds after the sunset) on that evening in Makkah AlMukarramah, therefore and according to calculations and possibility of actual sighting, it is predicated not to be possible (impossible) to sight the crescent moon on that evening due to the center of the Moon almost touching the horizon (its lower is actually below the horizon), extremely small elongation (0.4 °), its age is less than two hours, its visible part (phase, Illumination) is almost zero, and almost lack of crescent width which is totally less than the resolution of human eyes even by using optical devices. But on the evening (just after the sunset) of Monday 4 November 2013, the crescent can be sighted with naked eyes, where the age of the moon will be about 25.5 hours, it stays about 53 minutes, it is about 10.4 ° above the horizon, its thickness is about 0.008 °, its elongation with the Sun is about 13.6 °, and its visible part (phase) is about 1.6% of the full moon. Therefore, according to the conventional civil Hejriah calendar which requires only conjunction and setting to happen before sunset even by merely a minute or even less (does not require actual sighting), Monday 4 November will be the first day of Muharram, but according to astronomical calculations that requires an actual sighting of the crescent, Inn-Shaa-Allah, the possibility is that Tuesday 5 November 2013 is predicated to be the first day of the month of Muharram 1435 H, and Allah has the knowledge (wallahuAllam). A solar eclipse happens on Sunday and will be seen as partial solar eclipse in Saudi Arabia. It ends about four minutes before sunset in Makkah AlMukarramah which is an evidence and strong support for negative possibility of sighting the crescent on that evening.

Note that birth of the "visible" crescent happens after the new moon (conjunction) which may not exceed half a day or it may extend to a day or more depending on the Moon location relative to the Sun, its altitude and duration of its presence above the horizon, its luminosity (phase), crescent width, and of course the atmospheric condition just after sunset. Adding to that, the physical, psychological, health conditions, eye sensitivity and its speed of adaptation to light and accumulated experience of the person doing the sighting should be considered as important factors.

**For crescent sighting on Monday evening**, provided that the sky is dark and clear, free of clouds, dust, and humidity: just after the sunset, the altitude of the moon above the horizon will be about 10.4 °, its elongation with the sun is about 13.6 °, it is about 7.9 ° to left (south) of the setting sun (24.3 ° left of the West direction), and the shape of the crescent moon will be tilted to the left as shown in the figure.



**The above prediction is based on astronomical formulas and calculations and theoretical possibility of sighting the crescent which may be used for the purpose of a general guidance and one should go with the method of actual sighting of the crescent, the method which, our Prophet Mohammad SallallahuAlihiWassallam (ﷺ) guided and ordered us to observe and follow, and Allah has the knowledge.**