# MOON SIGHTING

**A WF-IIPS Damscus Presentation** 

"Keep the fast after seeing the Hilal and complete the fast after seeing the Hilal (of Shawwal)."

**Hadith of Prophet (SAW)** 

### **QUR'ANIC REFERENCES**

What The Qur'an says about the Crescent Moon as the standard to be used for the reckoning of time.

"It is He who made sun a lamp, and moon a light and measured stages so you know number of years and count (of time)." (10:5)

## **QUR'ANIC REFERENCES**

What The Qur'an says about the Crescent Moon as the standard to be used for the reckoning of time.

"Allah is He who raised heavens without pillars that you can see; Then He established Himself on the throne; And He subjected the sun and the moon (to his law); each one runs its course for a term appointed." (13:2)

### **QUR'ANIC REFERENCES**

What The Qur'an says about the Crescent Moon as the standard to be used for the reckoning of time.

"They ask you about new crescent moons, say they are to mark fixed times for mankind and Hajj." (2:189)

## START OF HIJRI MONTH

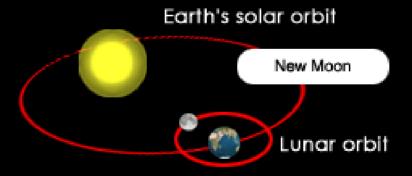
Q: When is the first of the month?

A: It is the day following the evening when you are reasonably certain of the presence of the crescent on the horizon of the place where you reside, in a manner in which it is visible to the naked eye.

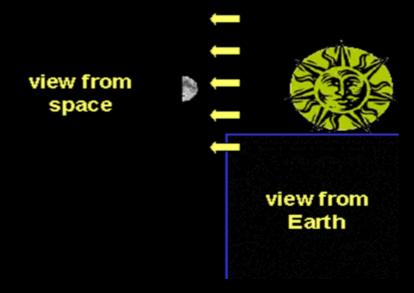
- The moon is not a light source.
- It can be seen because it reflects sunlight.
- A new crescent appears every 29 or 30 days, never fewer or more.



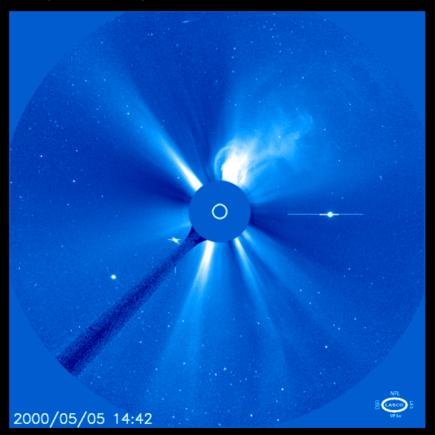
- The Moon is circling the earth in a counter clockwise elliptical orbit
- This allows us to see the different phases of the moon.



The Moon appears to go through a complete set of phases as viewed from the Earth because of its motion around the Earth, as illustrated in the following figure:



The exact time when the moon passes between the center of the earth and the center of the sun, called "conjunction" can be precisely calculated, exactly as the moment of sunrise or sunset can be determined precisely.



This moment of time is also called "New Moon" and is a black invisible moon, which will be in over 32 hours of disappearance.

January 2008 Moon Phase Calendar						
SUN	MON	TUE	WED	THU	FRI	SAT
			2	3	4	6
6	7	8	9	10	11	12
		NEW	)	)	)	
13	14	15 First Q	16	17	18	19
20	21	22 FULL	23	24	25	26
27	28	29	30 Last Q	31		

### **CRESCENT SIGHTING CRITERIA**

 Based on data collected from late 1980s by the World Federation, a criteria has been developed for calculating the likelihood of crescent visibility.

 This criteria has been continuously improved by the data collected for crescent observation.

 A very effective tool to calculate ahead of time, whether the moon can be sighted.

## **ELONGATION**

After the moon comes out of conjunction it takes some time for it to get away from the sun such that the crescent can be seen from the earth.

In 1931 the French Astronomer, André Danjon, suggested that scientifically it was not possible for the crescent to be seen when the angle of separation (elongation) is less than 7°, regardless of what the age of the crescent is and regardless of any favourable observing circumstances that may exist.

Our data suggests that this angle of separation (elongation) between the sun and the moon must be at least <u>9.7°</u> for the crescent to be sighted with the naked eye.

### ALTITUDE

 At sunset the altitude of the moon above the horizon must be high enough above the glare of the sun for the crescent to be sighted.

 A young crescent is usually sighted when the sun has dropped at least 5° below the horizon, which is about 20 minutes after sunset.

Therefore the moonset time has to be more than 20 minutes after the sunset time.

### CRESCENT AGE

 Our records show that with a naked eye, while no crescent can be seen before it is 16 hours old, it may still be up to 23 hours old, or more in certain seasons, before it is visible.

**ELONGATION** – More than 9.7°

ALTITUDE AT SUNSET - More than 5°

CRESCENT AGE - More than 16 Hours.

### **EXAMPLE 1a - RAMADHAAN 1429**

Conjunction is on Saturday 31st August 2008 at 3:59 am

- On Saturday 31<sup>st</sup> August 2008 (29 Sha'baan),
  - The sun should set at 7:19 p.m. when:
  - The crescent should be 15 hr 21mins.
  - The angle of separation between sun and moon should be 7.7°
  - The altitude of the moon above the horizon should be 4.5°
  - The moon should set at 7:40 p.m.
- Sighting is NOT POSSIBLE in Kuala Lumpur

#### **EXAMPLE 1b - RAMADHAAN 1429**

Conjunction is on Saturday 31st August 2008 at 3:59 am

- On Monday 1<sup>st</sup> September 2008 (30 Sha'baan),
  - The sun should set at 7:18 p.m. when:
  - The crescent should be 39hr 15min old.
  - The angle of separation between sun and moon should be 19.9°
  - The altitude of the moon above the horizon should be 15.0°
  - The moon should set at 8:24 p.m.
- Sighting is POSSIBLE in Kuala Lumpur

### **EXAMPLE 2a - SHAWWAAL 1429**

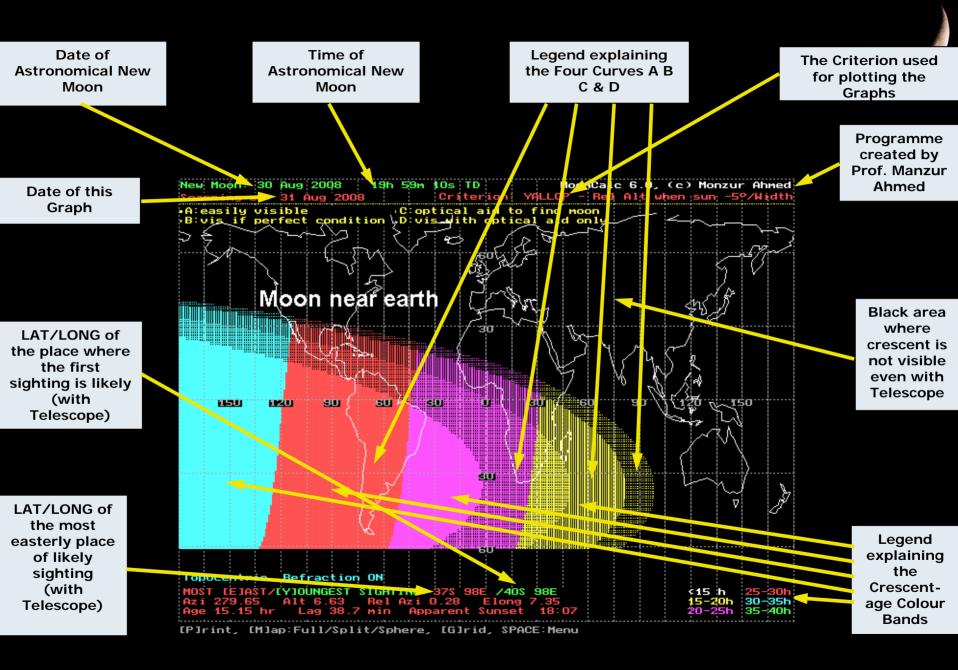
Conjunction is on Monday 29th September 2008 at 4:13 pm

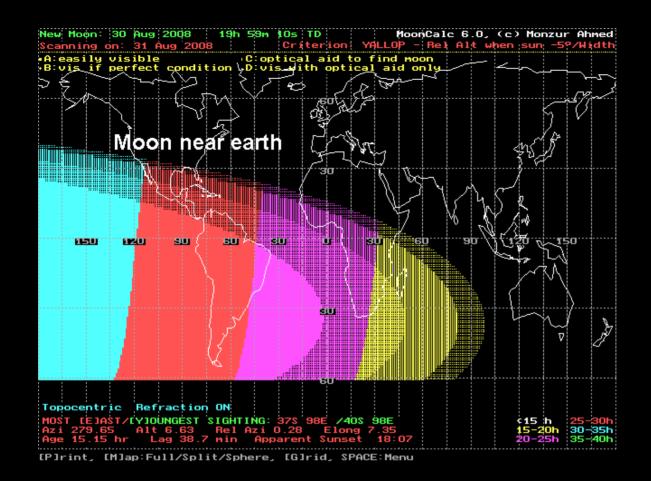
- On Monday 29th Sep 2008 (28 Ramadhaan),
  - The sun should set at 7:06 p.m. when:
  - The crescent should be 2hr 53min old.
  - The angle of separation between sun and moon should be 4.4°
  - The altitude of the moon above the horizon should be -1.6°
  - The moon should set at 7:00 p.m.
- Sighting is NOT POSSIBLE in Kuala Lumpur

### **EXAMPLE 2b - SHAWWAAL 1429**

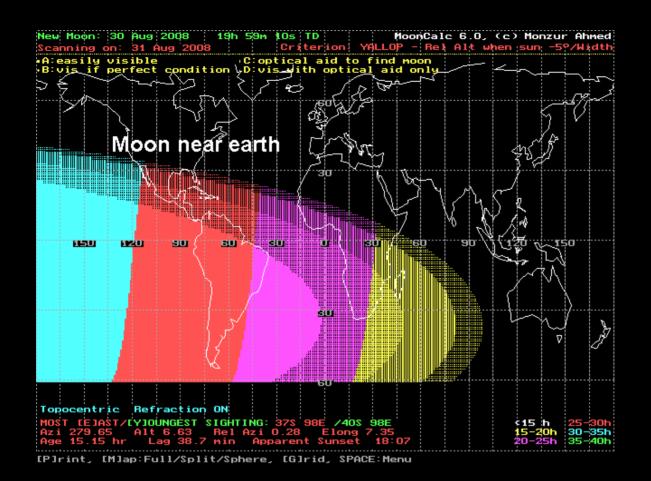
Conjunction is on Monday 29th September 2008 at 4:13 pm

- On Tuesday 30<sup>th</sup> Sep 2008 (29 Ramadhaan),
  - The sun should set at 7:06 p.m. when:
  - The crescent should be 26hr 53min old.
  - The angle of separation between sun and moon should be 13.4°
  - The altitude of the moon above the horizon should be 8.1°
  - The moon should set at 7:43 p.m.
- Sighting is POSSIBLE in Kuala Lumpur





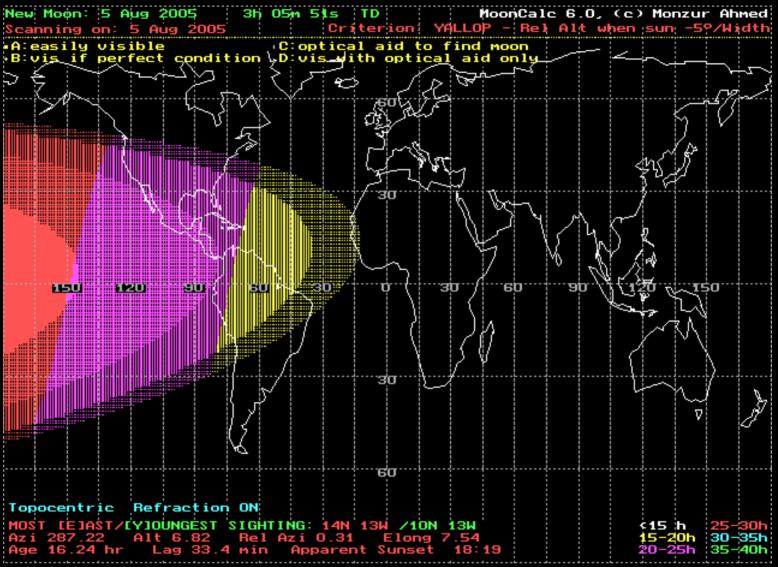
The first sighting of the crescent should InshaaAllah occur in Southern Africa on Sunday 31st Aug 2008.



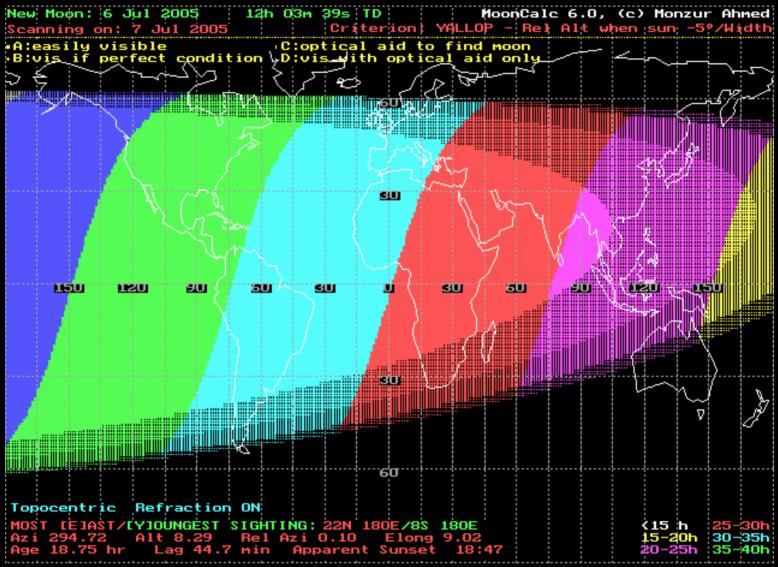
Should the crescent be sighted as expected, in accordance with the rulings of Ayatullah Seestani (based on the theory of Differing Horizons), 1st Ramadhaan 1429 will be on Monday 1st September, 2008 for Mu'mineen residing in Southern Africa, and South and Central America.

Tuesday 2nd September, 2008 for Mu'mineen in the rest of the world.

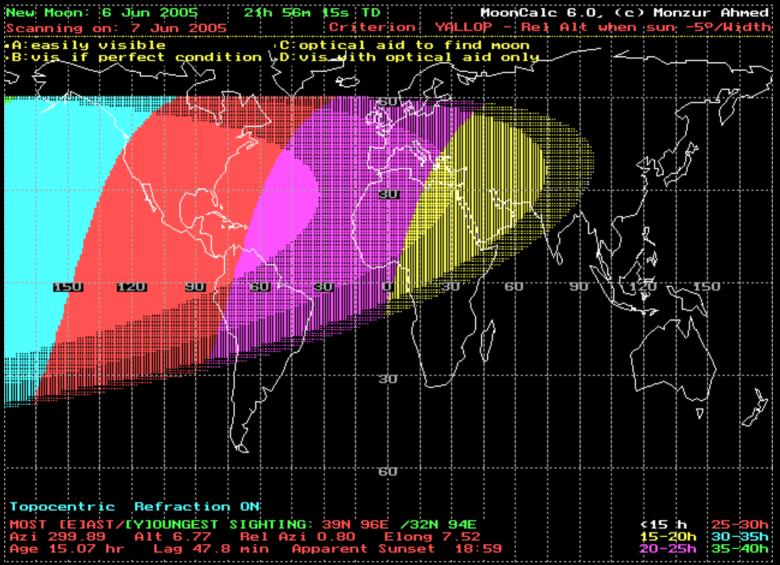
#### **RAJAB 1426 – AUGUST 2005**



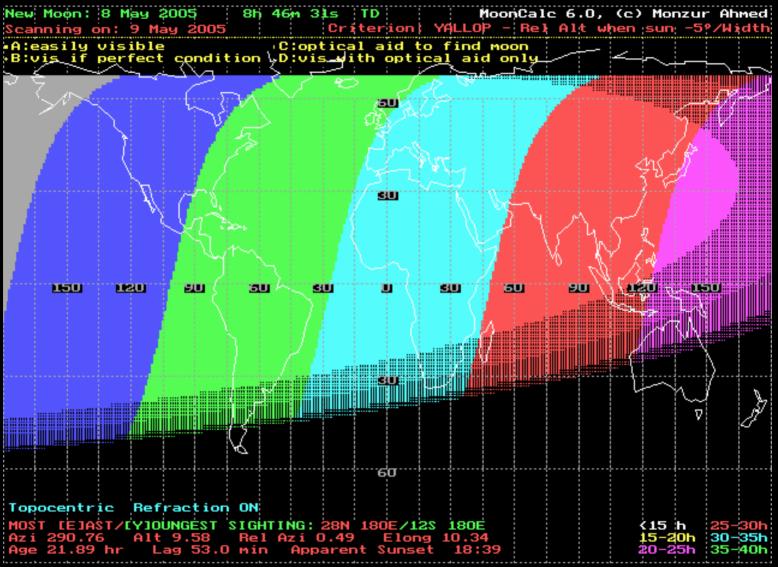
#### JAMAADA AL THAANI 1426 – JULY 2005



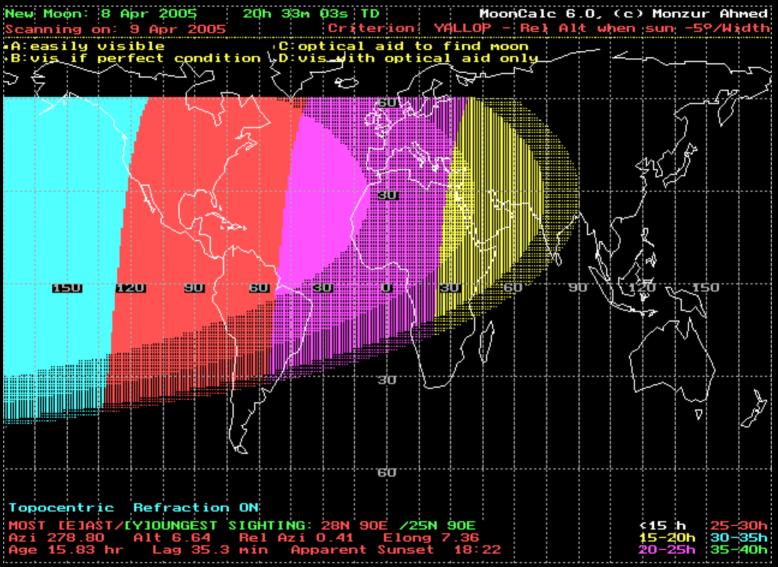
#### **JAMAADA AL ULA 1426 – JUNE 2005**



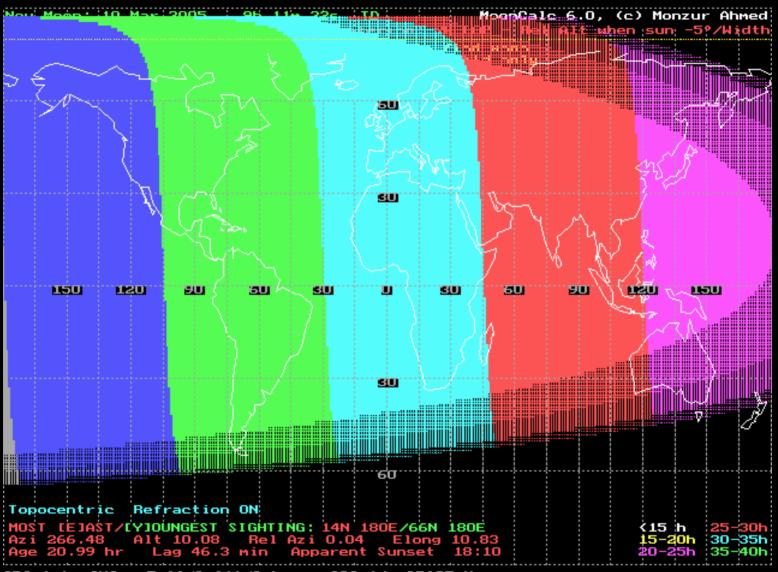
#### **RABI' AL THAANI 1426 – MAY 2005**



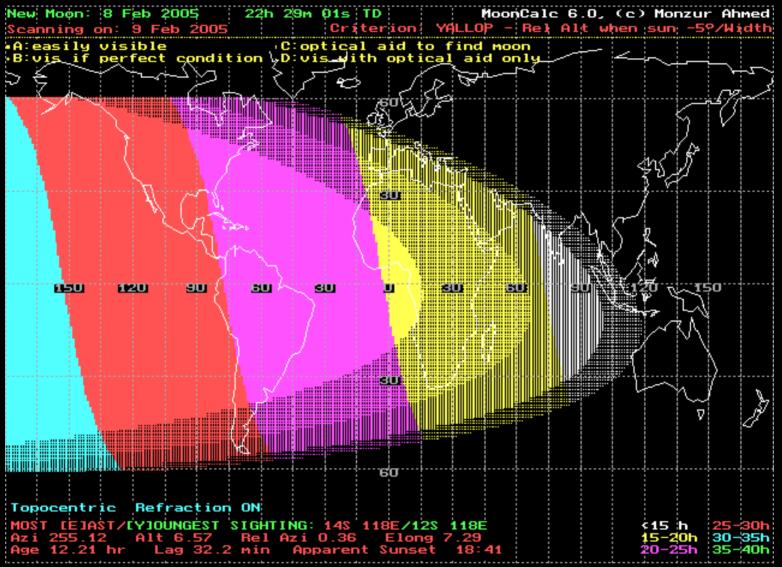
#### **RABI' AL ULA 1426 – APRIL 2005**



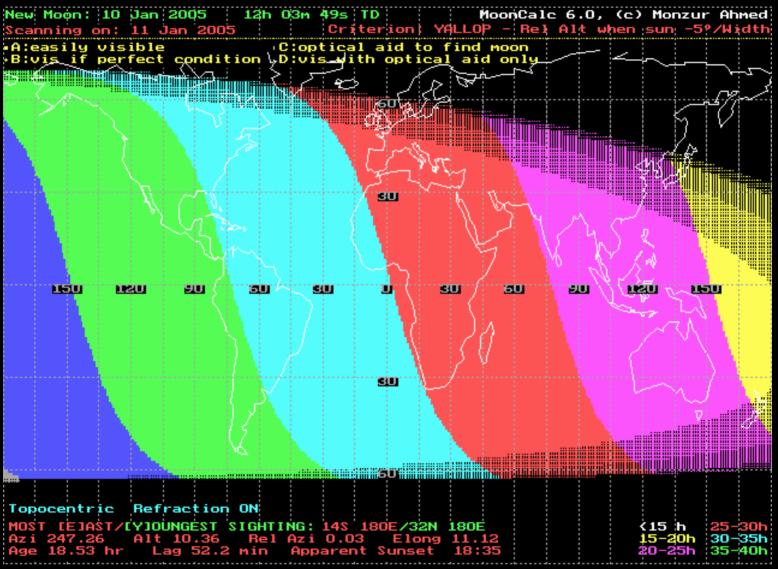
#### **SAFAR 1426 – MARCH 2005**



#### **MUHARRAM 1426 – FEBRUARY 2005**



#### DHU AL HIJJAH 1425 – JANUARY 2005



### PROOF OF CRESCENT SIGHTING

When one personally sees it.

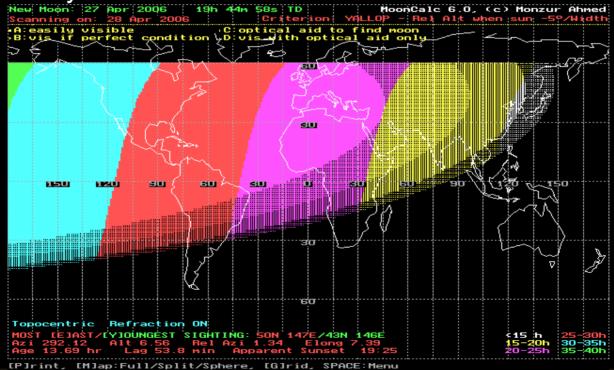
By certainty or conviction.

 When TWO Aadil (righteous) male persons stand witness to the fact that they saw the crescent.

When 30 days of a lunar month are completed.

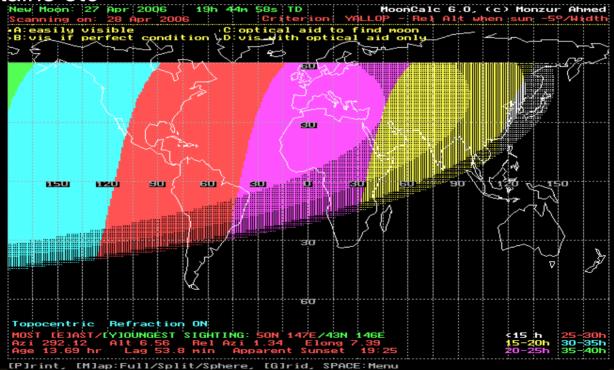
## **AGHA'S RULING**

"If the moon is sighted in the East, it also applies to the West as long as the latitude of the two locations are not greatly further away from one another"



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### **AGHA'S RULING - SUMMARY**



Can follow sighting in the East if:

1) Distinct Possibility of Sighting Exists in West (i.e. in your own city)

2) Cities in East are not far apart on the latitude lines (i.e. follow the moon path which changes on monthly basis.)

## **COMMON QUESTIONS???**

(According to calculations by astronomers for the new crescent of Shawwal 1424, there is possibility of sighting in South Africa on Tuesday night.) This may result in differences between the followers of the Marja who believes in sharing the night principle and the one who does not. How do you suggest we resolve these differences?

There is no need to resolve the differences.

Everyone has to act according to the rulings of his or her Marja.

Q: Can we rely on predictions of Astronomers?

The first day of a month will not be proved by the prediction made by the astronomers. However, if a person derives full satisfaction and certitude from their findings, he should act accordingly.

(From Taudheeul Masaael of Ayatullah Seestani)

Q: If a crescent on the second night is high and large, is that an indication that we may have erred in the beginning of the month?

\* If the moon is high up in the sky, or sets late, it is not an indication that the previous night was the first night of the month. Similarly, if there is a halo round it, it is not a proof that the new moon appeared in the previous night.

(From Taudheeul Masaael of Ayatullah Seestani)

Q: What about confirmed reports of sighting to the Eastern areas of our locality?

\* If the first day of a month is proved in a city, it is also proved in other cities if they are united in their horizon. And the meaning of having a common horizon in this matter is that if new moon was sighted in a city, there would be a distinct possibility of sighting it in the other cities, if there were no impediments, like, the clouds etc.

(From Taudheeul Masaael of Ayatullah Seestani)

Q: Is the declaration of a Mujtahid binding on his followers?

The 1st day of any month will not be proved by the verdict of a Mujtahed and it is better to observe precaution.

(From Taudheeul Masaael of Ayatullah Seestani)

O: (In Tawdīhu 'I-Masã'il (mas'ala no. 1744) and Minhãju 's-Sãlihiyn (mas'ala no. 1044), your eminence has defined the ittihad or ishtirak of ufuq as "the actual sighting in the first city would necessarily be followed with the sighting in the second city if there were no barriers like clouds, fog, mountains, etc." This had been commonly taken to mean that any sighting in the east will automatically necessitate its sighting in the west irrespective of the distance.

But in *al-Fiqh li 'l-Mughtaribīn*, you have further qualified the range of *ittihad 'l-ufuq* by saying "as long as the latitude of the two locations are not greatly further away from one another" (question no. 115) and "as long as they are not far apart on the latitude lines" (question no. 116).

Different interpretations are given by our scholars in the west in understanding the phrases "greatly further away" or "far apart". And so our question is:

If the astronomical data confirms to us that if the moon is sighted in the east (e.g. in Dar-es-salaam, in East Africa), the chances of it being sighted in the west within the curve of possibility (e.g., in New York) is greater even though they are far apart on the latitude lines — is the scientifically defined range of possibility of moon sighting accepted as the range for ittihadu 'l-ufuq?)

Sighting in the East does not necessarily mean the crescent will be sighted in the West. Even though the Crescent gets bigger as it heads West, sighting is dependant on appropriate altitude above horizon and suitable distance from the Sun. Sometimes, a Crescent is sighted in the East because, at Sunset, it is, say, 8 degrees above the horizon and cannot be sighted in the West after several hours because it is, say, only 2 degrees above the Horizon.

- a: When your Eminence declares that you are satisfied that the crescent has been sighted for the holy city of Najaf, we derive full satisfaction that the crescent has been sighted. However, because of a great latitude difference, our home city does not share the horizon with Najaf, can we, then, follow your declaration?
- a. If the answer to the above is no, and you recommend ihtiyāţ, can your Eminence please guide us as to how we can observe ihtiyāţ.
- b. Could there be an overriding principle to justify us following your declaration, for example:
- i. avoidance of disunity amongst *mu'minīn* who follow different *Marāji'* with different crescent sighting criteria, or
- ii. to avoid disrespect to our revered *Marja'* because his muqallidin do end up observing the 1st of month a day after the others, or
- iii. to avoid the confusion caused by different interpretation and application of your Eminence's crescent sighting criterion by your honourable appointed agents around the world.

Confirmation of sighting in Najaf does not necessarily mean possibility of sighting (if there are no impediments) in London and other Northern areas.

One could undertake a journey on the day one suspects could be Eid, eat something after arriving at the Hadd-e-Tarakkhus, and then give Qadha of the fast.

Differences arising from the differing Fatawa of Maraje' in the issue of Crescent Sighting is not a new thing. This should not cause divisions nor should it be used to undermine the status of any of the Maraje'. As regards to the Fatwa of Sayyid (may the Almighty grant him a long life), it is clear and there is no room for differences in its interpretation.

• Q: The Traditions of Holy Imams of Ahl al-Bayt (a), dismisses the calculations of the Munajjim/Hussāb. In your Eminence's opinion does this apply to modern day Astronomers?

Astronomers who use mathematical calculations to determine the conjunction of the new moon, its altitude at Sunset, and other similar data is normally acceptable as long as it is from reliable and competent astronomers and are free from errors. However, if these calculations were based on empirical data and experience (as some mention) such as criteria that determines when the Crescent can be sighted with the naked eye using the size of the crescent that is illuminated, altitude above the horizon, distance from the sun, etc. then these have no significance except if these were conducive to acquiring certainty on its validity.

• Q: Reliable astronomical calculations suggest that in our city, the crescent would be visible at sunset on the 29th of the month. However because of barriers like clouds, fog, mountains, etc., the crescent is not sighted in our city or in other cities that share our horizon. Can we consider the next day as the first of the new month just on the basis of possibility of the moon sighting without the actual sighting itself?

• A: Simple 'suggestions' cannot be considered. However, if there was certainty (Itmi'nan), then one would have to act accordingly.

- O: Some scholars espouse that there is not a single riwāyah that specifies the requirement of sighting the crescent by naked eye. What is your Eminence's expert opinion regarding the use of optical aid like:
  - a) low level binoculars
  - b) powerful binoculars
  - c) telescopes.

• A: 'Crescents were made for people to tell time' – as the Holy Qur'an stipulates. A crescent that can only be seen by aids cannot help the general public in telling time. Based on this, there is no consideration for a crescent sighted using optical aids like telescopes, etc.

• *Q:* In case of reported crescent sighting (either single, double or multiple), are we required to inquire about the basis of the sighting whether it conforms to the criterion that is valid according to our *Marja'* – for example naked eye or telescopic sighting.

Only if a testimony complies with the conditions laid down by his Marja', can a person use the testimony as a Hujjat for him to mark the beginning of the new month. He would thus have to ascertain that it does comply.

- Q: If the horizon is cloudy at sunset and if we have the facility of flying in an aircraft above the cloud, should we make an effort to look for the crescent from the aircraft?
   Would such a sighting be acceptable:
  - a) for the passengers in the aircraft who observed the crescent?
  - b) for the *mu'minīn* of the city below?

If the role of the aircraft was simply to rise above the impediments like clouds, then a sighting would be sufficient both for those on board the aircraft as well as those who inhabit the region above which the aircraft flies.

- O: Modern day Astronomers agree unanimously that the crescent cannot be sighted at conjunction and for a period of time until the separation between the sun and the moon has exceeded 6.8 degrees.
  - a) What is your Eminence's opinion on this?
  - b) Can we reject a valid *Bayyinah* that has testified to a sighting during this period?

• A: This is not an issue of jurisprudence (Fiqh) If certainty is acquired from them (astronomers), then it would be the certainty that would prove the fallacy of the 'Bayyinah' and hence the 'Bayyinah' would be rejected.

- Q: Modern day Astronomers agree unanimously that the sun has to be at least 5 degrees below the horizon before the light from the sun light on the horizon to have diminished to a level that would allow the new crescent to be sighted.
  - a) What is your Eminence's opinion on this?
  - b) Can we reject a valid *Bayyinah* that has testified to a sighting during this period?

A: Our response would be same as that to the question above.

• Astronomical calculations in which we have full confidence for the daily prayers times and for the eclipses, give us very accurate times for moon set. Can we reject a valid *Bayyinah* that has testified to a sighting after the moon has set on that horizon?

• A: Moonset times are determined by Mathematical calculations and, as long as these are reliable and error free, no testimony to the contrary should be accepted.

• O: Modern day Astronomy is a very specialized subject and the application of their calculations to reject a sighting is normally difficult for an average mu'min to comprehend. What is your Eminence's opinion regarding setting up a committee of Religious Scholars who are fully conversant with your rulings and who are also conversant with Astronomical calculations, to deliberate on the possibility of crescent sighting for each month and to advise your followers of their duties?

A: This is good, but not essential. Legal obligation can be determined without recourse to it.

• Q: Regarding sharing the horizon between two cities, such that a confirmed sighting in one can apply to the other, our observations over a number of years has shown that two cities that share the horizon in one month would not necessarily do so in subsequent months. In other words, the curve of possibility of moon sighting changes from month to month. Does your Eminence agree that we ought to calculate the common horizon independently every month?



Yes this is true.

• What is the ruling regarding going out to look for the crescent of any new month? (wājib, mustahabb or mubāḥ) Some scholars are of the opinion that it is ihtiyāt to look for the Shawwāl crescent so as to avoid falling into a harām act by fasting on the first of Shawwāl. What is your Eminence's expert opinion?

Searching for the new Crescent is Mustahab. The prohibition of fasting on Eid day is a legal obligation and not an inherent one. Thus, one who fasts believing that the new month has not begun will not be committing a sin even if the contrary were to be proven later.

- On the 29th of the month, if we attempted to sight the crescent but failed or neglected or were too pre-occupied, and then if we start receiving reports about sighting:
- a) from our home city,
- b) from cities with whom we share the horizon,
- c) from cities with whom we do not share the horizon,

Is it our duty to investigate the credibility of the report and the reliability of the reporter:

- a) in case of a single report of sighting?
- b) in case of multi reports of sighting?

It is not incumbent to verify and investigate all this. It is sufficient to conclude that the new month has not begun and if the contrary were to be proven later, necessary steps be taken to rectify it.

- Q: If a mu'mīn sights the new crescent, should he follow his conviction, given that when he reports the sighting, he finds that either:
  - a) others have failed to sight the crescent in similar circumstances, or
  - b) the astronomers say that there was no possibility of sighting, or
  - c) he lacks the experience of knowing about new crescent position, shape, moonset times etc., yet he believes that what he saw was the crescent.

If he does not believe – a reasonable degree of belief – that he has committed an error in perception, as is happening a lot, he has to act on his sightings. But if he believes there could be an error even though it was because information he has read from astronomers which said it would be impossible to sight the new crescent at the time and place that he believed he had seen, he will NOT act on his sightings because he will not have obtained certainty.

• If there are scholars who we rely upon for guidance, and they have derived satisfaction after investigation that the crescent has been sighted, should we accept their declaration unconditionally or are we required to inquire that the basis of their declaration conforms with a correct application of our Marja's criterion for crescent sighting?

You must acquire certainty (Itmi'nan) on the reliance they have over the reports and testimonies of sighting which must comply with the conditions that make it legally binding according to the Marja' of your tagleed.

 Q: As a matter of principle, for the holy month of Ramadhān, should we aim for the completion of 30 days and hence not bother with crescent sighting on the 29th?

You can base (the beginning of a new month) on the completion (full thirty days) of the current month, as long as nothing to the contrary is established. It is not wajib to search and investigate sighting of the new crescent. However, as mentioned earlier, it is Mustahab (recommended) to look for the new crescent.

• Q: As a mu'min has an understanding of your rulings regarding crescent sighting and on sharing the horizon, and finds them perfectly in agreement with astronomical data, but finds it difficult to reconcile with Marhum Grand Ayatullah Sayyid Al-Khui's interpretation of the common horizon, would it be valid for your Muqallid who is continuing with the taqlid of Sayyid Al-Khui on other issues, to revert to your Eminence's Fatwa on this particular issue?

He cannot do that just based on what has been mentioned, and the Almighty is All Knowing.

• Q: Kindly state if according to Ayatullah Seestani, can his/her Muqallid revert to another Mujtahid on the issue of hilal?

Hazrat Ayatullah has a Fatwa (ruling) on this issue and the instances of reverting to others does not arise.

- a) How does your Eminence define Shiyā'?
  - b) Is there a minimum number of individuals that constitutes a valid Shiyā'?
  - c) What are the qualifying characteristics of individuals who constitute a Shiyā'?
  - d) If a person is easily convinced in circumstances where others are not normally satisfied, would this conviction be still valid?

- Shiya' as in one of the means of establishing the new crescent is the spread of sighting amongst a large group of people. This is conditional, however, on acquisition of knowledge and certainty (Ilm wa Itmi'nan). If not, it has no bearing.
- b) For shiya that is conducive to knowledge and certainty, there is no minimum number. Whatever acquires the knowledge and certainty will be enough.
- c) Some characteristics that should be present in those who claim to have sighted the crescent include an understanding that stems from experience; awareness of errors and its sources; cautious in that they are not impulsive; and other similar ones that would allow acquisition of certainty from a fewer numbers of testimonies.
- d) Only if the conviction is based on logical deductions, not otherwise.

- Q: Regarding the Shiyā' that is valid for generating satisfaction of crescent sighting from cities that share our horizon:
  - a) Does a handful of people scattered over a number of cities constitute a valid Shiyā'?
  - b) Do we have to inquire about the number that went to observe but failed to see, in order to validate the *Shiyā*?
  - c) How many reports of confirmed sightings would constitute a  $Shiy\bar{a}'$  to over-rule astronomical calculations that suggest that a sighting is not possible that evening?
  - d) Can a *Shiyā*' comprising of individuals who have not sighted but are satisfied with a small number of reported sightings, be considered as a valid means for deriving satisfaction of crescent sighting?

- a) We have mentioned earlier that acquisition of certainty is paramount and this cannot be obtained when there are large numbers who go out in one country in search of the new crescent and only a few claim to see it; even though they collectively form a reasonable number.
- b) We have mentioned earlier what does and what does not influence the acquisition of certainty.
- c) As mentioned earlier, the number of reports are insignificant; what is significant is the acquisition of certainty. Confirmation by astronomers that it may not be possible to see the new crescent already has a negative effect on acquiring certainty.
  - d) There is no consideration for this whatsoever.

- Regarding Shiyā' that are valid for generating satisfaction of crescent sighting from cities that DO NOT share our horizon:
  - a) Does a handful of people scattered over a number of cities constitute a valid *Shiyā*?
  - b) Do we have to inquire about the number that went to observe but failed to see, in order to validate the *Shiyā*?
  - c) How many reports of confirmed sightings would constitute a <code>Shiyā</code> to over-rule astronomical calculations that suggest that a sighting is not possible that evening?
  - d) Can a  $Shiy\bar{a}'$  comprising of individuals who have not sighted but are satisfied with a small number of reported sightings, be considered as a valid means for deriving satisfaction of crescent sighting?
  - e) Can a *Shiyā'* comprising of scholars who we rely upon for guidance, who have not sighted the crescent, but are satisfied with a small number of reported sightings, be considered as a valid means for deriving satisfaction of crescent sighting?

Since the ruling of Sayyid, may the Almighty give him a long life, states that there is no bearing on reports of sighting from regions that do not share the horizon with the country where you reside, it is pointless to answer the various scenarios presented in this question.