APOLLO 11 ASTRONAUTS DID NOT TAKE THE APOLLO 11 MOON PHOTOS AND VIDEOS

A SCIENTIFIC PROOF OF AN APOLLO 11 HOAX

By
FRANCISCO VILLATE

Version 3 – January 6, 2024

Acknowledgments

Thanks to Christopher Lock for reviewing and challenging this investigation. His contributions as an expert in photography and editing English were very valuable.

Version Control

Version	Date	Comments
1	October 2023	Initial version
2	December 12, 2023	Chris Lock's corrections and suggestions.
3	January 6, 2024	Addition of 4 photos to the analysis.

APOLLO 11 ASTRONAUTS DID NOT TAKE THE APOLLO 11 MOON PHOTOS AND VIDEOS

The Apollo 11 photos and videos of the Moon we see in the NASA archives today were taken on the Moon but not by the Apollo 11 astronauts. They couldn't have taken these photos and videos because the Sun's position is incorrect, and anyone can verify this scientific fact.

THE MOON MISSION SCENARIO

During the Apollo 11 mission, the Sun, on average, should have been at 14 degrees elevation above the lunar horizon. But it was at around 20 degrees elevation, as seen in NASA's archive photos: a difference of about six degrees. A 6-degree difference might seem insignificant, but it is appreciable on the Moon, where the Sun is almost static, moving gradually across the sky. It means a significant time difference of almost 11 hours. So, the Sun seen in the Apollo 11 photos is higher than it should be. For it to reach 20 degrees elevation on the Moon during the Apollo 11 mission, the astronauts would have had to wait almost 11 hours to take the photos. That Sun height position happened when the Apollo 11 astronauts were already taking off from the Moon, returning from their supposed landing. So, the only possible conclusion is that they did not take those pictures.

Even though the photos and videos in NASA's records show that they were taken on the Moon – and this paper will show they indeed were -- Apollo 11 astronauts could not have taken them on the Moon during their mission as commonly believed. So, which Apollo mission shot them in the Sea of Tranquility? The answer may be the Apollo 13 mission. With extra fuel, it is feasible that Apollo 13 arrived at the Moon rather quickly, landed in the Sea of Tranquility, and unloaded the equipment that Apollo 11 supposedly had left there but did not because it had not landed on the Moon.

If the Apollo 13 mission did this, it means we face two hoaxes; the first being the fact that Apollo 11 never landed on the Moon, while the space agency claimed it did, and the second is the fact that Apollo 13 did not suffer its failure as reported, but instead went to the Moon and installed the equipment on the lunar surface that Apollo 11 is supposed to have left there.

These scenario findings and the Apollo 13 hypothesis are explained and described in detail in this three-part research outlined below:

> **PART 1:** Gives new evidence as to why the Apollo 11 photos and videos we see were indeed taken on the Moon and not in a recording studio as many conspiracy theories suggest.
>
> **PART 2:** Gives scientific evidence confirming the Apollo 11 astronauts could not have taken the Apollo 11 photos.
>
> **PART 3:** Presents hypotheses on how and why these two hoaxes happened. Unlike Parts 1 and 2, which present verifiable scientific evidence, this part goes more into the speculative realm. It discusses the possibility that Apollo 13 may have carried the Apollo 11 hardware to the Moon nine months after the Apollo 11 mission.

PART 1:

The photos and videos we see of Apollo 11 were indeed taken on the Moon and not in a recording studio, as many conspiracy theories suggest.

Many conspiracy theories suggest that Apollo 11 did not land on the Moon, that none of the Apollo missions were real, and that we see film studio recordings simulating lunar travel and walks. It has even been suggested that Stanley Kubrick was involved in such a hoax due to his extensive experience making special effects for his film 2001: A Space Odyssey. We conclude that while Kubrick and Walt Disney may have advised NASA to create its training centre, where astronauts practised filmed moonwalks, in reality, NASA's videos and photo records indicate they were taken on the Moon. At least, that is what the recorded photos, videos and this paper show.

Conspiracy "explanations" to date claiming inconsistencies seen in the Apollo 11 and other mission photos and videos have no scientific basis. For example, conspiracy theorists make the following claimS: stars should be visible in the dark sky on the Moon; that the shadows we see are not parallel when they should be, suggesting the use of several survey lights; that the US flag moves irregularly; and that the astronauts could not have survived the Van Allen radiation belt, and more. However, each point has a perfectly logical scientific explanation. See the Royal Museums Greenwich website www.rmg.co.uk, which explains the inaccuracies of the main five (Dec. 2023). The YouTube Mythbusters documentary (Banijay Science) makes several tests and demonstrations debunking conspiracy theories. So, we do not need to refute those proven incorrect assertions in this document, but we will explain why we know the photos and videos we see today in NASA's records were taken on the Moon.

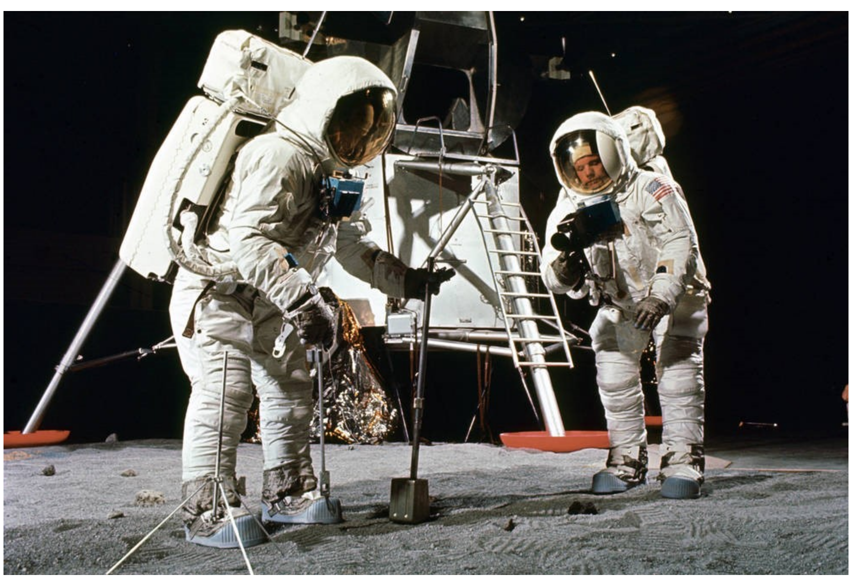


Figure 1- NASA training site (Mars, K.)

Making a recording studio simulation of the activity on the Moon is not too challenging. Just set up a dark subway or indoor location that simulates the lunar landscape, install a replica of the lunar module, and show the astronauts walking around.

NASA had just such a training site to simulate Extra Vehicular Activities (EVA). They used several simulators of the lunar module cockpit and the lunar module on the Moon's surface to simulate and test its manoeuvres. Logically, the astronauts prepared themselves by practising what they had to do on the Moon so they did not have to rely on improvisation upon arrival. In their training centre, they made several recordings and studied and analysed them as part of the tests. Furthermore, they could simulate the low gravity on the astronauts' bodies by installing cables that would reduce their net weight by utilising a counterweight. In this way, they could simulate and accustom themselves to the difficulties of walking in a low-gravity environment, such as they would encounter on the Moon.

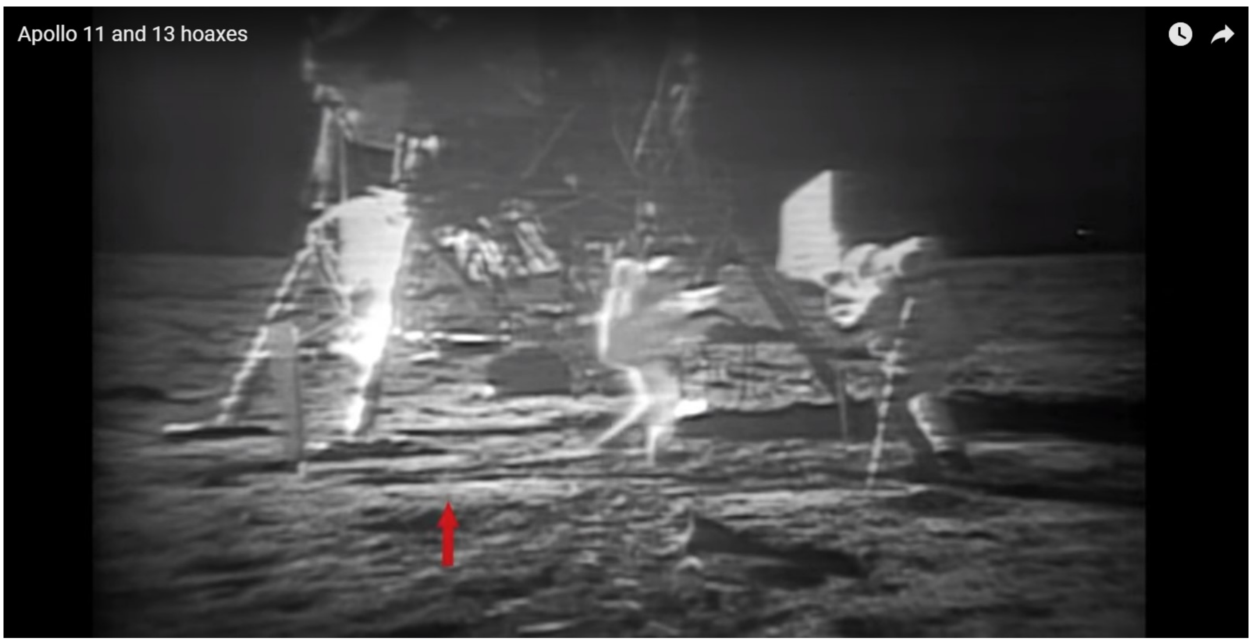


Figure 2 - Soil particle displacement (Imagine_if, minute 27:23)

So, if a moonwalk can be simulated in a training centre and recorded, how do we know we are watching a video of an actual moonwalk and not a video recorded in the training centre? The answer lies in the movement of lunar dust and soil.

The movement of the dust, soil, or gravel that astronauts hit with their boots cannot be simulated in a recording studio or training centre.

On Earth, if a pedestrian walking on soft sand and gravel kicks a little mound on the ground, the grains fall 30 to 50 centimetres away. On Earth, kicking the ground very hard to send the soil two meters away releases a cloud of dust. Moreover, it requires an energetic kick like a soccer player kicking a ball, not an accidental tripping, as in the NASA video.

How do the respective soil particles react, and why is the response different on Earth from the Moon? After being kicked, every soil particle of dust, sand, grains, or gravel involved has an initial velocity. The particles fly away at different angles. In an environment with an atmosphere, like the Earth, the air or atmosphere creates a drag effect that reduces the speed of small or light particles, and they fall close to the source or foot. The bigger and heavier the particles, the less air drag they receive. So, the big particles fall faster, the tiny light grains slower, and the dust keeps falling for a long time.

In a vacuum environment, somewhat like the Moon, this does not happen. All particles, independent of their weight, size, or shape, fall at the same speed. Gravity creates an additional effect. The higher the gravity, the faster the particles fall. So, particles fall fast on Earth but slower on the Moon. A particle flying from a bootkick follows the laws of physics. With no air in a vacuum and on the Moon, they will not face a drag effect to slow them down and will fly more freely following a parabolic orbit. With the Moon's low gravity, the particles fall slower, touching ground farther away after their parabolic flight, as shown in the NASA videos.

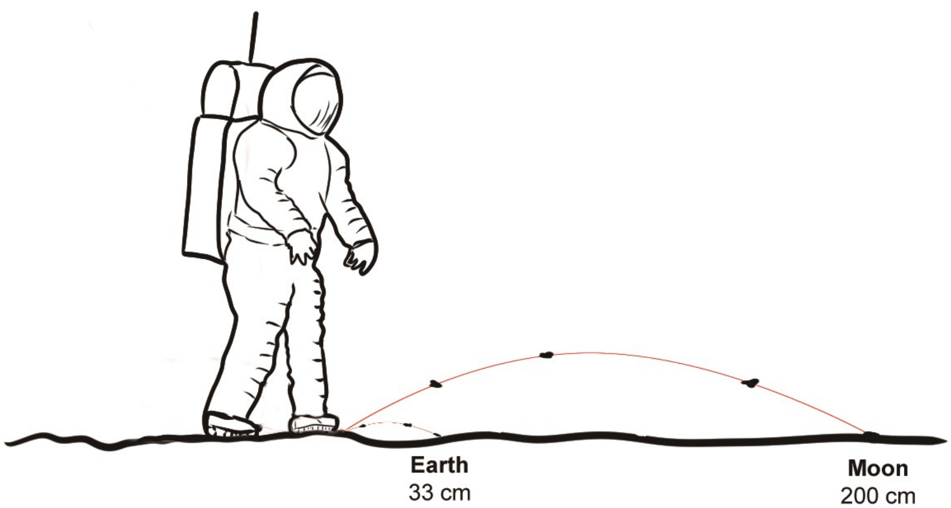


Figure 3 – Comparison of particles movement.

Observing the raising of the US flag in NASA's videos, we notice how the astronauts accidentally kicked some moondust, grains, and gravel that scattered almost two meters from their boots (Imagine_if. Apollo 11 and 13 Hoaxes. Video at 27:23 minutes). Other videos from other Apollo missions, such as Apollo 17, show the same thing. We cannot simulate this flying dust and gravel on the Earth's surface in a recording studio, and we certainly could not create it with the special effects available in the 1970s.

CONCLUSIONS OF PART 1:

- The NASA video of Apollo 11 shows how moondust and lunar soil displace a great distance when hit by the astronauts' boots. This action does not happen on the Earth's surface due to Earth's atmosphere and terrestrial gravity. Therefore, every indication is that the astronauts' activity occurs in a lunar environment with low gravity and no atmosphere.

- It makes no logical sense to conclude that the videos and photos in NASA's archives of Apollo 11 and other Apollo missions were taken in a recording studio. The only possible conclusion is that the astronauts took the pictures on the Moon.
- However, we do not rule out the possibility that recordings made at the training centre were those initially transmitted on the Apollo 11 mission and the actual recordings from other Apollo missions later replaced them. See more details on this in PART 3.

PART 2:

We now look at scientific evidence as to why the Apollo 11 astronauts could not have taken the Apollo 11 photos and videos.

NASA recorded the exact time each photo was taken, when each manoeuvre was executed, and when each conversation occurred. The photos analysed below are from NASA's web page (Apollo 11 Image Library), where the number of each picture and the time each was taken after the Apollo 11 lift-off are measured in hours and minutes. Likewise, on another NASA page (Apollo 11 Timeline), we find the exact times of major events. So, we know precisely when each event occurred and when the astronauts took each photo.

Figure 4 - Using the Horizons tool

Moreover, at the JPL site, NASA offers a tool called Horizons to calculate the Sun's elevation at each instant and precisely where the Apollo 11 lunar module supposedly landed in the Sea of Tranquility (Horizons System). Figure 4 above shows a view of the Horizons tool for observing the Sun. The location of the Apollo 11 landing site was selected using Horizons, which can give a range of start and end times (in universal time) and intervals of 1 hour, 10 minutes, or whatever is required. In Settings, we choose to show the elevation and azimuth of the Sun to define what we want to record and report. With Horizons and the hourly data of each event, we can know the exact elevation of the Sun above the lunar horizon. The results in Table 1 show the timing and Sun's elevation angle for each photo we chose to analyse.

EVENT	Time from Takeoff (HH:MIN:SEC)	Date (UTC)	Sun Elevation during Apollo 11 (Deg)	Sun Elevation on Photos (Deg)	Difference on Sun elevation	Comments
Apollo 11 takeoff	0	16/7/1969 13:32				
Lunar module lands on the Moon	102:45:00	20/7/1969 20:17				
Armstrong touch lunar gro	109:42:00	21/7/1969 03:14	14.2			EVA starts
Photo AS11-40-5872	110:03:24	21/7/1969 03:35	14.4	24.4	10.0	
Photo AS11-40-5873	110:03:24	21/7/1969 03:35	14.4	22.8	8.4	
Photo AS11-40-5882	110:31:47	21/7/1969 04:03	14.6	20.6	6.0	
Photo AS11-40-5884	110:31:47	21/7/1969 04:03	14.6	19	4.4	
Photo AS11-40-5905	110:43:33	21/7/1969 04:15	14.8	25	10.2	
Photo AS11-40-5931	110:55:49	21/7/1969 04:27	14.9	22.6	7.7	
Photo AS11-40-5936	110:55:49	21/7/1969 04:27	14.9	20.2	5.3	
Photo AS11-40-5946	111:04:56	21/7/1969 04:36	14.9	21	6.1	
Photo AS11-40-5949	111:06:34	21/7/1969 04:38	15.0	20	5.0	
Photo AS11-40-5961	111:11:31	21/7/1969 04:43	15.0	20.3	5.3	
Photo AS11-40-5962	111:11:31	21/7/1969 04:43	15.0	21.6	6.6	
EVA ended	111:39:13	21/7/1969 05:11	15.2			No more Extra vehicular Activities
Photo AS11-37-5466	112:20:56	21/7/1969 05:52	15.6	22	6.4	From inside after EVA
Compression of cabin and 5 hours of sleep						Resting period
LM lunar liftoff ignition	124:22:01	21/7/1969 17:54	21.7			Lunar Moduler returns
		Averages		*21.6*	*6.8*	

Table 1 - Expected Sun elevation during the Apollo 11 Mission versus measured photo elevations.

Table 1 shows, by different analyses of various photos, that the average result of the Sun's elevation is 21.6 degrees, while the average Sun elevation should be 14.7 degrees. The average difference of almost 7 degrees is a very high value. None of the values come close to the expected or required elevation of 14.7 degrees.

The following illustrates and explains the methods of sun elevation calculation in three photos.

METHOD 1:

SUN ELEVATION CALCULATION 1: FROM A FRONT ELEVATION VIEW OF THE TRIANGLE.

Imagine looking at a vertical pole and the shadow it casts. The pole and the shadow line are two legs of a right triangle. Calculating the angle is easy after accurately measuring the vertical leg, that is, the pole or elevation of the instrument, and the horizontal leg, represented by the length of the shadow. As we know from basic trigonometry, the ratio of these two measurements is the tangent of the angle; therefore, we can calculate the angle with the inverse function. In Method 1, the triangle measured must be in front view for best accuracy, with the shadows cast from right to left or left to right, not in perspective towards the horizon. Not all Apollo 11 archive photos show this feature, and sometimes, the end of the shadow is not visible in the picture.

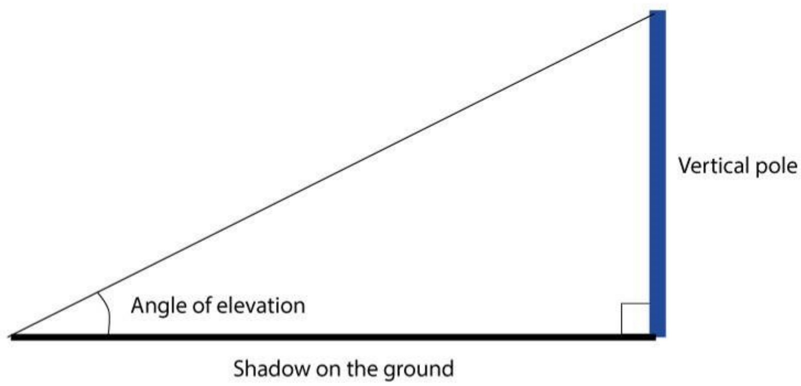


Figure 5 - Triangle to measure Sun elevation angle.

These are the three photos analysed and the results:

PHOTO AS11-40-5884:

This photo shows an instrument located on a tripod. Its top has a flat cylindrical object. The Sun is on the right, and the shadow casts from right to left. Here, we find a Sun elevation angle of 19 degrees, notably higher than it should be at 14.6 degrees.

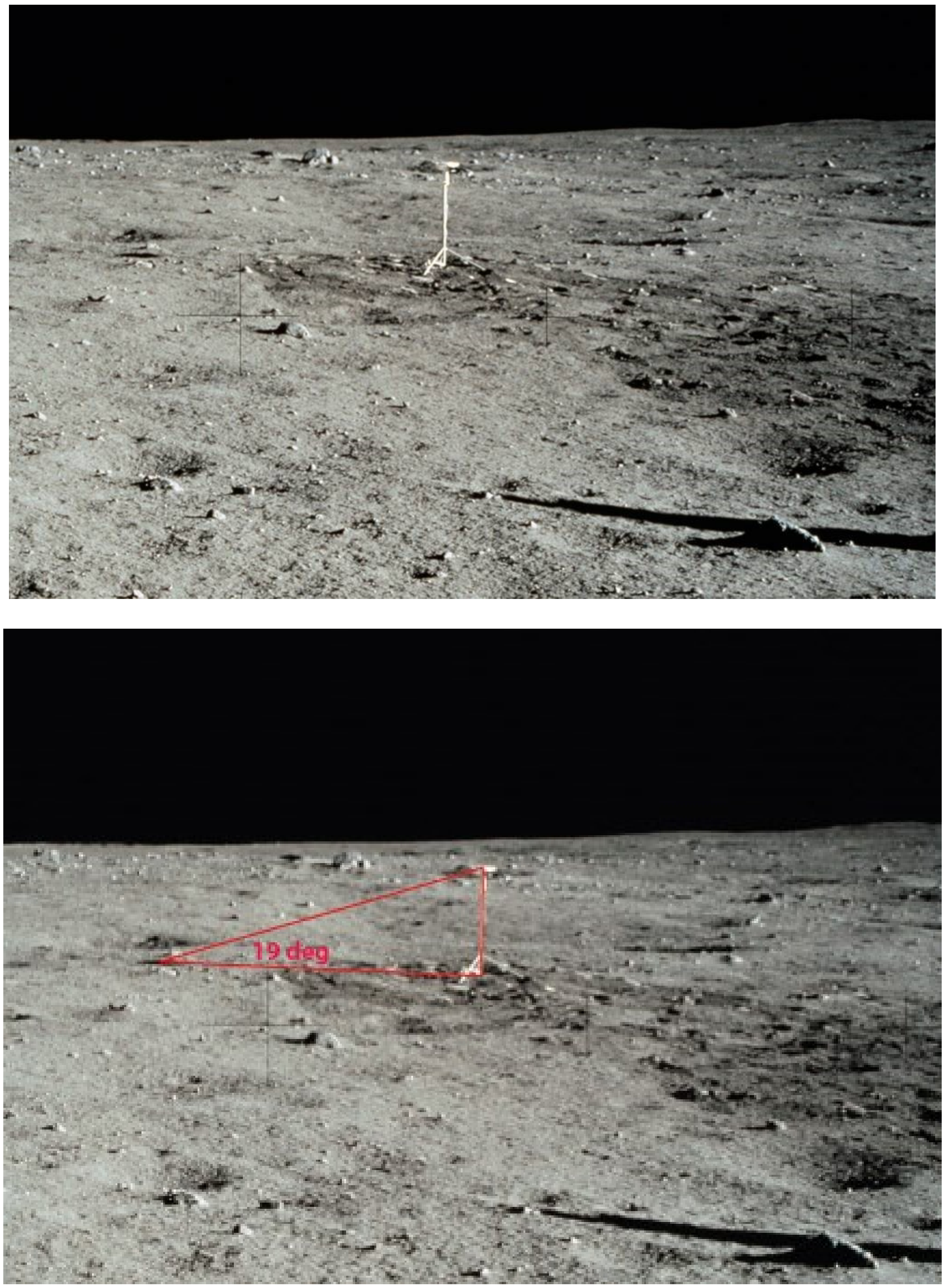


Figure 6 - Analysis of photo AS11-40-5884

PHOTO AS11-40-5946:

This photo shows the Sun elevation angle is 21 degrees, but it should be 14.9 degrees.

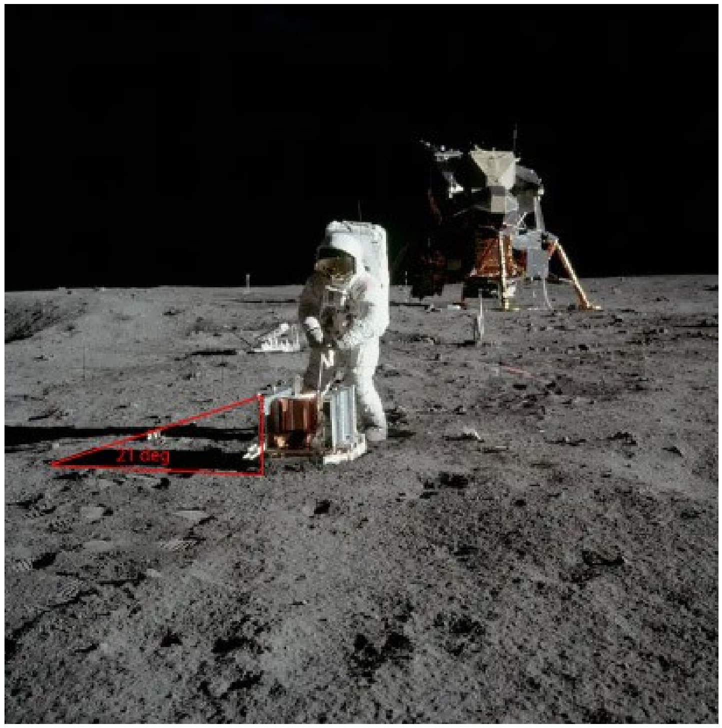


Figure 7- Analysis of Photo AS11-40-5946

PHOTO AS11-40-5949:

The Sun elevation angle calculated in the photo is 20 degrees and should be 15 degrees.

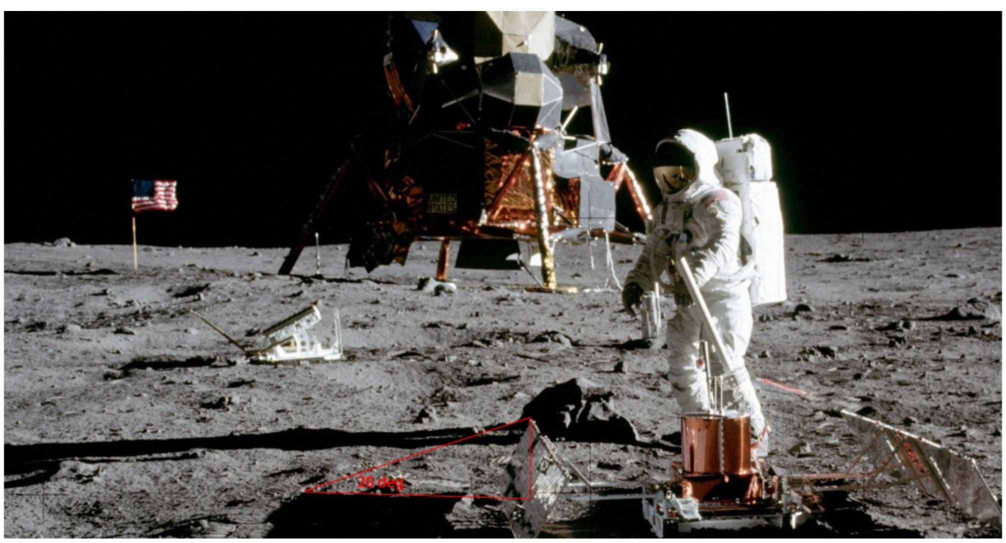


Figure 8- Analysis of Photo AS11-40-5949

OBSERVATIONS OF METHOD 1:

This method is approximate, as the ground is not entirely flat, and the instruments analysed are not very tall.

Although the Sea of Tranquility is a reasonably flat area on the Moon containing some craters but no mountains, the terrain might have a slight local non-apparent tilt in the photos where the lunar lander landed. Would this affect the results? Observing the lunar lander module in several images, it does not appear tilted and gives the impression the terrain is at least generally flat. However, we find an average difference of 7 degrees on the Sun elevation, the equivalent of a 12% slope. (Slope is Tangent of 7 degrees, i.e. 12%). A First Category Tour de France mountain prize has a gradient of 8.5%. So 12% is very steep and indeed not what the photos show. We would witness the astronauts having difficulty climbing the slope, and all the instruments, background, or terrain notably tilted. There is no local terrain slope capable of explaining the 7-degree (12%) difference.

METHOD 2:

SUN ELEVATION CALCULATION 2: BY ROTATING THE TRIANGLE TO THE FRONT VIEW.

This method can be applied to taller objects, like the US flag. See photo AS11-40-5905 in Fig. 9 and 10.

Figure 9- Photo AS11-40-5905. US flag.

The image is tilted here, but the flag is perpendicular to the horizon and raised vertically. Notably, the shadow of the flag is well-defined, but the shadow of the pole that holds it is choppy. Projecting the shadow of the vertical pole, we notice that the flag seems to be on a small mound of sand about 20 centimetres tall. See Figure 10 below.

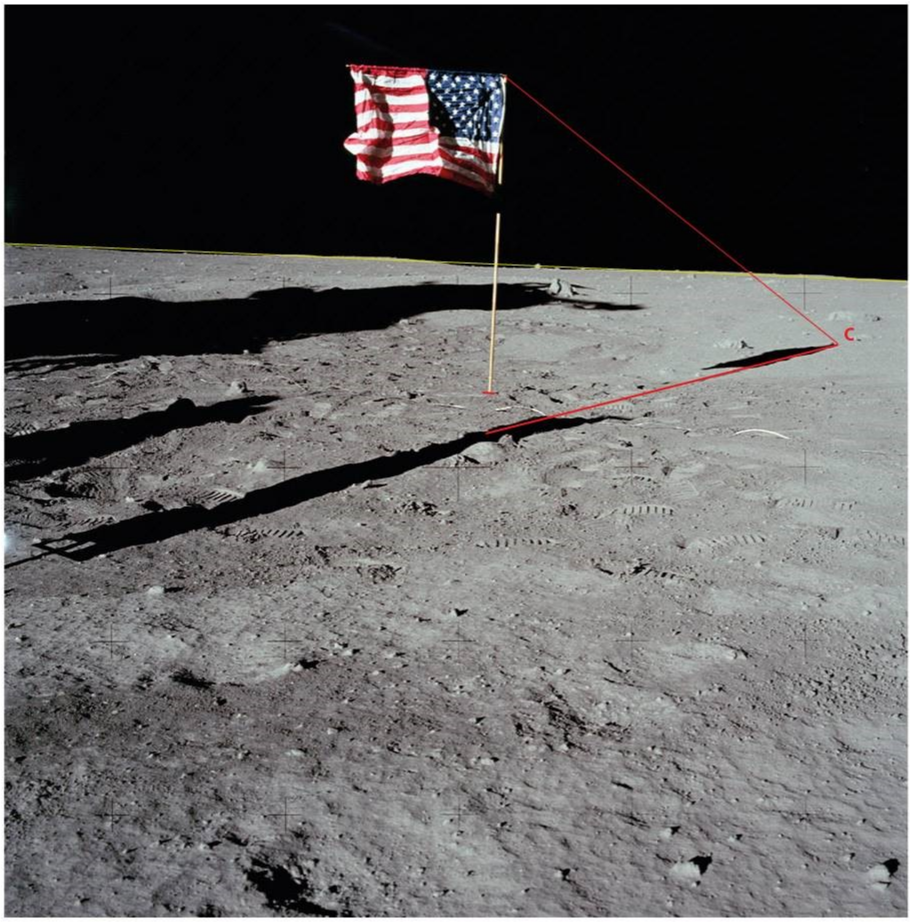


Figure 10- Photo AS11-40-5905. The flag on a small mound.

The mound gives the impression the astronauts moved moon dust and gravel over the base to support it when installing the flag. So, it appears elevated from the surrounding terrain, explaining why, in other photos, the shadow of the flag pole is not visible because it lies behind the created mound. The Sun's elevation should be measured up to the buried flag base.

In this method, the triangle defining the Sun's front view elevation is not visible. So, we cannot directly use it to calculate the Sun's elevations as we did in Method 1. The shadow is not cast from right to left or left to right but backwards. So, we must rotate the triangle to the front view to measure it correctly.

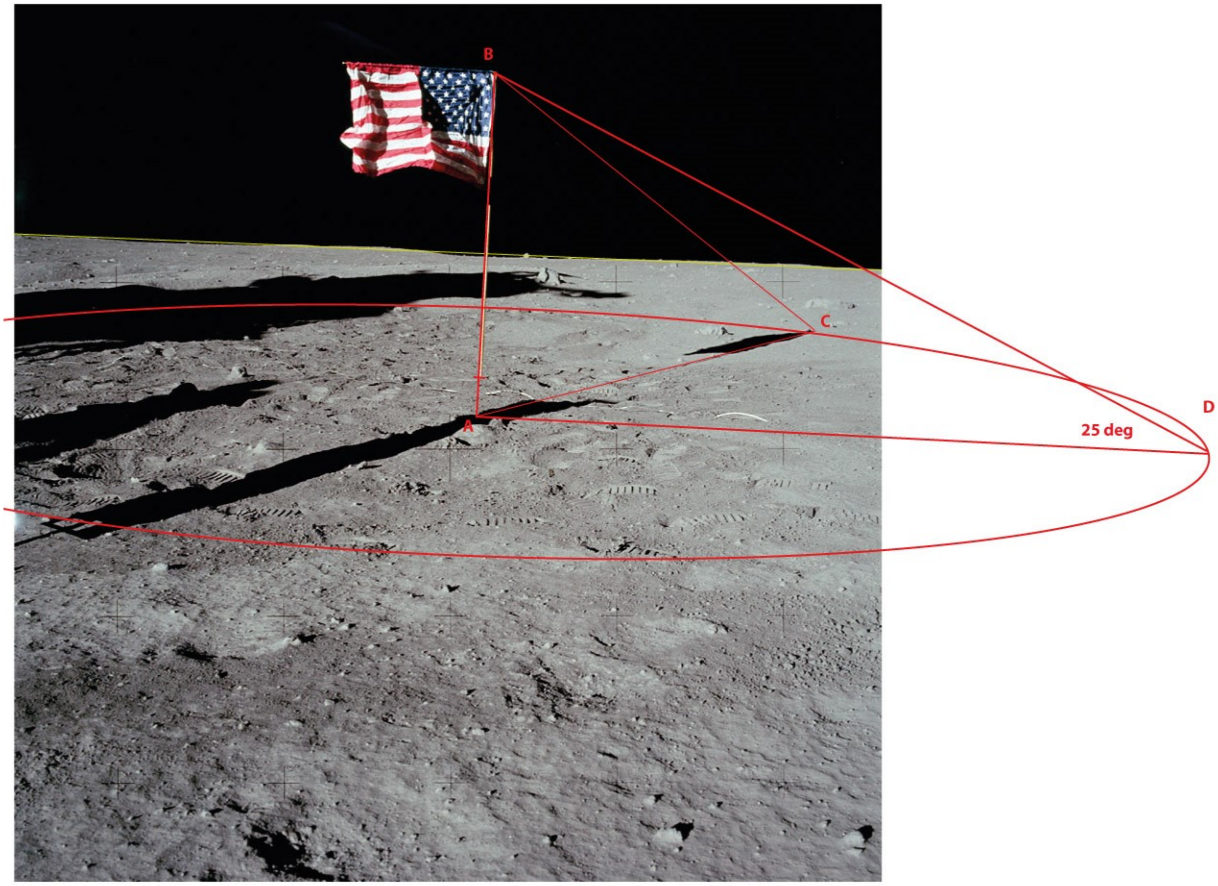


Figure 11- Analysis of Photo AS11-40-5905. The triangle rotated.

Figure 11 shows triangle A-B-C rotated to obtain the triangle A-B-D, which is now in front view. To do this, we draw an ellipse, which is a circle seen from above, that rotates the triangle on it to be analysed. Figure 11 shows this ellipse drawn and illustrated in perspective. One way we can draw the ellipse is with Adobe Illustrator tool. With this tool, we can define the major and minor axis of the ellipse. The proportion between these two axes is in proportion to the Sine function of the dip angle of the base of the flag. The flag base is about 10 degrees below the horizon. How do we know it is 10 degrees? The "+" sign marks on the crosshairs of these photos are 10.3 degrees apart, as shown in Annex B. Drawing this ellipse correctly and in perspective allows us to estimate where the rotated triangle (A-B-D) would be. In the resulting rotated triangle, we can measure the angle at vertex D using the tangent as in Method 1. The tangent of the Sun's elevation angle will be the segment A-B divided by A-D.

We arrive at an elevation of 25 degrees. But when the photo was taken, NASA's data with its Horizons tool indicated that the Sun should be at 14.8 degrees elevation. Why is the Sun 10.2 degrees higher? For the Sun to rise this much on the Moon, the astronauts would have had to wait 18 hours. The only conclusion possible is that this photo was not taken during the Apollo 11 mission when NASA says it was.

PHOTO AS11-37-5466

We have the US flag again (Figures 12 & 13) but now taken from inside the capsule, after the Extra-Vehicular Activities at 112h 20m 56sec after the Apollo 11 lift-off. The flag, again, is on a little mound. The Sun's elevation angle should be 15.6 degrees, but it is actually 22 degrees.

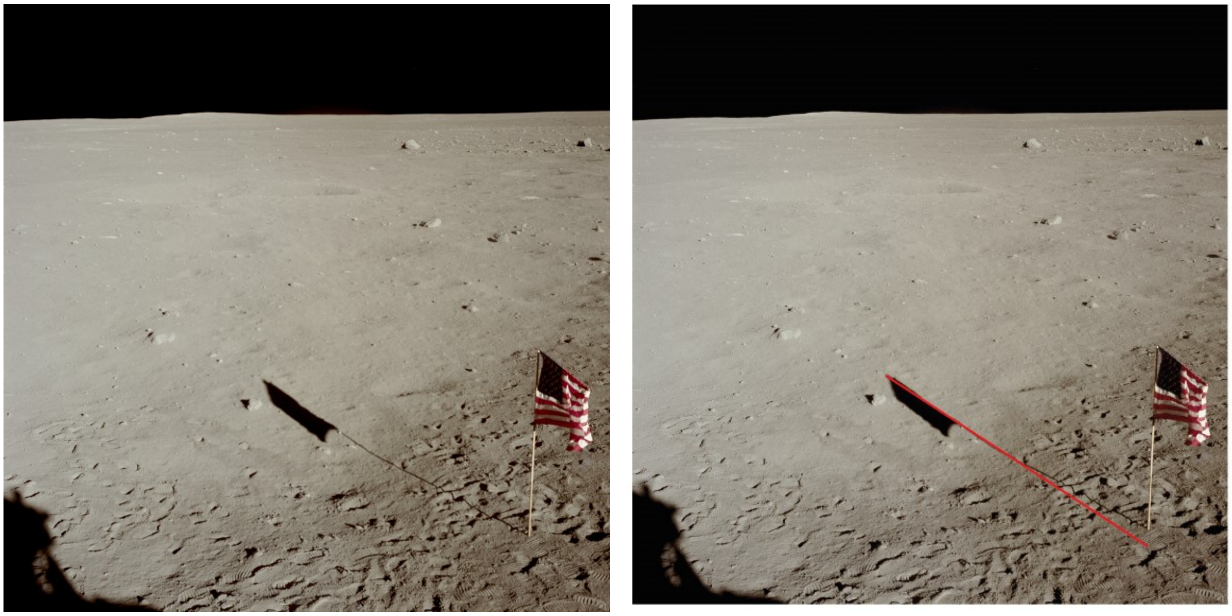


Figure 12- Photo AS11-37-5466. The flag is on a little mound.

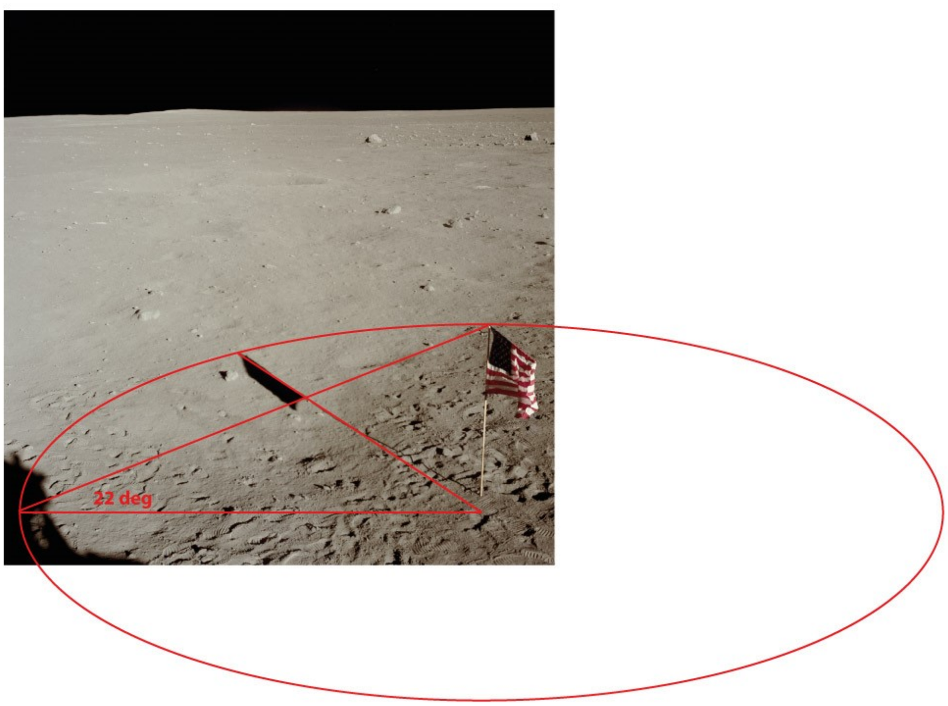


Figure 13- Analysis of Photo AS11-37-5466.

PHOTO AS11-40-5931

We see one of the instruments the astronauts installed. Its base is 13 degrees below the horizon and that helps to draw the ellipse in a ratio between the minor axis and the major axis equal to the Sine of 13 degrees, as explained above. The dimensions were measured on the computer screen and the resulting angle is 22.6 degrees. It should be 14.9 degrees.

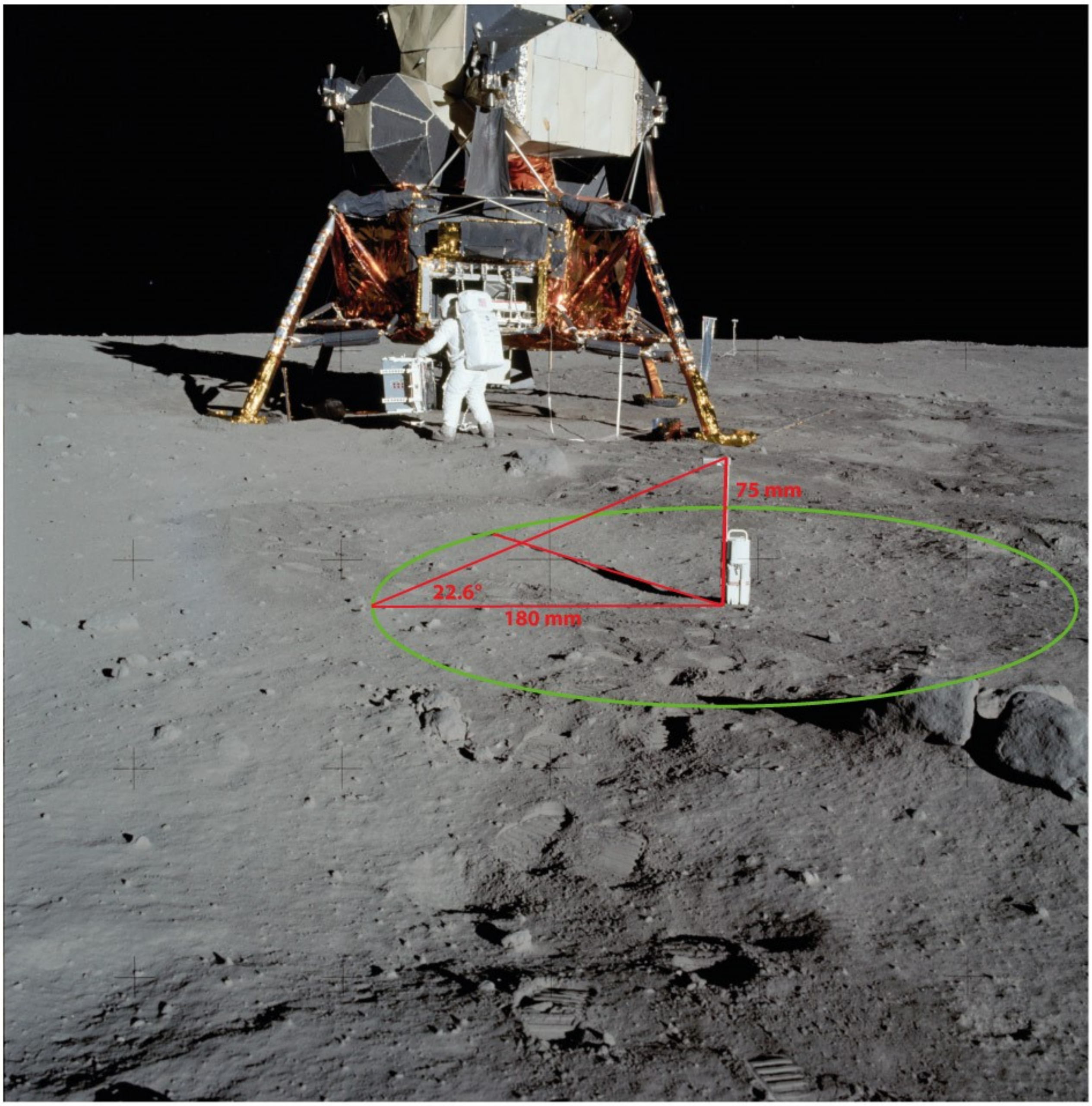


Figure 14- Analysis of the photo AS11-40-5931.

OBSERVATIONS OF METHOD 2:

This method is better than Method 1 because it allows us to analyse taller objects for a higher degree of accuracy.

The key to accuracy with this method is to draw the ellipse correctly and in perspective. An alternative way could be to use a 3D modelling tool like Blender to observe the image in a 3D view. With Blender, we can apply different positions of the Sun and compare them with the photo. But calculating it, as we did here, is handy and accurate.

METHOD 3:

SUN ELEVATION CALCULATION 3: BY INDIRECT SUN OBSERVATION USING THE CAMERA RETICLE.

This method may be the most accurate. It involves taking advantage of the system built into the Apollo 11 camera to verify positions and angles. Apollo 11 used several cameras. One was the “Hasselblad 500” (Annex A). This medium format camera, with its exceptionally high-quality lenses, made it possible to take excellent colour photos. The camera was attached to the astronauts’ space suits on the chest, obviating the need to hold it. However, this made many of the photos appear tilted because the astronaut could not use his hands to orient the camera horizontally, and the camera depended on the position of his body when taking the photos.

The Apollo Hasselblad 500 medium format camera had a one-plate system with crosshairs to measure angles and confirms positions of details on the ground (Annex B). The plate had “+” marks, called reticles (or ‘fiducials’), in a 5 by 5 pattern, where the centre mark was slightly longer. The + marks were 10 mm apart, and according to NASA, with the lens used, that equated to a 10.3-degree angle between each mark (Attachment B). These marks appear in many Apollo 11 photos from NASA’s records. They enable measurement of the Sun’s elevation above the lunar horizon.

There are no direct photos of the Sun, only indirect ones with the Sun near the edge of the photos’ field of view in which we can observe the lens flare phenomenon (Wikipedia, Lense Flare). The photos we analyse presenting this phenomenon are AS11-40-5872, AS11-40-5873 and AS11-40-5936. See the following Figures 15, 16 & 17. And in other photos we will use the astronaut's shadow as will be explained later.

In these photos, we see several main reflections from the light source, the Sun, aligned towards the centre of the photographic image. Drawing a line following the direction of the main reflections, it passes precisely through the centre of the camera, where the central reticle mark is. So, the Sun is on that line, even if it is not visible in the image. Other secondary lines also converge towards the Sun. We can project them, look for the crossing point, and know where the Sun is, even if we do not see it within the photo field. Then, using the Reseau plate system marks (Annex B), we can measure the elevation of the Sun above the horizon. As mentioned earlier, the angular separation between each reticle mark is 10.3 degrees.

Figure 15- Photos AS11-40-5872, AS11-40-5873 and AS11-40-5936.

PHOTO AS11-40-5872:

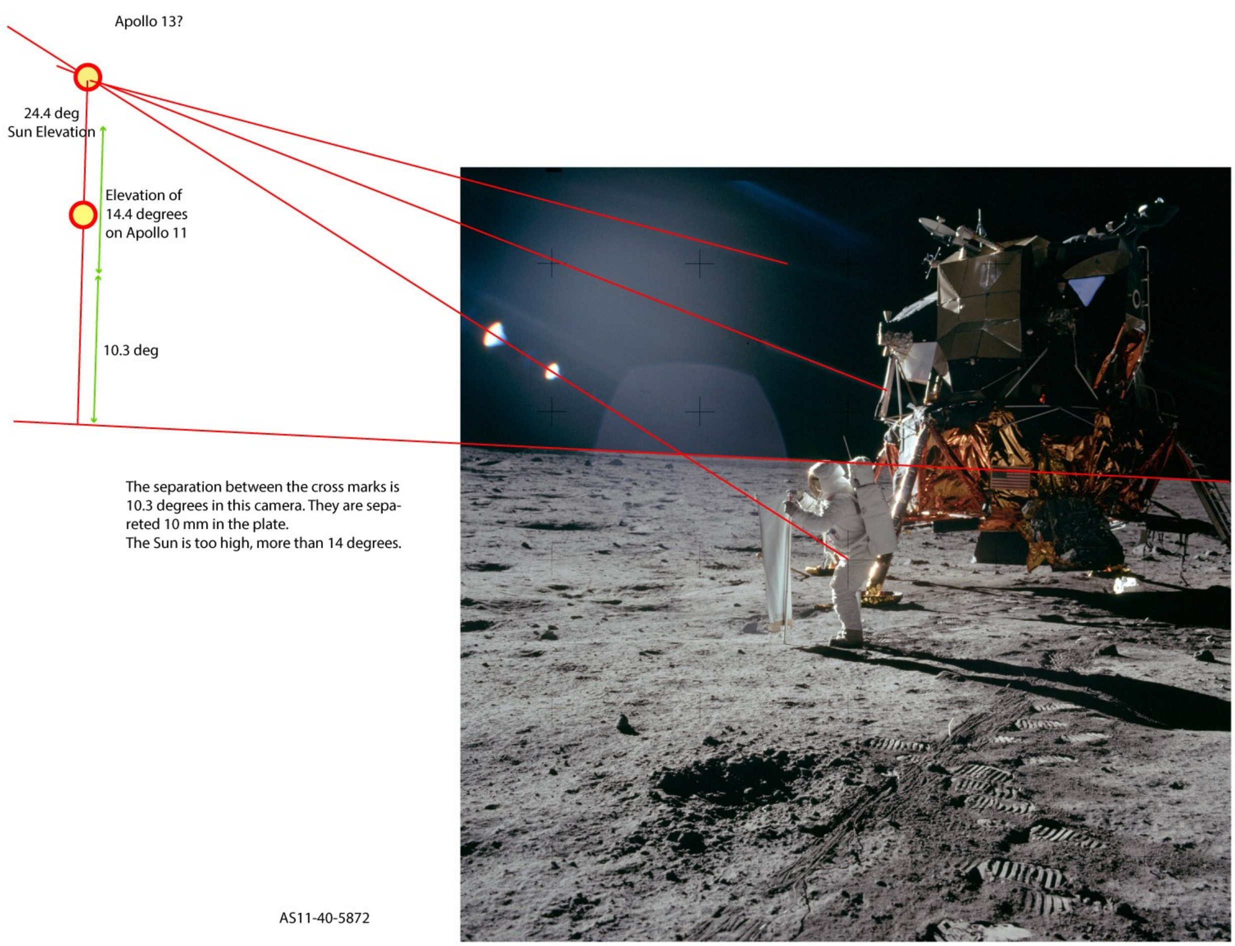


Figure 16- Analysis of Photo AS11-40-5872.

The green arrows in the figure represent the 10.3-degree separation between each crosshair mark. Lines indicating the Sun's position are projected, the horizon line drawn, and the Sun's elevation calculated.

The resulting elevation is 24.4 degrees, not the 14.4 it should be if this photo were taken by Apollo 11.

PHOTO AS11-40-5873

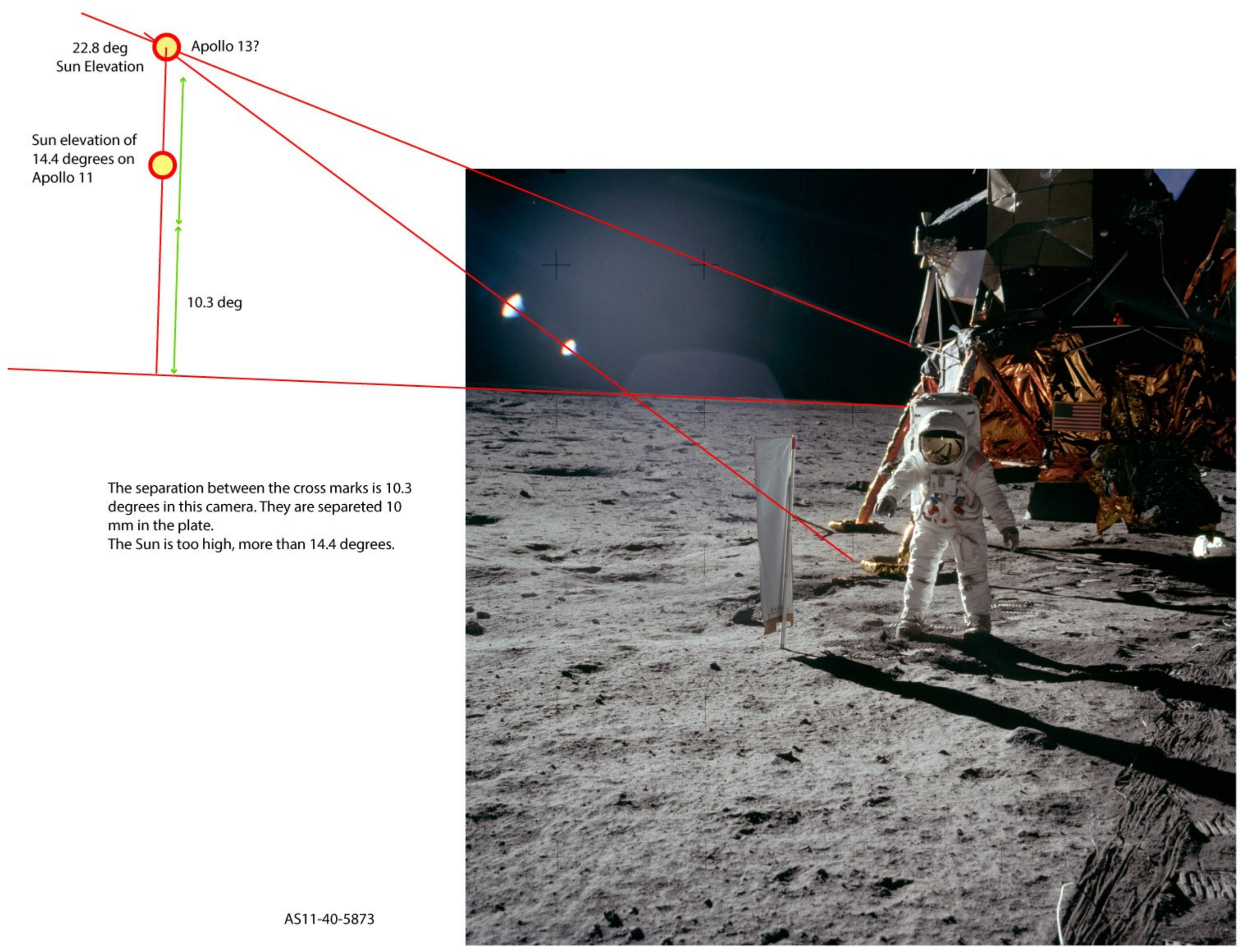


Figure 17- Analysis of Photo AS11-40-5873.

This analysis is similar to the previous one. In this case, we obtain a Sun elevation of 22.8 degrees, not the 14.4 it should be for Apollo 11. So, Apollo 11 astronauts could not have taken this photo.

PHOTO AS11-40-5936

This photo is perhaps the best of the three (see Figure 18). The Sun is closer to the edge of the photo's field of view, and many lines appear, enabling estimation of the Sun's position. Projecting the lines may produce a slight error if the Sun is far from the field of view. The closer the Sun is to the photo area of view, the smaller the error, so this photo may give the most accurate value of the Sun's position.

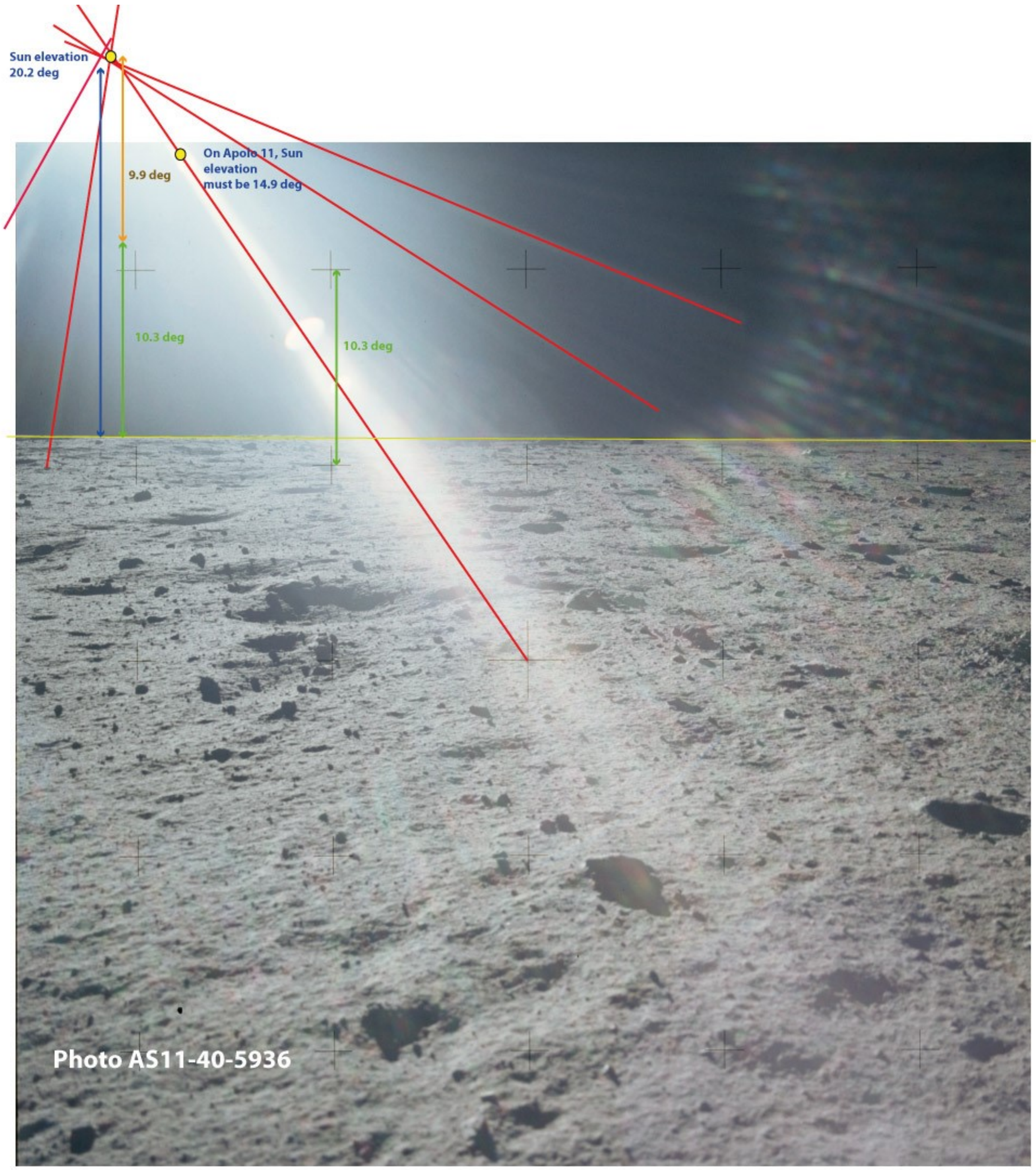


Figure 18- Analysis of Photo AS11-40-5936.

The Sun’s actual elevation in this photo is 20.2 degrees, but if the Apollo 11 astronauts had taken it, it should be 14.9 degrees; the Sun should appear in the photo’s field of view. So, this photo could not have been taken during the Apollo 11 mission. This photo, with the Sun in the field of view, must be overexposed and it is not.

USING THE SUN'S OPPOSITE POINT

In this method we will also use the reticule with marks 10.3 degrees apart, but instead of observing the position of the Sun, we will observe the opposite point of the Sun. That is, the point that is 180 degrees to the opposite side, and instead of being above the horizon at an angle of elevation, it will be that same value at an angle of dip. If the Sun should be at 15 degrees elevation, the opposite point should be at 15 degrees dip. To do this, we must understand that the camera was carried by the astronauts on their chest, fixed. In this way they had their hands free. See figure 19 where the location of the camera on the spacesuit is indicated.

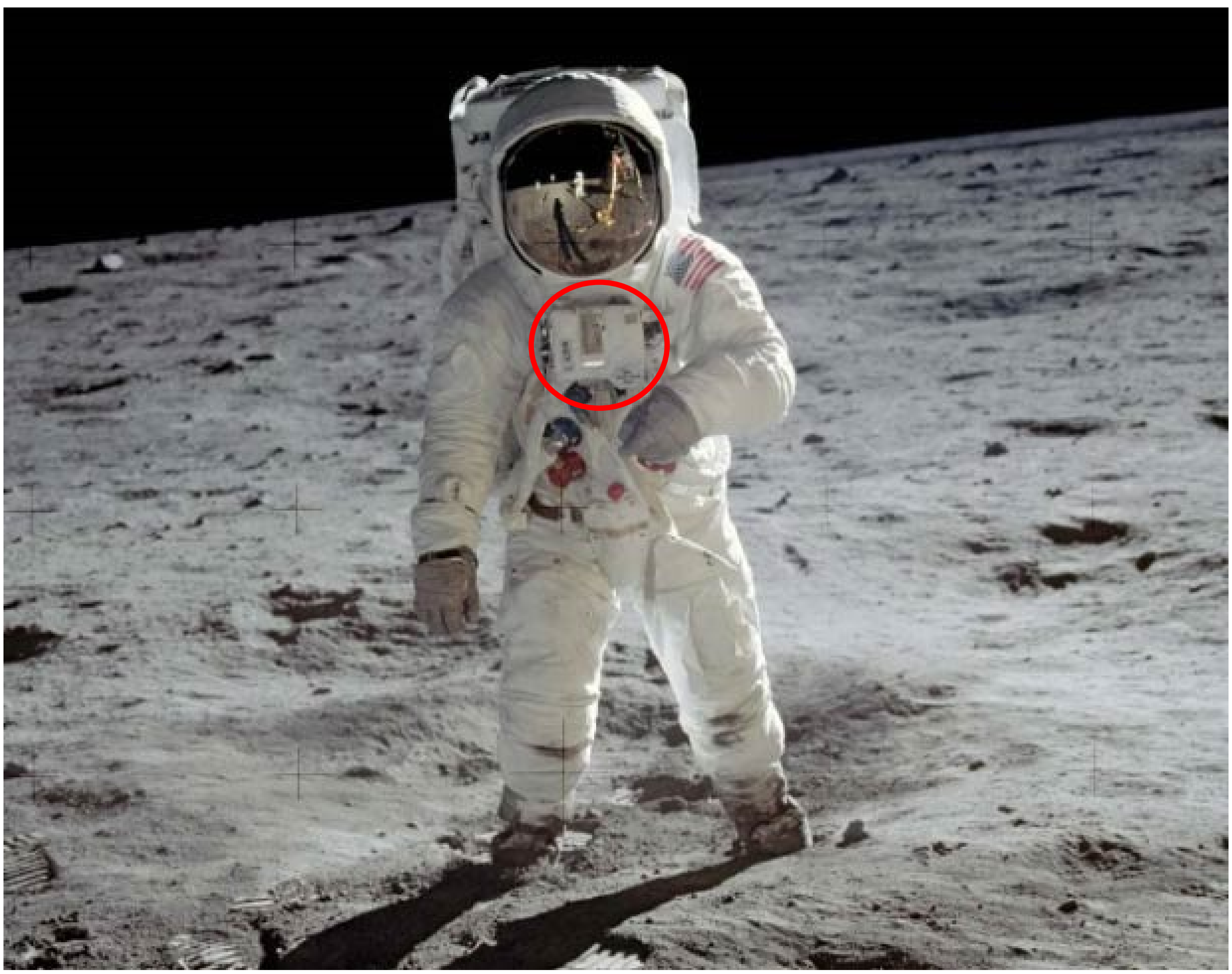


Figure 19- Location of the camera on the astronaut's chest.

PHOTO AS11-40-5882

We see the silhouette of the astronaut's shadow. The camera must be on the chest, on the red square mark. Therefore, the point opposite the Sun should be at that location. If we draw a straight line from the Sun, passing through the camera lens, it will be projected to the opposite point of the Sun. This helps us to measure the dip angle, which is equal to the elevation angle of the Sun at that instant.

On the computer screen we measure that the crosshair marks, which indicate 10.3 degrees of angular separation, are at 63.5 mm. By measuring the distance from the camera to the horizon, in this case 126 mm, we can calculate the angle proportionally, which gives us 20.6 degrees of dip. The Sun was in this photo at 20.6 degrees elevation, not 15 degrees. For it to be 15 degrees, the camera would have to be in the yellow circle. But we know that the astronaut did not have the camera over his head.

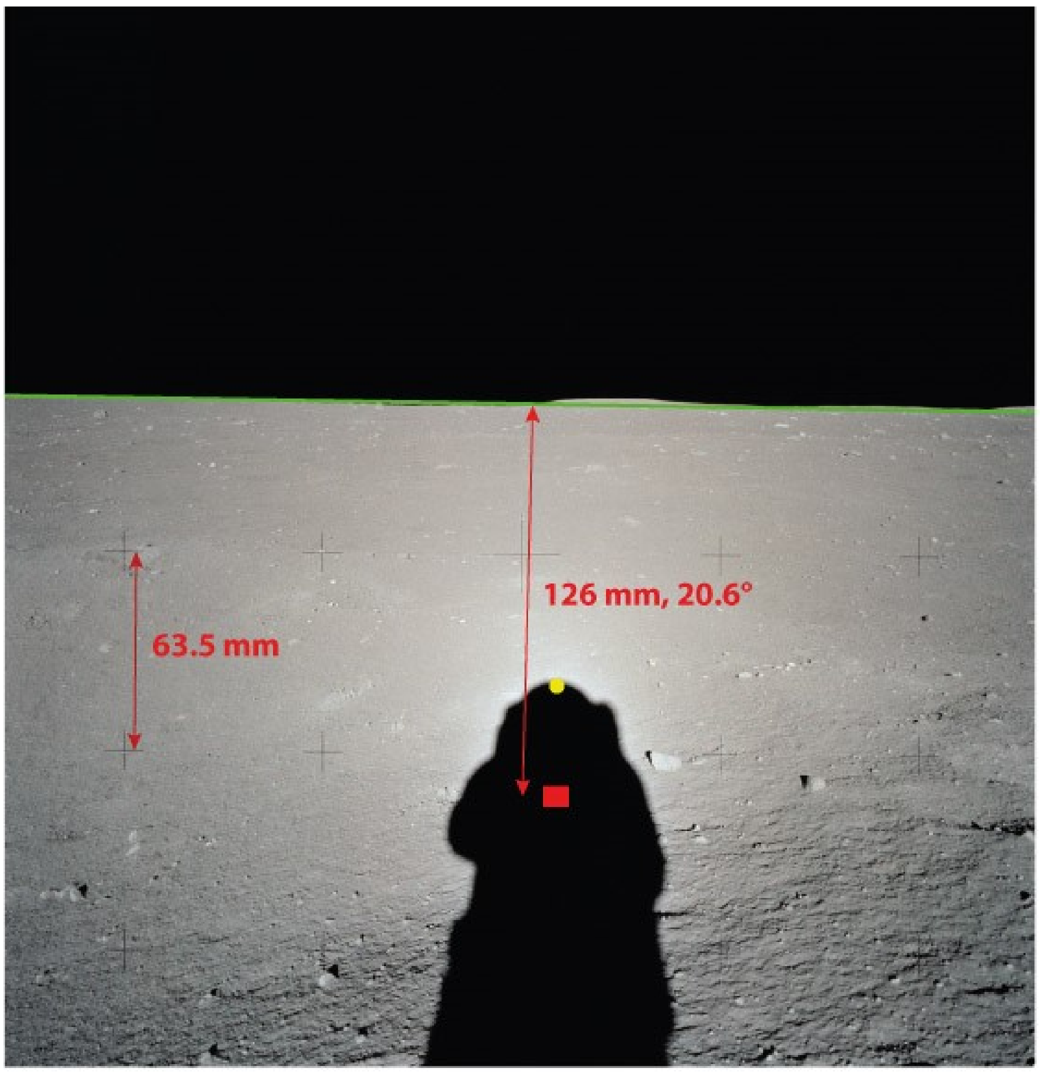


Figura 20- Análisis de la foto AS11-40-5882.

PHOTO AS11-40-5961

A similar photo, showing the silhouette of the astronaut. Here we get an elevation angle of the Sun of 20.3 degrees. It should be 15 degrees. And if it were 15 degrees, the camera should be above the astronaut, which is totally illogical.

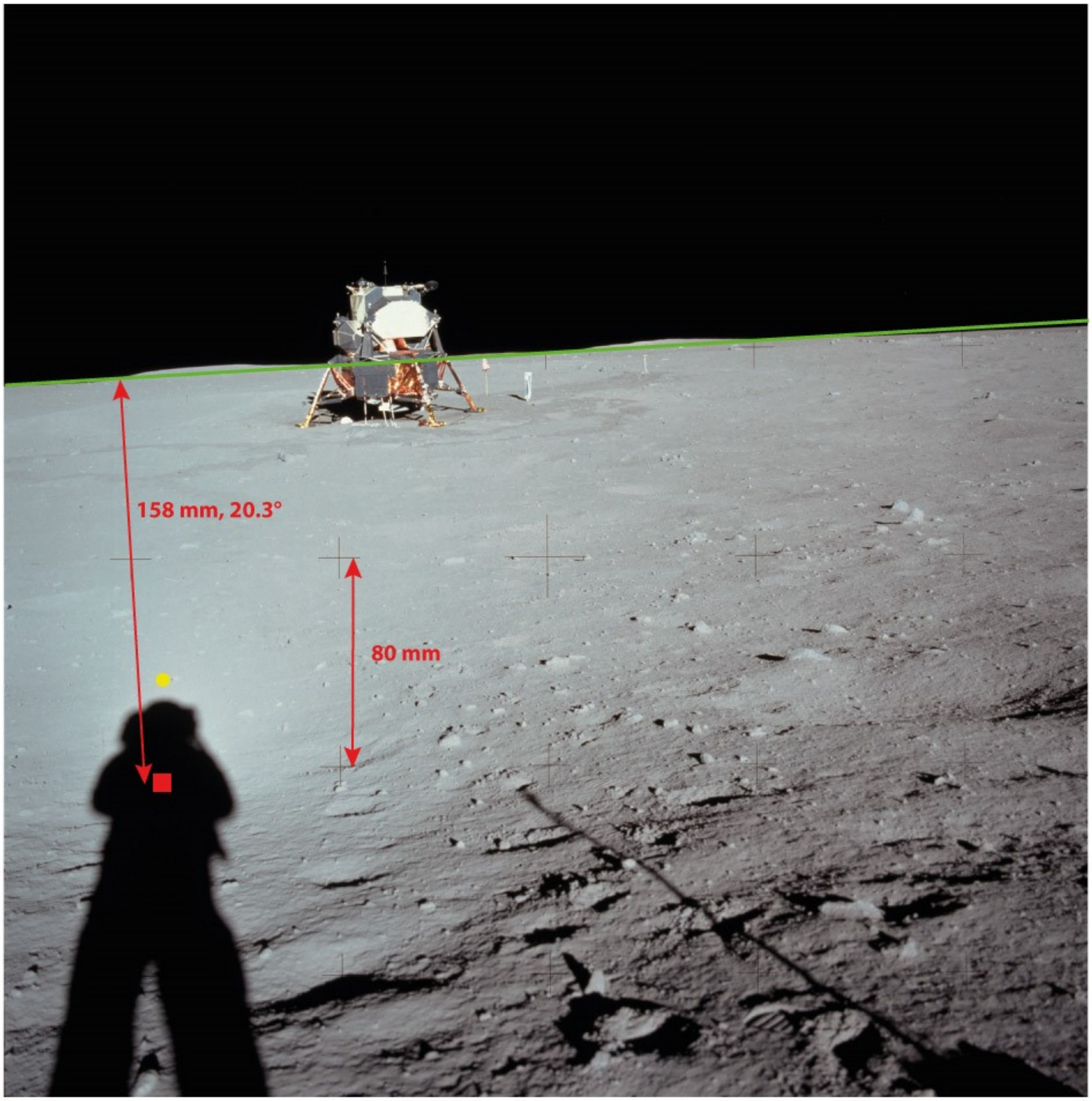


Figura 21- Análisis de la foto AS11-40-5962.

PHOTO AS11-40-5961

Here we get an elevation angle of the Sun of 21.6 degrees. It should be 15 degrees. And if it were 15 degrees, here too the camera should be above the astronaut.

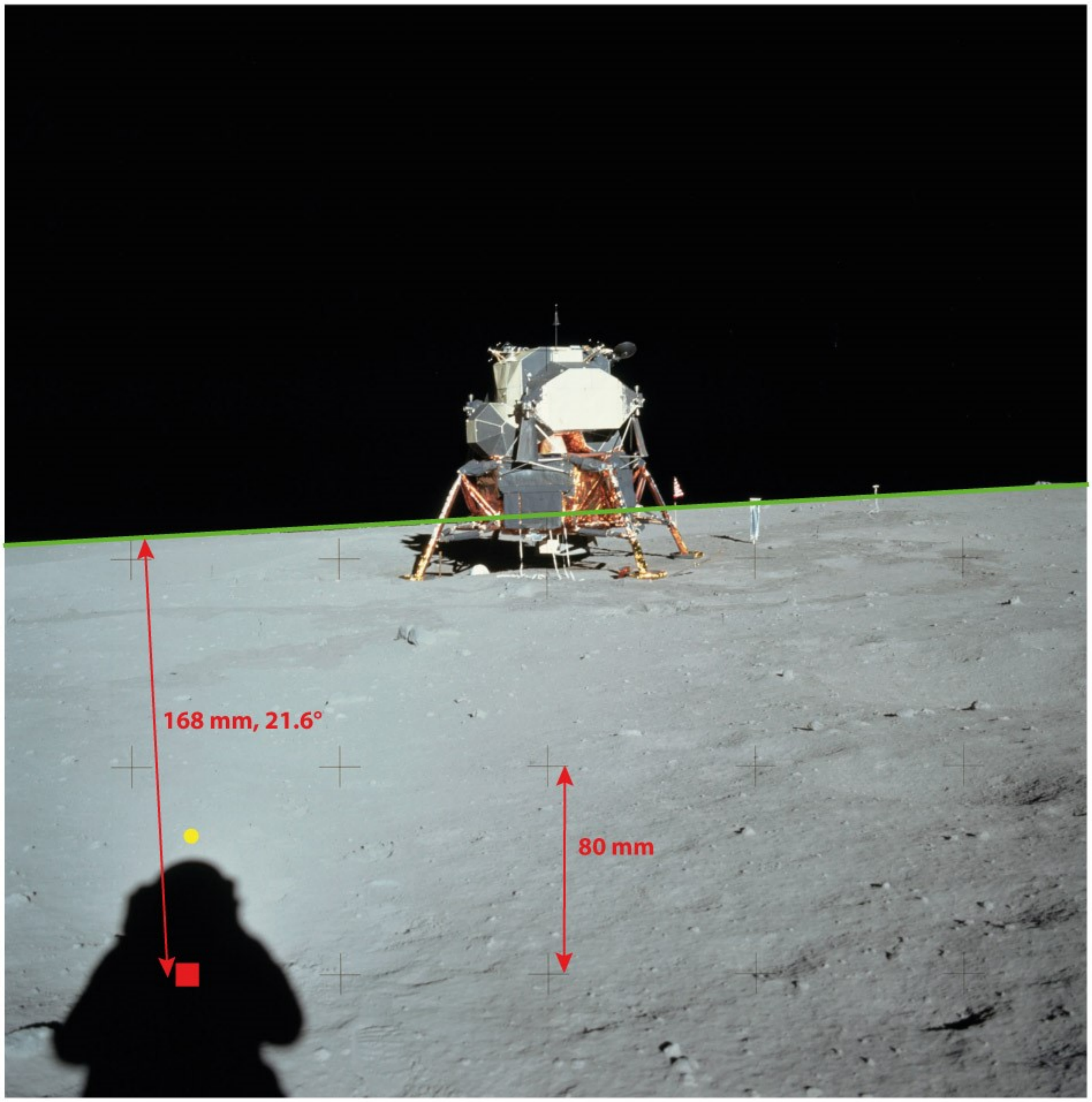


Figura 21- Análisis de la foto AS11-40-5961.

OBSERVATIONS OF METHOD 3:

This method is the most accurate of the three. It uses the camera's precise reticle system installed to measure angles and gives credibility to the result obtained. If there is any terrain slope located near the lunar module, it does not affect the results since the elevation is measured with respect to the far horizon in the photos.

Photos AS11-40-5936, AS11-40-5882, AS11-40-5961 and AS11-40-5962 are the most accurate, as they provide a precise value of the Sun's elevation. We know that the elevation of the Sun in the Apollo photos was very close to 20 to 21 degrees, not the 14.7 degrees we would have had if the Apollo 11 astronauts had taken the photos.

CONCLUSIONS OF PART 2:

- The Apollo 11 astronauts could not have taken the Apollo 11 Mission photos we see in the NASA archives.
- On NASA's website, anyone can readily verify that the Sun's elevation calculated with the Horizons tool is correct. It shows pictures taken from inside the lunar capsule by the astronauts before leaving for the Extra-Vehicular Operation and one upon just returning inside the capsule. Referring to the pair of photos taken from the capsule, it says, "The solar elevations were 10.9 and 15.1 degrees at the two times" (Apollo 11 Image Library). So, there is no reasonable way to claim the Sun was at 20 degrees elevation during the lunar surface photo session, as we see it in NASA's Apollo 11 records.
- According to the records, the Apollo 11 astronauts left only once to install the instruments on the Moon. When they returned inside the capsule, they refilled it with oxygen, removed their spacesuits and slept for 5 hours before returning to lunar orbit to meet Collins.
- During the Apollo 11 mission, the 20-degree elevation of the Sun occurred when the astronauts were already returning to Earth.
- If the Apollo 11 astronauts could not have taken the photos in the NASA Apollo 11 records, who did take them? Who are the astronauts we see in the pictures and videos? The answer could be on another Apollo mission, and I consider the most likely candidate to be Apollo 13.

PART 3:

A new hypothesis opens the door to different possible explanations for the facts found and the given evidence.

The demonstrated facts so far are:

- The evidence shows that the available photos and videos of Apollo 11 in NASA records were taken on the lunar surface, not in a recording studio.
- The Apollo 11 photos and videos in NASA's records show the Sun too high, at an elevation of about 20 to 21 degrees, not the requisite 14.7 degrees. The Apollo 11 astronauts could not take these photos and videos as the evidence clearly shows.

So, who took these photos and videos? Who are the astronauts shown there? Which Apollo mission took these photos and videos, and when?

Listed below is a hypothetical version of the events that likely occurred:

- Political pressures surfaced to show the Apollo mission a success. The risk of failure was not politically acceptable on the first attempted moon landing.
- Apollo 10 approached the lunar surface, but no lunar lander landing activity occurred then. There was also a risk of Apollo 11 mission failure upon landing and potential loss of astronaut lives. Such a failure would have been politically devastating for the President and government.
- Perhaps Richard Nixon, or someone else with the power and will for political and personnel safety, pushed to create a hoaxed and safe Apollo 11 landing on the Moon, thus giving more time to iron out the risks for a definite safe landing a little later.
- The Apollo 11 astronauts travelled to the Moon not for the supposed landing mission but to repeat the same mission as Apollo 10, without landing on the Moon.
- The Apollo 11 astronauts took previously recorded video copies of Extra-Vehicular Activity from the NASA lunar surface training site to the Moon.
- The Apollo 11 lunar module transmitted these video copies while orbiting the Moon. They did not land; they simply transmitted a pre-recorded TV signal. The voice and interaction of the astronauts was live, but never from the lunar surface, always and only from the capsule in orbit around the Moon.
- Several stations around the Earth (Urrutia) received the very low-resolution TV signal of the landing, so low that it was impossible to confirm whether it was a pre-recorded video transmission or a live one.
- Apollo 11 did not land on the Moon. The astronauts returned without landing. This was the first Apollo mission hoax.
- Later, Apollo 12 did land. It was the first time a manned spacecraft landed on the Moon. With Apollo 12 landing, it became clear that a successful moon landing was possible.
- The real mission of Apollo 13 was to carry the equipment not installed by Apollo 11. They traced the entire Apollo 11 routine that had not been previously performed on the Moon. Videos were

recorded, and pictures taken on the Moon's surface. These are what we see today in the NASA archives. This was the second hoax of the Apollo mission.

- Apollo 13 needed to reach the Moon very quickly, in two days or a little less. To do so, it needed to carry more fuel than for a normal flight. According to NASA "We flew with some extra propellants aboard this vehicle. Part of it for the reason of flying this missions [sic] and part of it to just get a little bit of added knowledge in - as a preliminary to flying the 'J' missions which are going to be missions where we fly with heavier payloads than we've been flying to this time. So we loaded the tanks up more than was required to fly the mission" (Apollo 13 Flight Journal).
- In record time, Apollo 13 arrived at the Moon to land in the Sea of Tranquility, the site destined for Apollo 11. They had to arrive early so the Moon phase and Sun elevation would match what it should have been during the Apollo 11 mission. But they arrived about 11 hours late, as the Sun was already considerably higher.
- The Apollo 13 astronauts followed the same routine that Apollo 11 was to have followed. They set up all the Apollo 11 equipment, walked around leaving footprints, and took pictures and videos.
- Perhaps just after performing their mission at the Apollo 11 landing site, the Apollo 13 astronauts reported having had a failure, which may not have happened quite as reported. They were already on the Moon or on their way back, not on their way to it.
- They took off from the Moon, returning to Earth at normal speed. They faked the entire damage and recovery process, pretending they could never perform their mission.
- The Apollo 13 photos and videos were brought back, archived and later replaced as if they had been taken by Apollo 11.
- The hoax could have been confirmed by reviewing the original Apollo 11 mission telemetry and verifying that the TV images they transmitted were not identical to the Apollo 13 videos. The videos they transmitted were pre-recorded at the NASA training site. They stored that information on 14 magnetic tapes that disappeared and were never recovered. There is no way to view the original transmission.
- A video we see on NASA's YouTube channel that reconstructs the original transmission most likely shows the video recorded by Apollo 13.
- It is strange to see the horizon of the Moon during Armstrong and Aldrin's descent down the lunar module's ladder, apparently tilted 13 degrees. It is not horizontal. The astronauts walk vertically, and it is clear that the horizon is tilted. There is still no explanation for this phenomenon.
- The lunar rock samples that exist today from Apollo 11 are actually from Apollo 13.
- Other missions to the Moon have taken photos showing the Apollo 11 landing site and confirming that there was a landing and installation of equipment there. These photos show the equipment installed by Apollo 13.
- It is challenging to prove these two hoaxes. However, this paper shows that the Apollo 11 astronauts could not have taken the photos we see in the NASA archives.

CONCLUSIONS OF PART 3

Whether there is another option besides Apollo 13 to have installed the Apollo 11 equipment is an open debate. Still, because the Apollo 11 astronauts did not take the photos we see in NASA's Apollo 11 records, it is undeniable that something happened, and we are looking at a hoax.

The hoax notwithstanding, the Apollo missions were even more successful than has been commonly reported. Not one critical Apollo moon mission failed. Apollo 13 was successful in its secret mission. Perhaps political reasons and the fear of losing astronaut lives led to these deceptions.

With Apollo 11, the U.S. pretended to be the first to land on the Moon, but this did not happen. The U.S. was the first to land on the Moon, but not with Apollo 11.

It is time for people to investigate this and for NASA to reveal the truth. After all, NASA succeeded in their missions to the Moon, even if political pressure and fear of losing astronaut lives led to manipulating the facts.

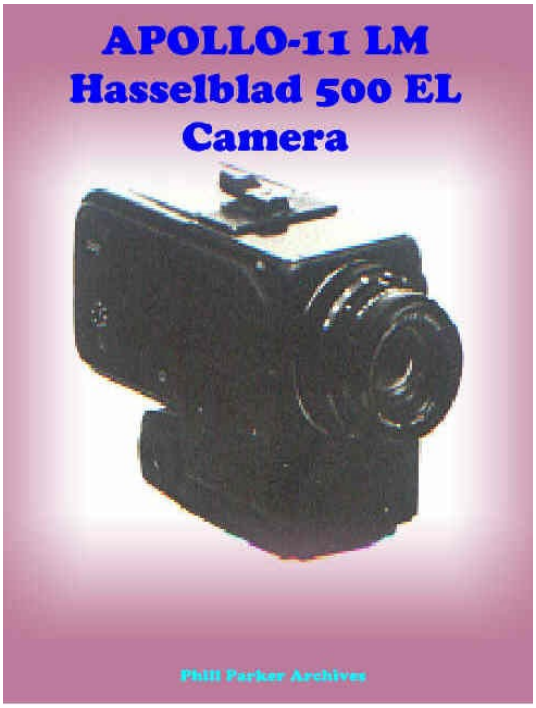
Annex A - Cameras used on Apollo 11 Mission

APOLLO-11 HASSELBLAD CAMERAS

by Phill Parker

The camera equipment carried on the Apollo-11 flight was comprehensive. In addition to the usual TV and small-film cameras on board, there was a special camera for near-distance stereoscopic shots of the moon. And, of course, there were also the cameras which, for this article, are the most important, viz., three Hasselblad 500ELs.

Two of the 500ELs were identical to the ones carried on the Apollo-8, -9 and -10 flights. Each had its own Zeiss Planar f-2.8/80 mm lens. A Zeiss Sonnar f-5.6/250 mm telephoto lens was also carried. One of the conventional 500ELs, along with the telephoto lens and two extra magazines, was in the Apollo-11 Command Module throughout the flight. The other conventional 500ELs, and two extra magazines as well, were placed in the lunar module. Also in the lunar module - and making its first journey in space - was a Hasselblad 500EL Data Camera, which was the one to be used on the moon's surface.



The Data Camera, like the other two 500ELs, was a modified standard 500EL camera but differed from the others in several ways:

(1) The Data Camera was fitted with a so-called Reseau plate. The Reseau plate was made of glass and was fitted to the back of the camera body, extremely close to the film plane. The plate was engraved with a number of crosses to form a grid.

The intersections were 10 mm apart and accurately calibrated to a tolerance of 0.002 mm. Except for the larger central cross, each of the four arms on a cross was 1 mm long and 0.02 mm wide. The crosses are recorded on every exposed frame and provided a means of determining angular distances between objects in the field-of-view.

(2) The Data Camera was fitted with a new Zeiss lens, a Biogon f-5.6/60 mmlens, specially designed for NASA, which later became available commercially. Careful calibration tests were performed with the lens fitted in the camera in order to ensure high-quality, low-distortion images. Furthermore, the lens of the camera was fitted with a polarizing filter which could easily be detached.

(3) The Data Camera was given a silver finish to make it more resistant to thermal variations that ranged from full Sun to full shadow helping maintain a more uniform internal temperature. The two magazines carried along with the Data Camera also had silver finishes. Each was fitted with a tether ring so that a cord could be attached when the Lunar Module Pilot lowered the mated magazine and camera from the lunar module to the Commander standing on the lunar surface. The exposed magazines were hoisted the same way.

(4) The Data Camera was modified to prevent accumulation of static electricity. When film is wound in a camera, static electricity is generated on the film surface. Normally, this electricity is dispersed by the metal rims and rollers that guide the film, and by the humidity of the air. In a camera fitted with a Reseau plate, however, the film is guided by the raised edges of the plate. As glass is a non-conductor, the electric charge that builds up at the glass surface can become so heavy that sparks can occur between plate and film - especially if the camera is used in a very dry environment or in vacuum. Sparks cause unpleasant patterns to appear on the film and can be a hazard if the camera is used in an atmosphere of pure oxygen. To conduct the static electricity away from the Reseau plate in the Data Camera, the side of the plate facing the film is coated with an extremely thin conductive layer which is led to the metallic parts of the camera body by two contact springs. Contact is effected by two projecting silver deposits on the conductive layer. The Reseau plate, or register glass, is not a new development in photography. What is most remarkable, however, is that the group of Hasselblad

staff working on NASA camera projects in collaboration with Carl Zeiss was successful in applying the idea to a small camera - like the Hasselblad 500EL Data Camera. This camera is not only useful in space photography, it is particularly suitable for all kinds of aerial photography. The special cameras produced in the past for aerial photography were large and intended for a large negative-format - frequently meaning high prices. The Hasselblad 500EL Data Camera with its Reseau plate produced a small and comparatively low-cost camera which gave satisfactory results in aerial photographic work.

Finally, The film used on Apollo-11 was the same type carried on the other flights - a Kodak special thin-based and thin emulsion double-perforated 70 mm film - which permitted 160 pictures in color or 200 on black/white in each loading.

This article was prepared by Phill Parker (UK) from media material supplied by Viktor Hasselblad in 1969.

Constructive editorial comments were furnished by Eric Jones (ALSJ).

Additional information can be found in NASA SP-5099
[Photography Equipment and Techniques: A Survey of NASA Developments](#)
by Albert J Derr.

E-mail spaceuk@netcomuk.co.uk

Annex B - Camera crosshairs plate

APOLLO LUNAR SURFACE JOURNAL

Reseau Plate

With contributions by Markus Mehring, Phill Parker, David Woods, and Eric Jones.
Last revised 21 November 2003.

The Hasselblad Lunar Surface Data Camera was fitted with a Reseau plate, which provides a means of correcting images for the effects of film distortion. The Reseau plate was made of glass and was fitted to the back of the camera body, extremely close to the film plane. The plate was 5.4 x 5.4 cm in the film plane, which was the useful exposure area on the 70 mm film.

The Reseau plate was engraved with a 5 x 5 grid of crosses. The intersections of the crosses were 10 mm apart and accurately calibrated to a tolerance of 0.002 mm.

Except for the double-sized central cross, each of the four arms on a cross was 1 mm long and 0.02 mm wide. The crosses (also known as 'fiducials') were recorded on every exposed frame and provided a means of determining angular distances between objects in the field-of-view.

When the Hasselblad Lunar Surface Data Camera was fitted with a 60mm lens, the images of the reseau crosses on the film have an apparent separation of 10.3 degrees. With a 500mm lens fitted, the apparent separation is 1.24 degrees.

Accidental Exposure AS11040-5904 showing images of the reseau crosses recorded on a blurry spacesuit picture.

References

Apollo 11 Image Library (n.d.). https://history.nasa.gov/alsj/a11/images11.html

Apollo 11 Timeline. (n.d.). https://history.nasa.gov/SP-4029/Apollo_11i_Timeline.htm

Apollo 13 Flight Journal - Day 1, part 2: Earth Orbit and Translunar Injection. (n.d.). https://history.nasa.gov/afj/ap13fj/02earth_orbit_tli.html

Banijay Science. (2023, November 19). NASA's Moon Mission - Mythbusters - S05 EP02 - Science Documentary [Video]. YouTube. https://www.youtube.com/watch?v=uGg6ywErf9Y

Hasselblad. (n.d.). https://history.nasa.gov/alsj/a11/a11-hass.html#:~:text=And%2C%20of%20course%2C%20there%20were,%2D2.8%2F80%20mm%20lens.

Horizons System. (n.d.) https://ssd.jpl.nasa.gov/horizons/app.html#/.

Imagine_If (2023, October 19). *Apollo 11 and 13 hoaxes* [Video]. YouTube. https://www.youtube.com/watch?v=vaFPGCLJJG4

Mars, K. (2023, September 21). Building on a mission: Astronaut training Facilities - NASA. *NASA*. https://www.nasa.gov/history/building-on-a-mission-astronaut-training-facilities/

Reseau plate (n.d.). https://history.nasa.gov/alsj/alsj-reseau.html

Royal Museums Greenwich. www.rmg.co.uk. (Moon landing conspiracy theories, debunked | Royal Museums Greenwich (rmg.co.uk)). December 10 2023.

Urrutia, D. E. (2019, July 18). How NASA Tracked Apollo 11 to the Moon and Back with 1960s Tech. Space.com. https://www.space.com/how-nasa-tracked-apollo-11-communications.html

Wikipedia contributors (2023, November 7*). Lens flare.* Wikipedia. https://en.wikipedia.org/wiki/Lens_flare