

## **Moon Talk--from Apollo 11** **(Long version--includes words from Mike Collins orbiting the Moon)**

Adapted for Readers Theater by Carol Montgomery

From NASA's Apollo 11 Lunar Surface Journal\*

(Transcript and Commentary Copyright 1995 by Eric M. Jones)

Performance Time = less than 21 minutes

Readability = grade 5.0

Cast (6+):

- Narrator
- Buzz Aldrin
- Neil Armstrong
- Michael Collins (less speaking than other astronauts)
- President Nixon (voice from chorus?)  
(only two sections toward the end)
- Mission Control (chorus?)

**NOTE:** The numbers on the right side of some lines represent periodic references to the actual NASA transcript in case someone wants to look up the original document. Every quote is not listed with a number, but they are in sequential order.

### **Vocabulary**

launched	particularly	participate	privilege
Columbia	plume	distinguishable	interior
command module	calculations	adhere	affirmative
astronauts	procedures	charcoal	signature
conversation	geology	experiments	technical
computer	adapting	absolutely	enthusiasm
overloads	environment	suspected	regularly
announcement	immediately	atmosphere	precisely
craters	comparable	perpendicular	variety
manual	fractured	bombarded	mobility
Houston	basalt	conventional	analysis
Tranquility	particularly	meteorites	interjects
immediate	maneuver	evaluate	optics
angularity	coordinates	magnificent	plaque
granularity	oppressive	desolation	tentative
simulated	malfunction	fragments	ingress
one-sixth g [gravity]	microphones	analysis	cohesive
descent	television	maneuvering	bulkhead
synchronize	rung [of a ladder]	hemispheres	specular
topographical	Lunar Module [LM]	rendezvous	sextant
	contingency	contemplate	horizon
	emanating	insignificant	literally

## **Moon Talk--from Apollo 11**

Adapted for Readers Theater by Carol Montgomery  
From NASA's Apollo 11 Lunar Surface Journal\*  
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**Narrator:** It's been four days since the Saturn rocket launched into space with the Columbia Command Module and the Eagle Lunar Module. Today we're in for a treat as we hear parts of the astronauts' actual conversation, live from the Moon and outer space.

**Collins:** You'll hear me, Michael Collins, as I orbit the Moon.

**Aldrin:** You'll hear me, Buzz Aldrin, as I explore the Moon.

**Armstrong:** And, you'll hear me, Neil Armstrong, as I become the first man who walks on the Moon.

**Narrator:** The world waited a long time for this day, July 20, 1969. After two alarms went off earlier due to computer overloads, many now hold their breath because they've heard the announcement that the Eagle has only 60 seconds of fuel left before they have to land on the Moon. The Moon is filled with craters and mountains. The astronauts have taken over manual control from the computer.

**Mission Control:** Houston Mission Control here. You have 30 seconds of fuel remaining.

**Armstrong:** Can't land on a crater....or on those boulders.

**Aldrin:** We're close.....drifting forward a little. That's good. Contact light.

**Armstrong:** Shutdown. [102:45:43]

**Aldrin:** Okay. Engine stop.

**Mission Control:** We copy you down, Eagle.

**Armstrong:** Engine is off..... Houston, Tranquility Base here. The Eagle has landed. [102:45:58]

**Mission Control:** Roger, Tranquility. We copy you on the ground. You have a bunch of guys about to turn blue. We're breathing again. Thanks a lot. [102:46:06]

**Aldrin:** Thank you.

**Mission Control:** You're looking good, here.

**Narrator:** The astronauts, Buzz Aldrin and Neil Armstrong prepare for immediate lift-off in case the landing damaged their fuel tank. They go through their checklists of procedures. Meanwhile, Michael Collins, orbits the Moon waiting to pick up his fellow astronauts whenever they leave the Moon.

**Collins:** Houston, do you read me?

**Mission Control:** We read you, Columbia. He has landed at Tranquility Base. Eagle is at Tranquility. Over.

**Collins:** Yeah, I heard the whole thing.

**Mission Control:** Good show.

**Collins:** Fantastic.

**Narrator:** The astronauts continue to do a lot of technical communication. Finally, the pilot of Eagle, Neil Armstrong, speaks...

**Armstrong:** Hey, Houston, that may have seemed like a very long final phase. The Auto targeting was taking us right into a football-field-sized crater, with a number of big boulders and rocks for about one or two crater diameters around it, and it required us going in P66 and flying manually over the rock field to find a reasonably good area.

[102:55:16]

**Mission Control:** Roger. We copy. It was beautiful from here, Tranquility. Over.

**Aldrin:** We'll get to the details of what's around here, but it looks like a collection of just about every variety of shape, angularity, granularity, about every variety of rock you could find. The color is...Well, it varies pretty much depending on how you're looking...There doesn't appear to be too much of a general color at all... Over.

[102:56:02]

**Narrator:** The Sun, low in the sky, reflects brightly as the astronauts look out the window while they get ready to exit.

**Mission Control:** Roger. Copy. Sounds good to us, Tranquility. We'll let you press on through the simulated countdown, and we'll talk to you later. Over.

**Armstrong:** Roger.

**Aldrin:** Okay. This one-sixth g is just like the airplane.

[102:57:01]

**Narrator:** The astronaut, Buzz Aldrin, notices he feels less gravity pull on his body on the Moon than on Earth.

**Mission Control:** Roger, Tranquility. Be advised there are lots of smiling faces in this room and all over the world. Over.

**Armstrong:** Well, there are two of them up here. [102:57:15]

**Mission Control:** Roger. That was a beautiful job, you guys.

**Collins:** And don't forget one smiling face here in the command module...Thanks for putting me on relay, Houston. I was missing all the action.

**Mission Control:** Roger, Columbia. This is Houston. Say something. They ought to be able to hear you in the Eagle. Over.

**Collins:** Roger. Tranquility Base, it sure sounded great from up here. You guys did a fantastic job.

**Armstrong:** Thank you. Just keep that orbiting base ready for us up there now.

**Collins:** Will do.

**Narrator:** Michael Collins will go behind the Moon in about thirty minutes and emerge about forty-five minutes later. He will continue to orbit the Moon while Buzz Aldrin and Neil Armstrong collect rocks, set up science stations, and do their checklists.

**Armstrong:** Houston, the guys that said that we wouldn't be able to tell precisely where we are, are the winners today. We were a little busy worrying about program alarms and things like that in the part of the descent where we would normally be picking out our landing spot. And, aside from a good look at several of the craters we came over in the final descent, I haven't been able to pick out the things on the horizon as a reference as yet. [103:02:03]

**Mission Control:** Roger, Tranquility. No sweat. We'll figure it out...We'll figure it out. Over.

**Armstrong:** You might be interested to know that I don't think we notice any difficulty at all in adapting to one-sixth g. It seems immediately natural to move in this environment.

**Mission Control:** Roger, Tranquility. We copy. Over.

**Armstrong:** The area out the left-hand window is a relatively level plain cratered with a fairly large number of craters of the 5- to 50--foot variety: and some ridges which are small--20, 30 feet high, I would guess; and literally thousands of little 1- and 2-foot craters around the area. We see some angular blocks out several hundred feet in front of us that are probably two feet in size and have angular edges. There is a hill in view, just... ahead of us... [103:03:55]

**Mission Control:** Roger, Tranquility. We copy. Over.

**Collins:** Sounds like it looks a lot better than it did yesterday...at that very low sun angle. It looked as rough as a corn cob then.

**Armstrong:** It really was rough, Mike. Over the targeted landing area, it was extremely rough, cratered, and large numbers of rocks that were probably some...many...larger than five or ten feet in size.

**Collins:** When in doubt, land long.

**Armstrong:** That's what we did.

**Narrator:** The astronauts and Mission Control try to figure out where Eagle landed while doing some technical calculations and procedures. Then, Armstrong, a man who enjoys geology, returns to comment...

**Armstrong:** I'd say the color of the local surface is very comparable to that we observed from orbit at this Sun angle...It's pretty much without color. It's gray: and it's a very white, chalky gray in the sun, a darker gray out of the Sun. Some of the surface rocks in close here that have been fractured or disturbed by the rocket engine plume are coated with this light gray on the outside: but where they've been broken, they display a very dark gray interior. It looks like it could be country basalt. [103:12:44]

**Narrator:** The astronauts do more technical procedures. Neil Armstrong then comments...

**Armstrong:** From the surface, we could not see any stars out the window; but out my overhead hatch, I'm looking at the Earth. It's big and bright and beautiful. Buzz is going to give a try at seeing some stars through the optics.

**Mission Control:** Roger, Tranquility. We understand. Must be a beautiful sight. Over.

**Narrator:** The astronauts synchronize their event timers for the planned adventure on the Moon. Then Buzz Aldrin asks...

**Aldrin:** Houston, Tranquility Base. Does somebody down there have a mike button keyed? Over.

**Mission Control:** Stand by and we'll check. *(pause)* Tranquility, Houston. Do you still hear it now? Over.

**Aldrin:** I still hear it. It sounds like somebody's banging chairs around in the back room

**Mission Control:** Roger. That's a VOGAA that you hear for the CSM to keep the noise down on the loop. Maybe we got a MSFN relay of something. Stand by.

**Aldrin:** Okay.

**Mission Control:** Tranquility, Houston. We got the MSFN relay in. You're hearing the VOGAA, which is a noise suppression device. We'll try to take it out. Over.

**Aldrin:** All right. Thank you.

**Mission Control:** Tranquility, Houston. It ought to be a little quieter up there now. We disabled the MSFN relay.

**Aldrin:** Okay. I think the noise has stopped now. Thank you, Charlie.

**Mission Control:** Roger.

**Narrator:** The astronauts interact with Mission Control about the tentative location of the Eagle Lunar Module. They read their tank pressures. Mission Control switches teams. Then, they talk about the camera that will broadcast Armstrong and Aldrin's time on the Moon. As they continue communicating Mission Control asks Mike Collins a question while he orbits the Moon.

**Mission Control:** How did Tranquility look down there to you? Over.

**Collins:** Well, the area looks smooth, but I was unable to see him. I just picked out a distinguishable crater nearby and marked on it.

**Mission Control:** Roger.

**Collins:** It looks like a nice area, though.

**Mission Control:** Hello, Columbia. Houston. I understand you could not see Tranquility. What were you marking on? Over.

**Collins:** Houston, Columbia. I say again, I could not see him.. Auto optics pointed at a spot very close to the coordinates which you gave me, so I picked a tiny crater in that area and marked on it so I will be able to have repeatable data, but I was unable to see him.

**Mission Control:** Roger. Copy.

**Narrator:** The astronauts continue with their procedures then, the Lunar Module--LM--pilot, Buzz Aldrin interjects...

**Aldrin:** Houston, Tranquility. Over.

**Mission Control:** Tranquility, Houston. Go ahead.

**Aldrin:** Roger. This is the LM pilot. I'd like to take this opportunity to ask every person listening in, whoever and wherever they may be, to pause for a moment and contemplate the events of the past few hours and to give thanks in his or her own way. Over. [105:25:38]

**Mission Control:** Roger, Tranquility Base.

**Narrator:** At this moment, Buzz Aldrin privately takes communion with supplies he has brought from Earth. Then, the men eat lunch and get ready to embark on their Moon Adventure.

**Collins:** Houston, Columbia. I'm coming up on my time for the first pass when I may be able to see the LM. Do you have any topographical cues that might help me out here? Auto optics is tracking between two craters. One of them, as the LM sees it, would be long at 11 o'clock. The other would be short and behind at 5 o'clock. *(pause)* These are great big old craters, depressions. [106:36:16]

**Mission Control:** Stand by. *(pause)* Columbia, this is Houston. The best we can do on topo features is to advise you to look to the west of the irregularly shaped crater, and then work on down to the southwest of it. Over. *(pause)* Columbia, Houston. Another possibility is the southern rim of the southern of the two old-looking craters. Over.

**Collins:** Roger, Houston. Columbia. No joy. I kept my eyes glued to the sextant that time hoping I'd get a flash of specular light off the LM, but I wasn't able to see any in my scan areas that you suggested.

**Mission Control:** Roger.

**Narrator:** As Michael Collins orbits the Moon he continues to talk to Mission Control about where he is looking. Everyone hopes to pinpoint the coordinates where the Eagle Lunar Module--the LM--landed. Meanwhile, astronauts Neil Armstrong and Buzz Aldrin go through their checklists, eventually testing out their microphones and television signals.

**Mission Control:** Buzz, Buzz. This is Houston. Do you read? Over. [108:21:01]

**Aldrin:** Roger, Houston. This is Buzz. How do you read? Over.

**Mission Control:** Roger. You're coming through loud and clear, Buzz. It's a beautiful signal.

**Aldrin:** Neil has his antenna up now. Let's see if he comes through any better now.

**Armstrong:** Okay. Houston, this is Neil. How do you read?

**Mission Control:** Neil, this is Houston. Reading you beautifully.

**Armstrong:** Hear that static? My antenna's scratching the roof.

**Mission Control:** We copy your antenna scratching the roof. Roger.

**Narrator:** The astronauts, now fully suited with their life support backpacks make sure their space suits are locked tight. Their lives depend on the space suits protecting them from the Sun's oppressive heat--cooling their bodies with little water tubes in the suits--and providing oxygen for breathing. A leak or a malfunction could mean bad news.

**Aldrin:** Okay. About ready to go down and get some Moon rock?

**Narrator:** Buzz Aldrin and Neil Armstrong hook up some equipment. Because the space suits are so bulky and visibility is not the best through their visors, the astronauts have some challenges maneuvering in the tight quarters with one-sixth the gravity of Earth.

**Aldrin:** Okay. Your back is up against the stowage purse. *(pause)* All right. Now it's on top of the DSKY. Forward and up; now you are clear. Little bit toward me. *(pause)* Straight down. To your left a little bit. Plenty of room. *(pause)* Okay, you're lined up nicely. Toward me a little bit, down. Okay. Now you're clear. You're catching the first hinge. [106:16:49]

**Armstrong:** The what hinge?

**Aldrin:** All right. Move...to your...Roll to the left. Okay. Now you're clear. You're lined up on the platform. Put your left foot to the right a little bit. Okay. That's good. Roll left. Good.

**Armstrong:** Okay. Now I'm going to check ingress here.

**Aldrin:** Okay. You're not quite squared away. Roll to the ...Roll to the right a little. Now you're even.

**Armstrong:** Okay, that's okay.



**Aldrin:** That's good. You've got plenty of room to your left. It's a little close...

**Armstrong:** How am I doing?

**Aldrin:** You're doing fine.

**Narrator:** The astronauts move into position slowly for man's first steps on the Moon.

**Armstrong:** Okay. Houston, I'm on the porch.

**Mission Control:** Roger, Neil.

**Aldrin:** Okay. Stand by, Neil.

**Mission Control:** Columbia. Columbia. This is Houston. One minute and thirty seconds to LOS. All systems Go. Over.

**Collins:** Columbia. Thank you.

**Aldrin:** Stay where you are a minute, Neil.

**Armstrong:** Okay. Need a little slack? *(pause)* You need more slack, Buzz?

**Aldrin:** No. Hold it just a minute.

**Armstrong:** Okay.

**Narrator:** The microphones are checked again. The television camera begins to send a TV picture to Earth.

**Mission Control:** Okay. Neil, we can see you on the TV coming down the ladder now.

**Narrator:** Neil Armstrong checks the ladder to make sure they can get back up because ...

**Armstrong:** Takes a pretty good little jump to get back up to the first rung. [109:23:11]

**Narrator:** Actually, the astronauts had to jump almost three feet. However, the Moon's one-sixth gravity of Earth makes that fairly easy. All the astronaut needs to do is give a little push with the legs, and guide himself up with his hands on the outside rail.

**Armstrong:** I'm at the foot of the ladder. The LM footpads are only depressed in the surface about one or two inches, although the surface appears to be very, very fine grained, as you get close to it. It's almost like a powder--ground mass is very fine. Okay. I'm going to step off the LM now.

**Narrator:** Neil steps down with his left foot onto the surface of the Moon--the first time in history that a man's foot has touched the Moon.

**Armstrong:** That's one small step for man; one giant leap for mankind.

**Narrator:** The world goes wild with enthusiasm.

**Mission Control:** *(cheers, hoots, applauds)*

**Armstrong:** Yes, the surface is fine and powdery. I can kick it up loosely with my toe. It does adhere in fine layers, like powdered charcoal, to the sole and sides of my boot. I only go in a small fraction of an inch, maybe an eighth of an inch, but I can see the footprints of my boots and the treads in the fine, sandy particles. [109:24:48]

**Narrator:** Neil Armstrong experiments with some slight knee bends, then lets go of the lunar module--the LM.

**Armstrong:** Ah...There seems to be no difficulty in moving around--as we suspected. It's even perhaps easier than the simulations of one-sixth g that we performed in the various simulations on the ground. It's absolutely no trouble to walk around...Okay. The descent engine did not leave a crater of any size....We're essentially on a very level place here. I can see some evidence of rays emanating from the descent engine, but a very insignificant amount. [109:26:16]

**Narrator:** Neil adjusts the camera a little so he can take some pictures and get some soil samples for the scientists back at Earth.

**Aldrin:** Okay. Going to get the contingency sample there, Neil?

**Armstrong:** Right.

**Aldrin:** That's good. *(pause)* Okay, the contingency sample is down...Looks like it's a little difficult to dig through the initial crust...

**Armstrong:** This is very interesting. It's a very soft surface, but here and there where I plug with the contingency sample collector, I run into a very hard surface. But it appears to be a very cohesive material of the same sort. I'll try to get a rock in here. Just a couple...

**Narrator:** Since the Moon does not have any atmosphere, the surface is regularly bombarded with a variety of meteorites---mostly small. That creates of top layer of soft soil.

**Aldrin:** That looks beautiful from here, Neil.

**Armstrong:** It has a stark beauty all its own. It's like much of the high desert of the United States. It's different, but it's very pretty out here. [109:34:56]

**Narrator:** Neil conducts some tests trying to see how far he can push the soil sampler into the Moon's surface. Then, he throws something.

**Aldrin:** Didn't know you could throw so far.

**Armstrong:** (*chuckling*) You can really throw things a long way up here! [109:36:08]

**Narrator:** Neil struggles to get the soil sample into his thigh pocket, communicates with Mission Control and prepares to help Buzz come out on the Moon.

**Aldrin:** Okay. Are you ready for me to come out? [109:38:41]

**Armstrong:** All set. Okay. You saw what difficulties I was having. I'll try to watch your PLSS\* from underneath here.

**Aldrin:** All right; the backup camera's positioned.

**Armstrong:** Okay. You PLSS\* looks like it is clearing okay. Your toes are about to come over the sill. Okay. (*pause*) Now drop your PLSS down. There you go; you're clear. And laterally you're good. You've got an inch clearance on top of your PLSS.

**Aldrin:** Okay. You need a little bit of arching of the back to come down. How far are my feet from the edge?

**Armstrong:** Okay. You're right at the edge of the porch.

**Aldrin:** Okay...back in...now a little foot movement...little arching of the back. Helmet comes up and clears the bulkhead without any trouble at all.

**Armstrong:** Looks good.

**Aldrin:** Okay. Now I want to back up and partially close the hatch.....(*pause*) Making sure not to lock it on my way out. [109:41:28]

**Armstrong:** (*laughs*) A particularly good thought.

**Narrator:** Buzz manages to maneuver himself down the ladder with Neil's help. He jumps down to the footpad.

**Aldrin:** Beautiful view!

**Armstrong:** Isn't that something! Magnificent sight out here.

**Aldrin:** Magnificent desolation. [109:43:24]

**Narrator:** Neil and Buzz discuss the powdery soil, the rocks, and the landing of the Eagle Lunar Module. Mission Control constantly listens.

**Mission Control:** Say again, please, Buzz; you're cutting out.

**Aldrin:** I say that the rocks are rather slippery.

**Mission Control:** Roger.

**Narrator:** The astronauts discuss the difficulties of keeping their balance when Buzz calls out...

**Aldrin:** Hey, Neil, didn't I say we might see some purple rocks? [109:49:40]

**Armstrong:** Find a purple rock?

**Aldrin:** Yep. *(pause)* Very small, sparkly fragments...would make a first guess at some sort of biotite. *(pause)* We'll leave that to further analysis...

**Narrator:** Neil readjusts the camera...

**Aldrin:** Neil is now unveiling the plaque...

**Mission Control:** Roger.

**Armstrong:** For those who haven't read the plaque, we'll read the plaque that's on the front landing gear of this LM. First there's two hemispheres, one showing each of the two hemispheres of the Earth. Underneath it says: "Here Men from the planet Earth first set foot upon the Moon, July 1969 A.D. We came in peace for all mankind." It has the crew member's signatures and the signature of the President of the United States. [109:52:40]

**Narrator:** Neil and Buzz continue to set up experiments and take pictures. Finally, the astronauts set up the American flag with a tiny rod extended to hold the flag perpendicular to staff so it appears to be blowing in the wind.

**Collins:** Houston, Columbia on the high gain. Over.

**Mission Control:** Columbia, this is Houston. Reading you loud and clear. Over.

**Collins:** Yeah. Reading you loud and clear. How's it going?

**Mission Control:** Roger. The EVA is progressing beautifully. I believe they are setting up the flag now.

**Collins:** Great!

**Mission Control:** I guess you're about the only person around that doesn't have TV coverage of the science.

**Collins:** That's all right. I don't mind a bit...

**Mission Control:** They have the flag up now and you can see the stars and stripes on the lunar surface. [110:09:50]

**Collins:** Beautiful. Just beautiful.

**Narrator:** Buzz plants the flagpole with some difficulty and salutes the flag. The astronauts continue doing the tasks on their checklists, including more soil samples.

**Aldrin:** I'd like to evaluate the various paces that a person can do traveling on the lunar surface. I believe I'm out of your field-of-view. Is that right, Houston?

**Mission Control:** That's affirmative, Buzz. *(pause)* You're in our field-of-view now.

**Aldrin:** Okay. You do have to be rather careful to keep track of where your center of mass is. Sometimes, it takes two or three paces to make sure you have your feet underneath you. *(pause)* About two to three or maybe four easy paces can bring you to a fairly smooth stop. To change directions, like a football player, you just have to put a foot out to the side and cut a little bit. [110:13:42]

**Narrator:** Buzz turns toward the TV camera and starts to do a hop with two feet.

**Aldrin:** The so-called kangaroo hop does work, but it seems as though your forward mobility is not quite as good as it is in the more conventional one foot after another...

**Mission Control:** Tranquility Base, this is Houston. Could we get both of you on the camera for a minute, please?

**Aldrin:** Say again, Houston.

**Mission Control:** Roger.

**Armstrong:** He wants us on camera.

**Mission Control:** We'd like to get both of you in the field-of-view camera for a minute.  
(pause) Neil and Buzz, the President of the United States is in his office now and would like to say a few words to you. Over.

**Armstrong:** That would be an honor.

**Mission Control:** All right. Go ahead, Mr. President. This is Houston. Out.

**Nixon:** Hello, Neil and Buzz. I'm talking to you by telephone from the Oval Room at the White House, and this certainly has to be the most historic telephone call ever made. I just can't tell you how proud we all are of what you've done. For every American, this has to be the proudest day of our lives. And for people all over the world, I am sure they too, join with Americans in recognizing what an immense feat this is. Because of what you have done, the heavens have become a part of man's world. And as you talk to us from the Sea of Tranquility, it inspires us to redouble our efforts to bring peace and tranquility to Earth. For one priceless moment in the whole history of man, all the people on this Earth are truly one: one in their pride in what you have done, and one in our prayers that you will return safely to Earth. [110:16:30]

**Armstrong:** Thank you, Mr. President. It's a great honor and privilege for us to be here representing not only the United States, but men of peace of all nations and with interests and the curiosity and with the vision for the future. It's an honor for us to be able to participate here today.

**Nixon:** And thank you very much and I look forward...All of us look forward to seeing you on the Hornet\* on Thursday.

**Aldrin:** I look forward to that very much, sir.

**Narrator:** Buzz salutes. Then, Neil. The astronauts finish their checklists, reenter the Eagle, and try to get rid of the Moon dust they've carried inside.

**Mission Control:** Tranquility Base, Houston.

**Armstrong:** Go ahead. Tranquility Base, here.

**Mission Control:** Roger. Just want to let you guys know that, since you're an hour and a half over your timeline and we're all taking a day off tomorrow, this team is going to leave you. See you later. [114:00:13]

**Armstrong:** I don't blame you a bit.

**Mission Control:** That's a really great day, guys. I really enjoyed it.

**Armstrong:** Thank you. You couldn't have enjoyed it as much as we did. [114:00:23]

**Aldrin:** It was great.

**Narrator:** The End. Well, almost. Actually Michael Collins will rendezvous successfully with the Eagle and the three astronauts will return home to a hero's welcome.

**All:** The End.

\*\* The aircraft carrier scheduled to recover the astronauts after they reenter Earth's atmosphere and land in the ocean is called The U.S.S. Hornet.

\* PLSS = Primary Life Support Subsystem (a NASA acronym)

## Curriculum Links (Valid in 2012):

### Moon

<http://www.woodlands-junior.kent.sch.uk/time/moon/facts.htm>

A variety of moon facts on a colorful page. (No animation.)

[http://library.thinkquest.org/3645/phases\\_moon.html](http://library.thinkquest.org/3645/phases_moon.html)

Animated phases of the moon.

<http://www.mmscrusaders.com/newscirocks/tides/tideanim.htm>

Animation of how the moon seems to Pull the water toward it.

<http://www.enchantedlearning.com/subjects/astronomy/moon/Moonweblinks.shtml>

Enchanted Learning's Moon page with links to "Moon Activities, Worksheets, and Printables." Includes a Moon Phases Calendar, a K-3 Moon Theme Page, a Sun/Earth/Moon Model to make, and more.

<http://havefunteaching.com/songs/science-songs/moon-song/>

"The Moon Song" by Mark from Have Fun Teaching.

Here's a video of some students performing the song (4:23):

[http://www.youtube.com/watch?v=6CZo\\_zaf7B4](http://www.youtube.com/watch?v=6CZo_zaf7B4)

(Note: I am an affiliate of Have Fun Teaching because I believe in what he does and enjoy many of Mark's songs. He has many free goodies for teachers, but if you decide to purchase his Cds or Dvds you may want to use my affiliate link to his store:

[http://havefunteaching.com/shop/?ap\\_id=phlp419](http://havefunteaching.com/shop/?ap_id=phlp419) )

[www.thebestclass.org/Team\\_Moon.pdf](http://www.thebestclass.org/Team_Moon.pdf)

PDF of a Readers Theater adaptation of Catherine Thimmesh's book Team Moon: How 400,000 People Landed Apollo 11 on the Moon. The script takes about 7 minutes, and doesn't look too hard. It's about 3 1/2 pages long. Cast = 6-12? I like it. No readability level. Looks to be 12 pt font.

<http://aa.usno.navy.mil/imagery/moon>

"What the Moon looks like now" from the U.S. Naval Observatory. Fills your whole computer window!

<http://www.earth2class.org/er/teachers/lessonplans/McCall%20phases%20lesson%20plan.php>

"Phases of the Moon Lesson Plan" lists a variety of ideas in teaching about the moon--probably for third grade and up.



<http://www.astro.wisc.edu/~dolan/java/MoonPhase.html>

"Moon Phases" with stop-action animation and this definition:

"Waxing" means growing and "waning" means shrinking. One appropriate definition of "gibbous" is "swollen on one side." (Animation takes longer to load.)

<http://www.enchantedlearning.com/subjects/astronomy/moon/Phases.shtml>

Enchanted Learning's page on "The Phases of the Moon"--with vocabulary pictured (e.g., Waxing Gibbous on Day 10). This is a clear page for elementary level to understand and includes a link on the right to a "Label the Moon Phases Diagram."

<http://mrscienceut.net/phasesofthemoonwebquest.html>

"Phases of the Moon--An Astronomy WebQuest". (Note: I didn't look at all their videos on this.) Appears to be for upper elementary through middle school. As the teacher you may choose to have students SKIP some of the tasks, of course.

<http://lunar.arc.nasa.gov/education/activities/index.htm>

NASA's "Hands-on Activities" for the Moon. Looks good!

<http://spinner.cofc.edu/CGOInquiry/tides.htm>

"The In's and Out's of Tides"--simple explanations with illustrations.

## **Astronauts and Apollo 11**

<http://www.hq.nasa.gov/alsj/a11/a11.landing.html>

NASA's Apollo 11 Lunar Surface Journal page on "The First Lunar Landing" which is basically the transcript (and a little explanation) of what happened.

<http://www.hq.nasa.gov/alsj/a11/a11.postland.html>

NASA's Apollo 11 Lunar Surface Journal page on "Post-Landing Activities" which is basically the transcript (and a little explanation) of what happened.

[http://nssdc.gsfc.nasa.gov/planetary/lunar/apollo\\_11\\_30th.html](http://nssdc.gsfc.nasa.gov/planetary/lunar/apollo_11_30th.html)

NASA's page on the "30th Anniversary of Apollo 11: 1969-1999" with great summaries and photos from launch to splashdown. The reading level varies according to the block of print--probably most upper elementary and possibly middle school. You may read it aloud or have students take turns reading it. LOVE THIS PHOTO SUMMARY!

<http://history.nasa.gov/ap11ann/>

Here's another NASA 30th Anniversary page with links to Astronaut Comments, Biographies, Documents, Galleries, Timelines... Make sure you check the Gallery for photos (I was disappointed the video was a dinky square and another one I couldn't figure out how to play it.) Here's the Apollo 11 Image Gallery:

<http://history.nasa.gov/ap11ann/kippsphotos/apollo.html>

[http://www.retroweb.com/apollo\\_retrospective.html](http://www.retroweb.com/apollo_retrospective.html)

“Contact Light--a personal retrospective of Project Apollo” by Kipp Teague, **remembers the Apollo missions of his teenage years.** This webpage is written by a man whose entire life was impacted by the Apollo program--including Apollo 11. Contains lots of photos, easy to read paragraphs with good vocabulary for upper elementary and middle school students, and links (not all useful) for the entire Apollo program. **FIRST-PERSON ACCOUNT.**

<http://airandspace.si.edu/events/apollo11/video/>

National Air and Space Museum’s page on Apollo 11. **Great, small 3 minute museum video on Apollo 11 and the Apollo program--even shows the touchable moon rock!** Nine other Apollo videos linked--including Saturn V rocket, Columbia Command Module, Mobile Quarantine Facility--some students may get bored with the curator’s narrations.

<http://wechoosethemoon.org/>

John F. Kennedy Presidential Library and Museum’s **interactive animation of Apollo 11 with ORIGINAL VOICEOVER from the astronauts and Mission Control.** You may skip forward from stage to stage, as I did, but the change to the next stage is a little slow. Stage 8 shows the Eagle leaving the Columbia. Stage 11 shows the landing with one small discrepancy: the astronaut voice of Buzz Aldrin says, “Contact light,” but the animation doesn’t show it until Neil Armstrong says, “The Eagle has landed.” Great for young space scientists, but too slow for those used to video games. ;)

<http://spacefeelings.com/astronaut-outer-space-food.shtml>

Answers the question “What do astronauts eat in outer space travel?” with interesting information and great photos (not of Apollo 11.)

<http://www.mrbreakfast.com/article.asp?articleid=4>

Fun “Breakfast in Space” article.

<http://www.eatmedaily.com/2009/07/food-of-the-apollo-11-lunar-landing/>

Food of the Apollo 11 Lunar Landing small print, some photos a few videos.

<http://lunar.arc.nasa.gov/education/lesson.htm>

NASA’s lesson plan page from “Exploring the Moon Teacher’s Guide.” I did not look at these PDFs, but they have the following options:

Unit 1: Pre-Apollo

Unit 2: Learning From Apollo

Unit 3: The Future

Plus, you can download the complete “Exploring the Moon Teacher’s Guide.”

<http://history.nasa.gov/ap11fj/08day3-africa-breakfast.htm>

Conversations with Apollo 11 crew. Scroll down past the green text until you see the black text...Look for 053:57:55

Collins: I'd like to enter Aldrin in the oatmeal eating contest next time.

Mc C: Is he pretty good at it?

Collins: He's doing his share up here.

Mc C: Let's see. You all just finished a meal not long ago, too, didn't you?

Aldrin: I'm still eating.

Mc C: Okay does that that--

Collins: He's on his- He's on his 19th bowl.

[http://www.nasa.gov/audience/forstudents/k-4/home/F\\_Apollo\\_11.html](http://www.nasa.gov/audience/forstudents/k-4/home/F_Apollo_11.html)

Student page (small print) on Apollo 11--First Footprint on the Moon, picture of the Eagle.

<http://www.nytimes.com/learning/general/onthisday/big/0720.html>

**NY Times article "On This Day" with the headlines "Men Walk On Moon," "Astronauts Land On Plain; Collect Rocks, Plant Flag."**

[http://science.nasa.gov/science-news/science-at-nasa/2006/19jul\\_seaoftranquility/](http://science.nasa.gov/science-news/science-at-nasa/2006/19jul_seaoftranquility/)

NASA's article "Wide Awake in the Sea of Tranquility," the story of Apollo 11 with photos. (small print)

<http://www.spacekids.co.uk/moon/>

Spacekids website on Apollo missions Including sound clips of President Kennedy's speech, the landing, Neil Armstrong's speech when they first landed on the moon. Nice photos and info. Small print, but short blurbs.

<http://www.amazon.com/Magnificent-Desolation-Long-Journey-Home/dp/0307463451>

Amazon's page for Magnificent Desolation: The Long Journey Home from the Moon, astronaut Buzz Aldrin's story. (You may read an excerpt on Amazon.)

### **You Tube:**

**Note: Be wary of moon videos.** There are so many conspiracy theories out there that you should preview them before showing students. Some believe the moon landing never happened. Some claim there were things hidden from the public (e.g., evidence of moon civilizations).

### **Moon (You Tube)**

<http://www.youtube.com/watch?v=Bz9D6xba9Og>

"How Far Away is the Moon? (The Scale of the Universe) Excellent real-life visual demonstration. All ages. 1:50

<http://www.youtube.com/watch?v=HkvlrWpsnuQ>

"Moon Phases Song" with TIDES. Pop music sound. 3:42

<http://www.youtube.com/watch?v=zHJ77RsnFXI>

"Moon in Google Earth" interviews Apollo 17 astronaut and instructs you how to explore the Moon with Google. Don't bother unless you want to spend some time on the Moon via Google. I didn't go on the Moon Tour in Google Earth. 2:57

[http://www.youtube.com/watch?v=6CZo\\_zaf7B4](http://www.youtube.com/watch?v=6CZo_zaf7B4)

**"The Moon Song" as done by Have Fun Teaching. The lyrics include Moon phases.**(Note: I am an affiliate of Have Fun Teaching because I believe in what he does and enjoy many of Mark's songs. He has many free goodies for teachers, but if you decide to purchase his Cds or Dvds you may want to use my affiliate link to his store:

[http://havefunteaching.com/shop/?ap\\_id=phlp419](http://havefunteaching.com/shop/?ap_id=phlp419) )

<http://www.youtube.com/watch?v=nXseTWTZlks>

The History Channel presents "The Universe: The Phases of the Moon". This video shows the 4 main phases & mentions waxing, waning moons. Nice animation. Commercial. 3:16

<http://www.youtube.com/watch?v=F9pVaTQinlw>

"One Year of the Moon in 2.5 Minutes" silent, black & white video. Clear. You don't need to watch the whole video because it loops. 2:27

<http://www.youtube.com/watch?v=EQAhX4ff7m0>

**"Easy At-Home Demonstration of the Phases of the Moon" by a family with a basketball and a flashlight. 1:33**

<http://www.youtube.com/watch?v=gHIMReTpJXw>

"The Moon for Kids 1/3"--Introduction to the Moon for children or ESL students. Many of the words are on the slides with photos explaining phases, Earth's shadow,(First in a series of 3 videos.) 4:08

<http://www.youtube.com/watch?v=hm1eL37gDGY&feature=relmfu>

"The Moon for Kids 2/3"--Part II of the video above, still with photos and many words on slides. This one has more vocabulary and talks about Apollo 11. Discusses the near side and the far side of the Moon, "Sea" of Tranquility, Moon mountains, craters, meteors, 4:17

(Continued next page...)

<http://www.youtube.com/watch?v=JbxC3hmr3bY&feature=relmfu>

"The Moon for Kids 3/3"--Part III of the video series for children on the Moon. This one starts with an explanation of the tides, gravity, and the pull of the Moon on Earth's oceans causing tides. Lot's of diagrams and animation. Describes the Apollo program briefly and shares lovely photos of Apollo 11. Includes real video of the lift-off of Apollo 11, then explains how the rocket dropped off stages. Shows what Earth looked like to the astronauts. He shows the Apollo 11 Command Module and the Eagle with video excerpts. Well done! 7:49

### **Astronauts and Apollo 11 (You Tube)**

<http://www.youtube.com/watch?v=xLu0Ak9Blog>

Video of July 20th, 1969, Apollo 11 Moon Landing. Shows footprints on the moon and the actual footage of astronaut "kangaroo hopping" on the moon. 1:25

<http://www.youtube.com/watch?v=rj18UQjPpGA>

"What an Astronaut's Camera Sees" as narrated by Dr. Justin Wilkinson from NASA's astronaut team. Commercial. Skip the commercial, this is a unique perspective of Earth. Incredible! 7:01

<http://www.youtube.com/watch?v=-fPJCEHumvE>

Upbeat instrumental music behind samples from the NASA documentary "Flight of Apollo 11" depicting the events of July 1969 when the first human set foot upon the moon. Astronauts (carrying life-support "suitcases"). Crowd of viewers. Rocket take-off. Mission Control. First footprint. Gathering rocks and soil. Helicopter and the astronauts in their quarantine trailer. Well-done! 2:27

<http://www.youtube.com/watch?v=pCp2jTtay0w&feature=topics>

This is a video collection commemorating the 40th anniversary of the first walk on the moon. It starts with President Kennedy's speech and shows DRAMATIC footage of lift-off of Apollo 11. **This is an incredible video good for all ages. It shows great clips of the Eagle, Mission Control, the Moon, and audio from President Nixon to the astronauts. It shows Earth from space and a parachute landing.** (Note: It was dark when Apollo 11 landed, so that NASA clip was from another space voyage.) 4:52

<http://www.youtube.com/watch?v=IRwKUScppvQ>

"Apollo 11 Mission Highlights--NASA Educational Film" using narration and historical film footage. Featured are various mission activities including pre-launch (e.g., astronauts getting ready and crowd with binoculars), launch--including NOISE, Mission control, lunar landing, return to Earth, and the parade. "This film was produced by NASA to commemorate the 20th anniversary of the first manned moon landing , and has been made available by NASA/courtesy of nasaimages.org. (I only watched the first ten minutes of this and the ending.) Commercial. 26:33