



Crew Lunar Observations Lunar Targeting Package

Archived Version

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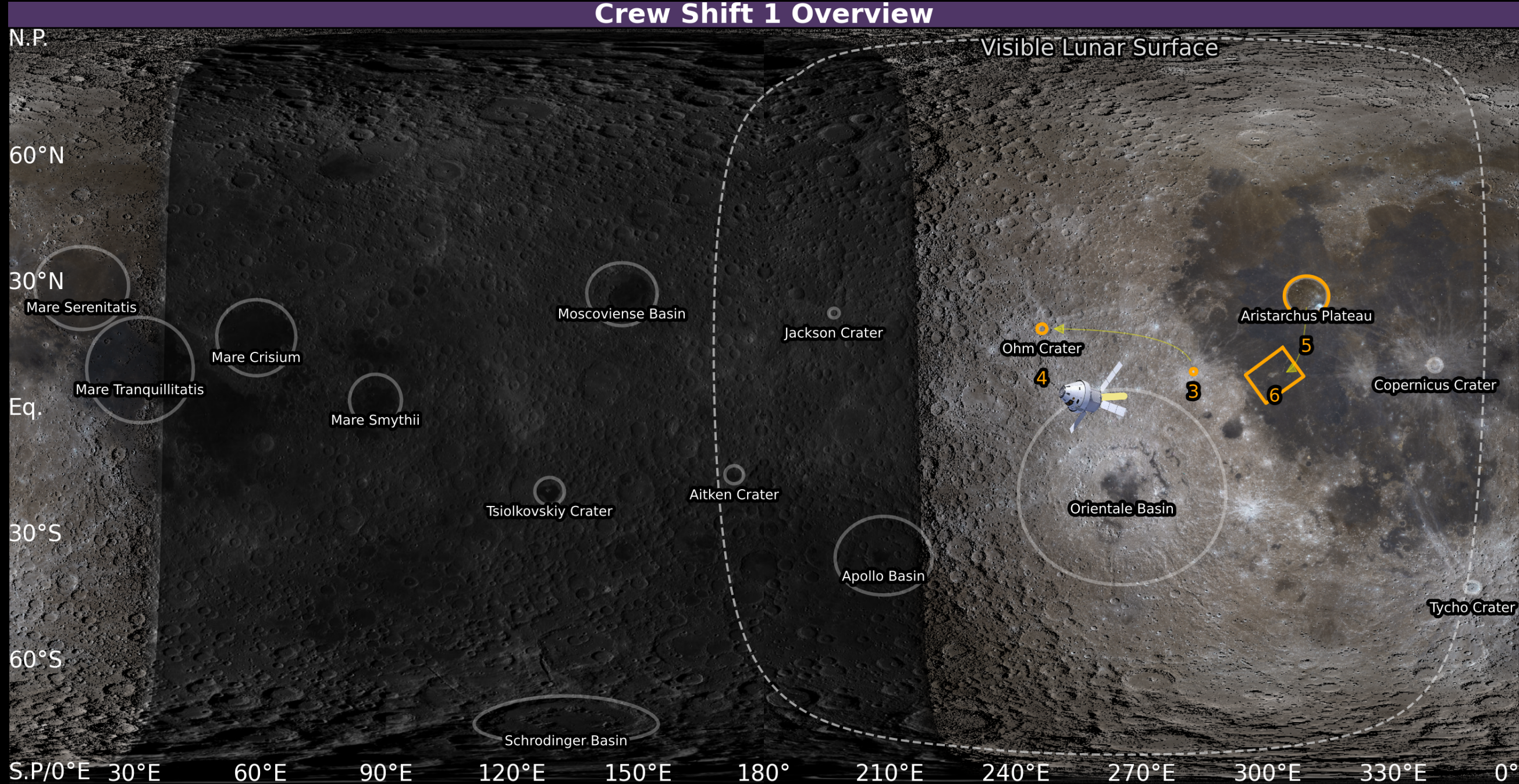
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Overview

A comprehensive lunar flyby overview featuring a high-level map of all observation targets. Includes detailed shift maps and a quick-reference cue card for mission planning.



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

- Structures
- Slopes
- Texture

5. Geologic Relations

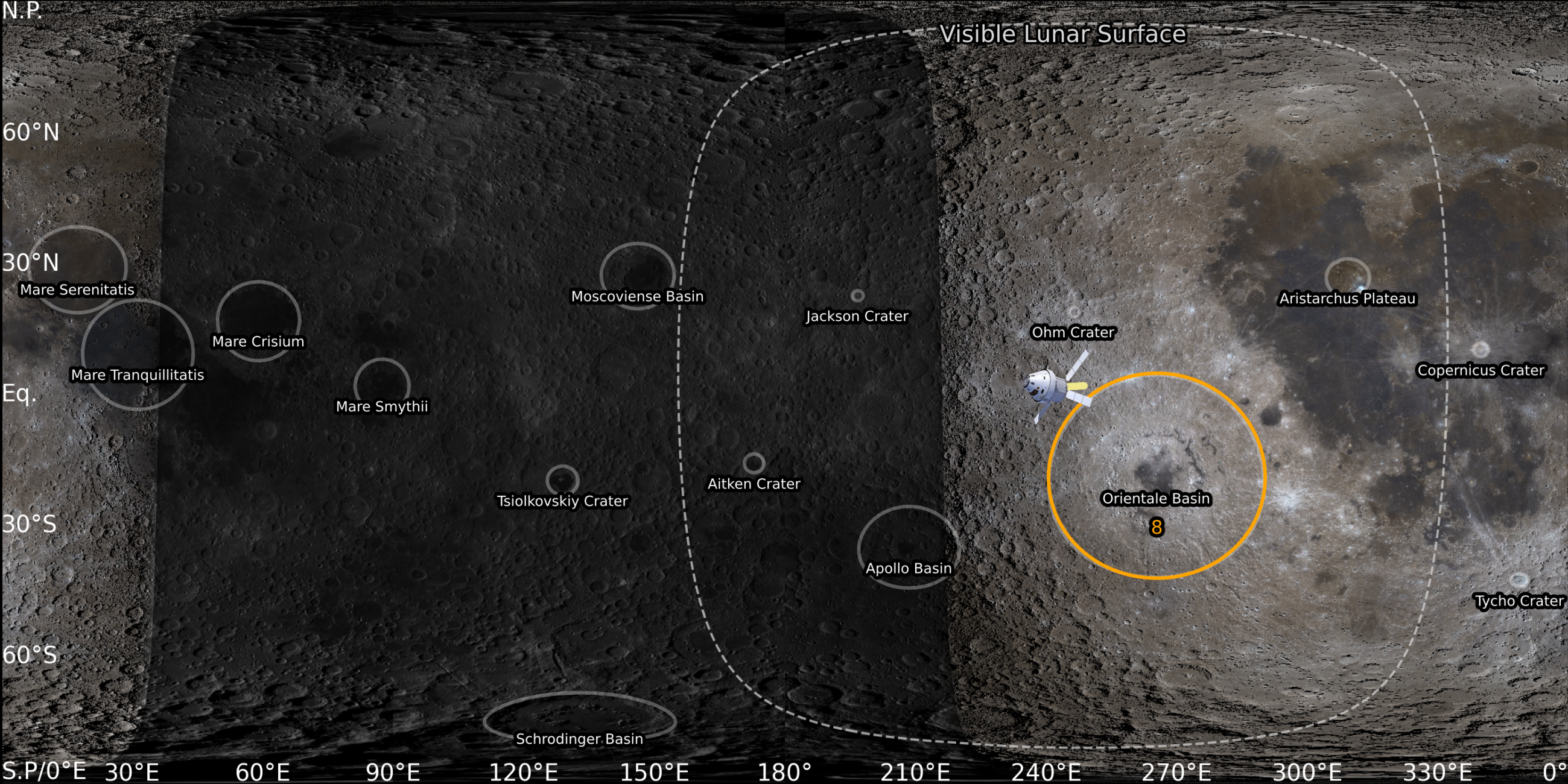
- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?



Crew Shift 2 Overview



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

- Structures
- Slopes
- Texture

5. Geologic Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?

< Shift

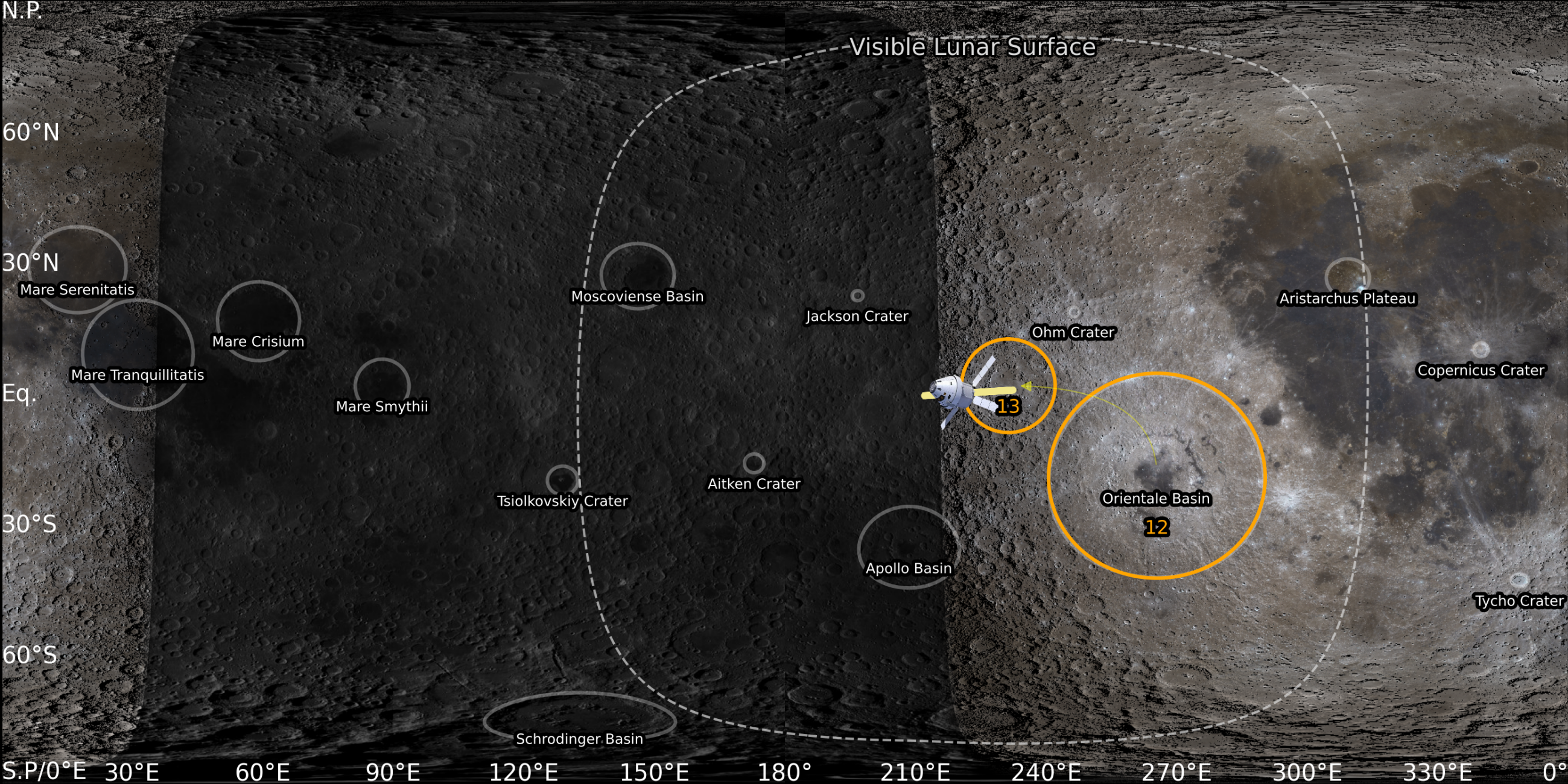
Shift >

Turn Big 15 Off

Full Screen Image



Crew Shift 3 Overview



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

- Structures
- Slopes
- Texture

5. Geologic Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

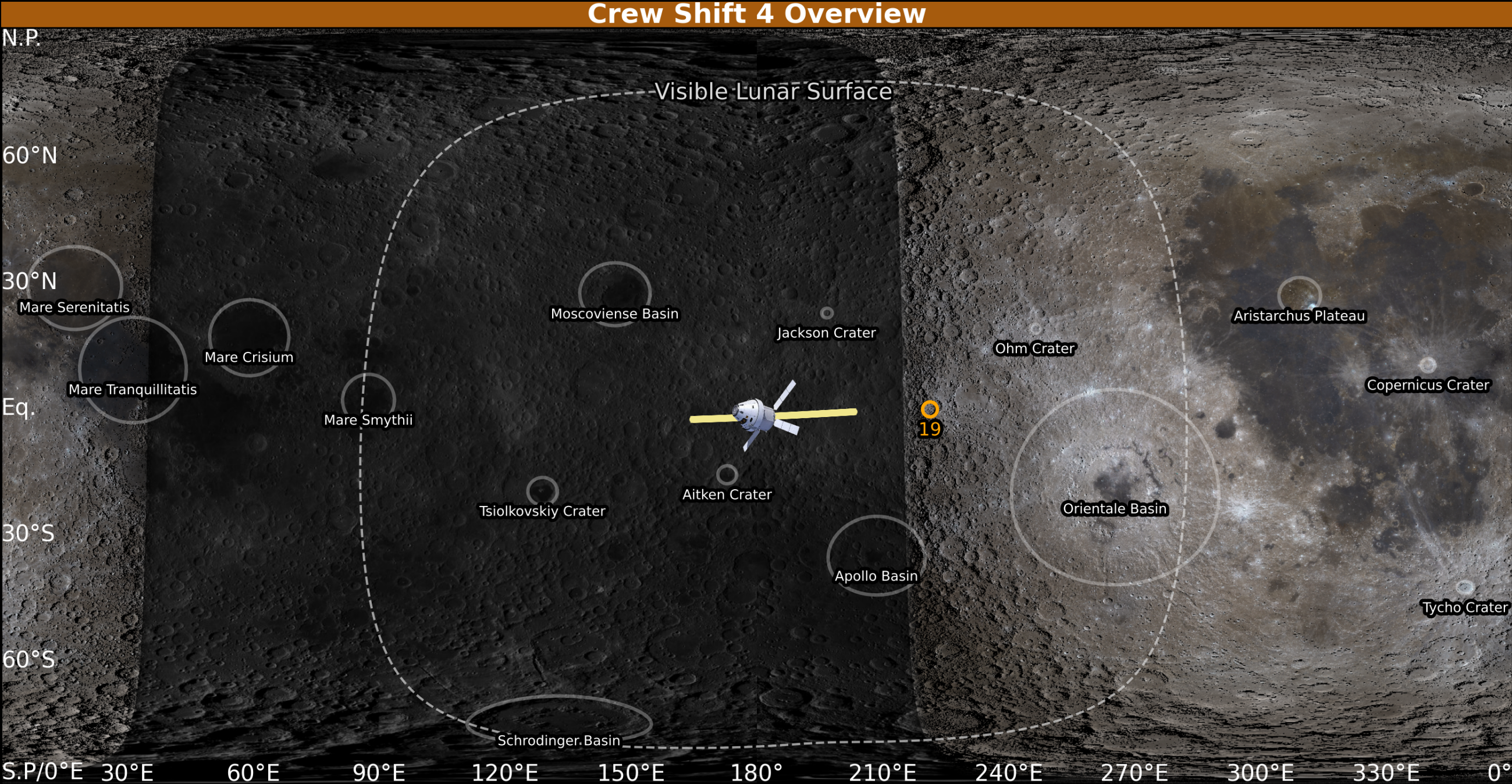
- Impressions
- Interpretations
- Any changes?

< Shift

Shift >

Turn Big 15 Off

Full Screen Image



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

- Structures
- Slopes
- Texture

5. Geologic Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

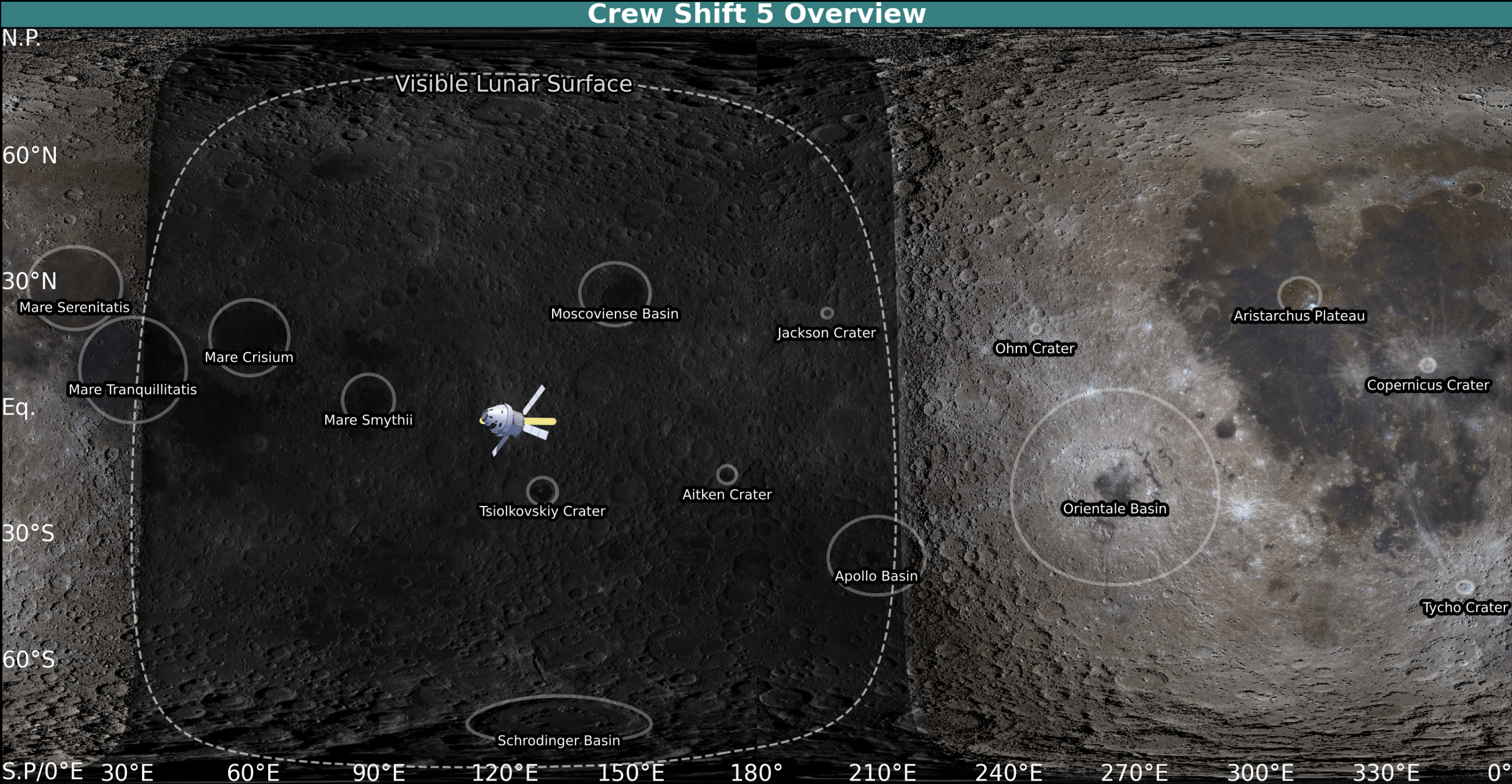
- Impressions
- Interpretations
- Any changes?

< Shift

Shift >

Turn Big 15 Off

Full Screen Image



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

- Structures
- Slopes
- Texture

5. Geologic Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?

< Shift

Shift >

Turn Big 15 Off

Full Screen Image



Timeline

A graphical schedule detailing target visibility windows and observation request times. Features an interactive time input tool, an icon legend, and a structured target timeline.

[illegible]



Lunar Targets

An in-depth catalog of all mission targets. Each section features comprehensive information panels, example imagery across multiple camera focal lengths, and a dedicated observation cue card.

Diameter (km)	
Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Ohm Crater	67
Orientele Basin	1430

Diameter (km)	
Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Ohm Crater	67
Orientele Basin	1430

6 Apr 2026 18:45:00.000

Unaided Eye
135 mm
200 mm
400 mm

OneNote
Labels Off
Cue Card Off
+
↺
↻

1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
• Feature type/name	• Size	• Color tone	• Structures	• Association	• Impressions
• Target? (yes/no)	• Shape	• Albedo	• Slopes	• Contact habit	• Interpretations
• Location	• Boundary Preservation	• Shadows/ illumination	• Texture	• Contact relationship	• Any changes?
• Observation style					

- | Diameter (km) | |
|---------------------|------|
| Apollo Basin | 569 |
| Aristarchus Plateau | 270 |
| Jackson Crater | 70 |
| Ohm Crater | 67 |
| Oriente Basin | 1430 |

Target Information

- ## Camera Actions

- ## Unaided Eye Actions

- ## Science Impact

-

Unaided Eye

200 mm

400 mm

OneNote

Labels Off

Cue Card Off



► 1. Feature ID

- ## 2. Geometry

- ### 3. Color & Shadow

- #### 4. Structure & Texture

- ## 5. Geologic Relations

- * Thoughts *

- Impressions
- Interpretations
- Any changes?



1. Discussion #1: Warm up

18:45 GMT



2. Discussion #2: Near/Farside



18:55 GMT



3. Crater Duo: Glushko (1/2)



19:15 GMT



4. Crater Duo: Ohm

19:23 GMT



a. Window Team Position Swap

19:30 GMT



5. Aristarchus Plateau



19:31 GMT

4. Crater Duo: Ohm *OH m*

Target Information

- Small, complex crater with prominent ray system.
- Size of the Eye of the Sahara in Mauritania.
- Second of two craters in Crater Duo (Glushko, Ohm).

Camera Actions

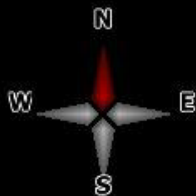
- Centered images of entire crater and ray system in a single frame.
- Image and compare the brightness and extent of rays in Ohms and Glushkos ray systems.
- Image and describe color, albedo, and texture variations along or between Ohms rays.

Unaided Eye Actions

- Describe the extent of Ohms ejecta/ray system.
- Describe albedo, color, and texture variations along or between Ohms rays.
- Compare the ejecta/ray systems of Ohm to Glushko.

Science Impact

- Comparative observations of the Crater Duo will be used to understand how crate ray systems evolve with time.



6 Apr 2026 19:23:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure &
Texture

- Structures
- Slopes
- Texture

5. Geologic
Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?

Diameter (km)

Ohm Crater	67
Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Orientele Basin	1430

Moon NorthPole

Jackson Crater

Aristarchus Plateau

4. Ohm Crater

3. Glushko Crater

Far SideVavilov Crater

Near Side

Orientele Basin

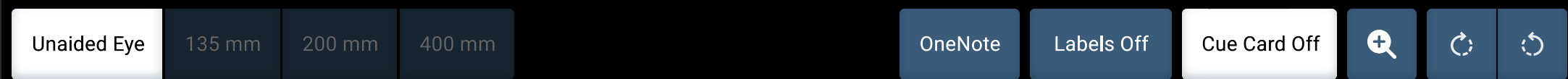
Apollo Basin

Moon SouthPole

- | Diameter (km) | |
|---------------------|------|
| Apollo Basin | 569 |
| Aristarchus Plateau | 270 |
| Jackson Crater | 70 |
| Ohm Crater | 67 |
| Oriente Basin | 1430 |

Target Information

- Window team switch!



1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?



- ☐

1. Discussion #1: Warm up

18:45 GMT
- ☐

2. Discussion #2: Near/Farside

18:55 GMT
- ☐

3. Crater Duo: Glushko (1/2)

19:15 GMT
- ☐

4. Crater Duo: Ohm

19:23 GMT
- ☐

a. Window Team Position Swap

19:30 GMT
- ☐

5. Aristarchus Plateau

19:31 GMT
- ☐

5. Aristarchus Plateau *AIR is TAR kus*

Target Information

- Plateau known for its volcanic diversity and the bright Aristarchus crater.
- Within NW Oceanus Procellarum near limb.

Camera Actions

- Centered image of plateau in full zoom.
- Image and describe any topographic highs or lava channels across the plateau.
- Image and describe any color/albedo variations across the plateau.
- Image and describe the colors and textures of Aristarchus crater and rays.

Unaided Eye Actions

- Describe any color/albedo variations across the plateau.
- Describe any color/albedo variations between the plateau and the surrounding mare.
- How does the color/albedo of Aristarchus crater and rays compare to other bright features on the Moon?

Science Impact

- Your observations will inform the complex and varied volcanic and tectonic history of this unique lunar feature.

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6 Apr 2026 19:31:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

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Cue Card Off

1. Feature ID

2. Geometry

3. Color & Shadow

4. Structure & Texture

5. Geologic Relations

* Thoughts *

• Feature type/name

• Target? (yes/no)

• Location

• Observation style

• Size

• Shape

• Boundary Preservation

• Color tone

• Albedo

• Shadows/ illumination

• Structures

• Slopes

• Texture

• Association

• Contact habit

• Contact relationship

• Impressions

• Interpretations

• Any changes?

Diameter (km)	
Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Ohm Crater	67
Orientele Basin	1430

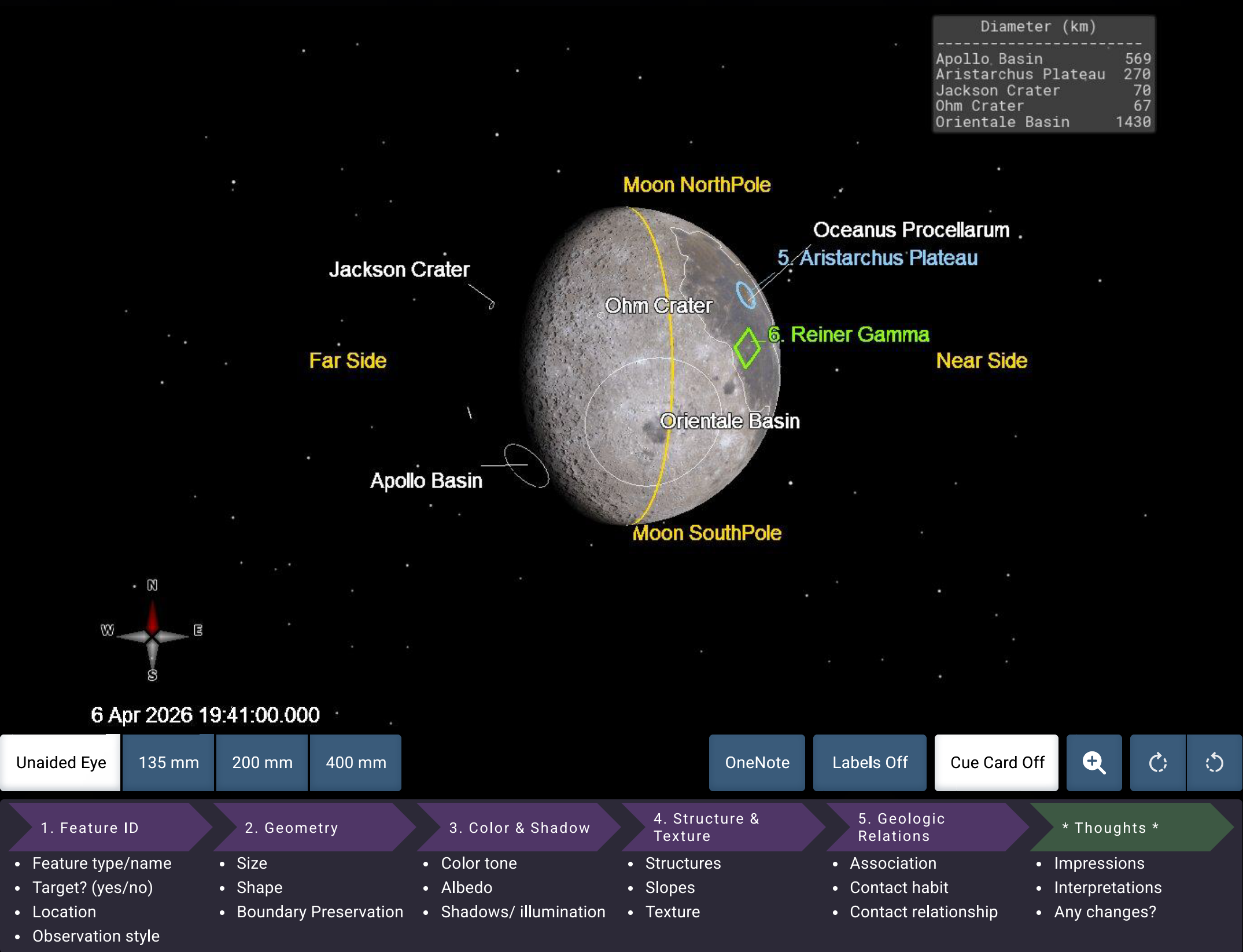
Target Information

- ## Camera Actions

- ## Unaided Eye Actions

- ## Science Impact

- Your observations of the swirls provide clues as to how magnetism preserves lunar regolith against space weathering.





	☐	a. Window Team Position Swap	19:30 GMT
	☐	5. Aristarchus Plateau	19:31 GMT
	☐	6. Reiner Gamma	19:41 GMT
	☐	b. Cabin and Window Teams Swap	19:50 GMT
	☐	7. Whole Moon	20:05 GMT
	☐	8. Orientale Basin	20:15 GMT
	☐	c. Window Team Position Swap	20:30 GMT

b. Cabin and Window Teams Swap

Target Information

- Handover and switch with your crewmates.



6 Apr 2026 19:50:00.000

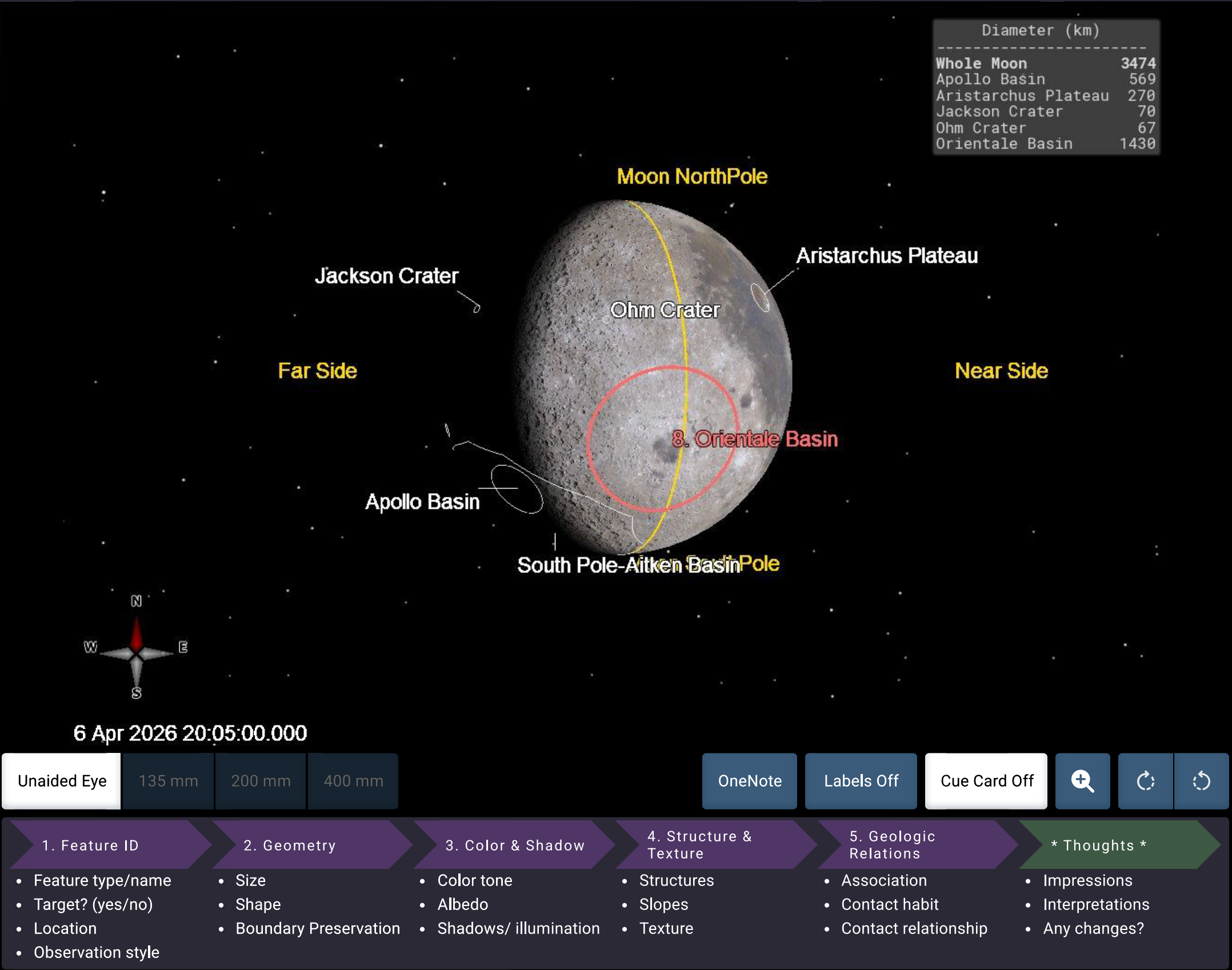
Unaided Eye135 mm200 mm400 mm

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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?

Diameter (km)	
Whole Moon	3474
Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Ohm Crater	67
Orientele Basin	1430

- No one else has seen the Moon from this angle in the history of the Solar System! Your observations of SPA basin and whole Moon characteristics will help to unravel the history of the Moon in time and space.





		a. Window Team Position Swap	19:30 GMT
		5. Aristarchus Plateau	19:31 GMT
		6. Reiner Gamma	19:41 GMT
		b. Cabin and Window Teams Swap	19:50 GMT
		7. Whole Moon	20:05 GMT
		8. Orientale Basin	20:15 GMT
		c. Window Team Position Swap	20:30 GMT

8. **Orientale Basin** *OR ee ent ALL*

Target Information

- Youngest large basin on the Moon.
- Prominent ejecta with secondary crater chains.
- Diameter is distance between JSC and KSC.

Camera Actions

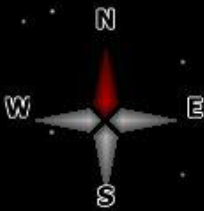
- Centered images of entire basin and surrounding craters in a single frame.
- Mosaic entire basin at full zoom w/ overlap.
- Image and describe color, albedo, texture, and topography across mare patches and ring mountains.
- Image and describe southern dark annular ring, including boundaries and texture.
- Image and describe color/albedo variations of ejecta.

Unaided Eye Actions

- Describe color, albedo, texture, and topography across mare patches and ring mountains.
- Describe southern dark annular ring, including boundaries and color.
- Describe any color/albedo variations of ejecta.

Science Impact

- Observations will be used to study the geologic evolution of the youngest lunar basin and to inform formation hypotheses for the annular ring.



6 Apr 2026 20:15:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure &
Texture

- Structures
- Slopes
- Texture

5. Geologic
Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?

Far Side

Jackson Crater

Apollo Basin

Moon NorthPole

Moon SouthPole

Near Side

Aristarchus Plateau

Ohm Crater

Pierazzo Crater

Glushko Crater

8. **Orientale Basin**

Montes Rook

Montes Cordillera

Orientale Annular Ring

Diameter (km)	
-----	-----
Orientale Basin	1381
Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Ohm Crater	67

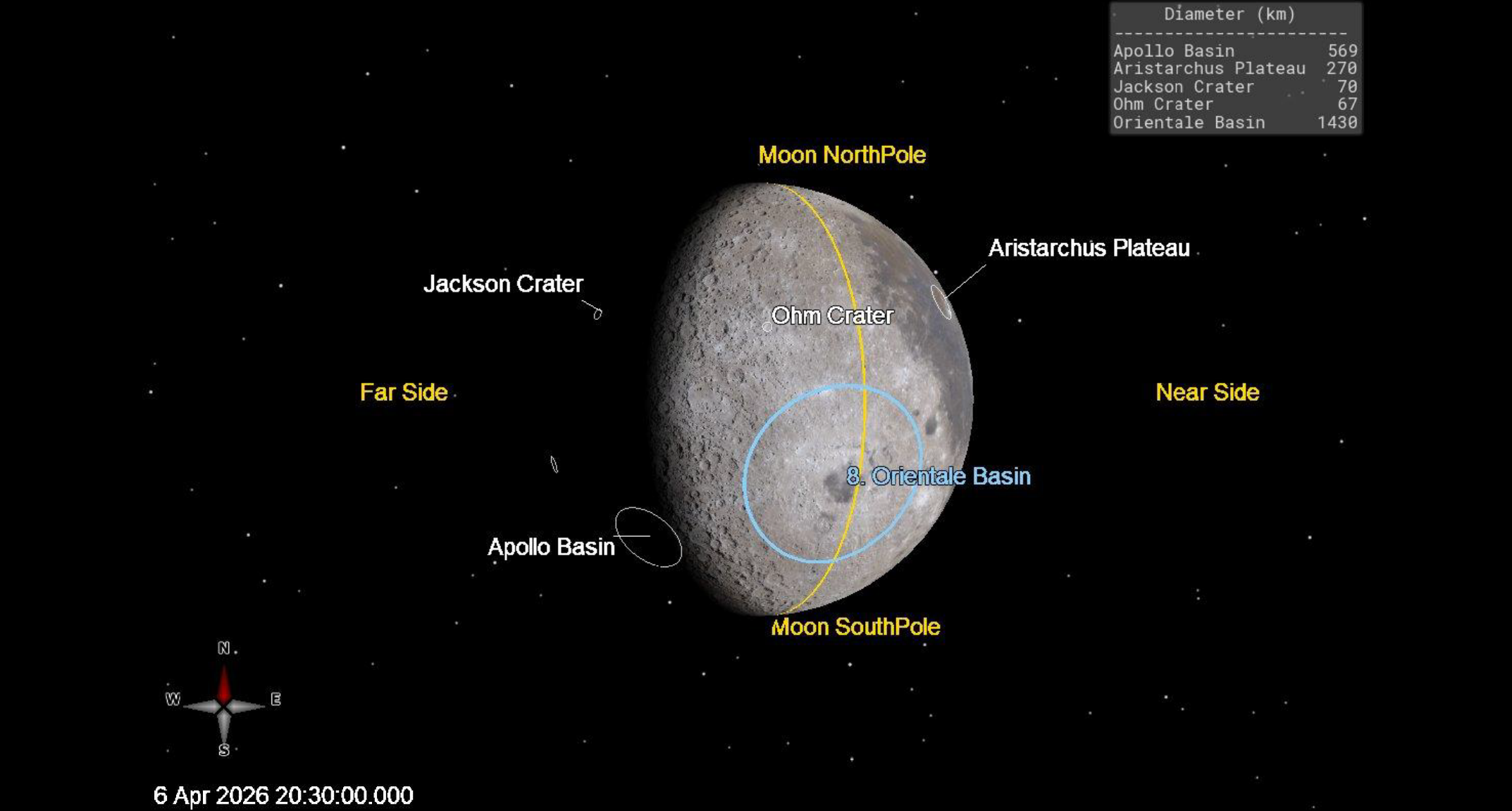


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⌵	5. Aristarchus Plateau		19:31 GMT
⌵			
⌵	6. Reiner Gamma		19:41 GMT
⌵			
⌵	b. Cabin and Window Teams Swap		19:50 GMT
⌵			
⌵	7. Whole Moon		20:05 GMT
⌵			
⌵	8. Orientale Basin		20:15 GMT
⌵			
⌵	c. Window Team Position Swap		20:30 GMT

c. Window Team Position Swap

Target Information

- Window team switch!



Diameter (km)	

Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Ohm Crater	67
Orientele Basin	1430

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off

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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?

Diameter (km)	
Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Ohm Crater	67
Orientele Basin	1430

Camera Actions

- Focus on regions, patterns, or features that interest YOU.
- Capture images to illustrate your choice, at multiple zoom levels.
- Image and describe WHY certain features or regions caught your eye.
- Remember your cue card.

- Focus on regions, patterns, or features that interest YOU.
- Describe WHY certain features or regions caught your eye.
- Remember your cue card.

Diameter (km)	
Apollo Basin	569
Aristarchus Plateau	270
Jackson Crater	70
Ohm Crater	67
Oriente Basin	1430

6 Apr 2026 20:31:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off

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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
• Feature type/name	• Size	• Color tone	• Structures	• Association	• Impressions
• Target? (yes/no)	• Shape	• Albedo	• Slopes	• Contact habit	• Interpretations
• Location	• Boundary Preservation	• Shadows/ illumination	• Texture	• Contact relationship	• Any changes?
• Observation style					



🏠	📺	7. Whole Moon	📺	20:05 GMT
🏠	📺	8. Orientale Basin		20:15 GMT
🏠	📺	c. Window Team Position Swap		20:30 GMT
🏠	📺	9. Crew Choice #1	📺	20:31 GMT
🏠	📺	10. Discussion #3: Farside Albedo/Color	📺	20:39 GMT
🏠	📺	d. Cabin and Window Teams Swap		20:55 GMT
🏠	📺	11. Glushko Crater (2/2)	🕒📺	21:10 GMT

10. Discussion #3: Farside Albedo/Color

Target Information

- Discussion theme: Regional scale albedo/color variations across the farside.

Camera Actions

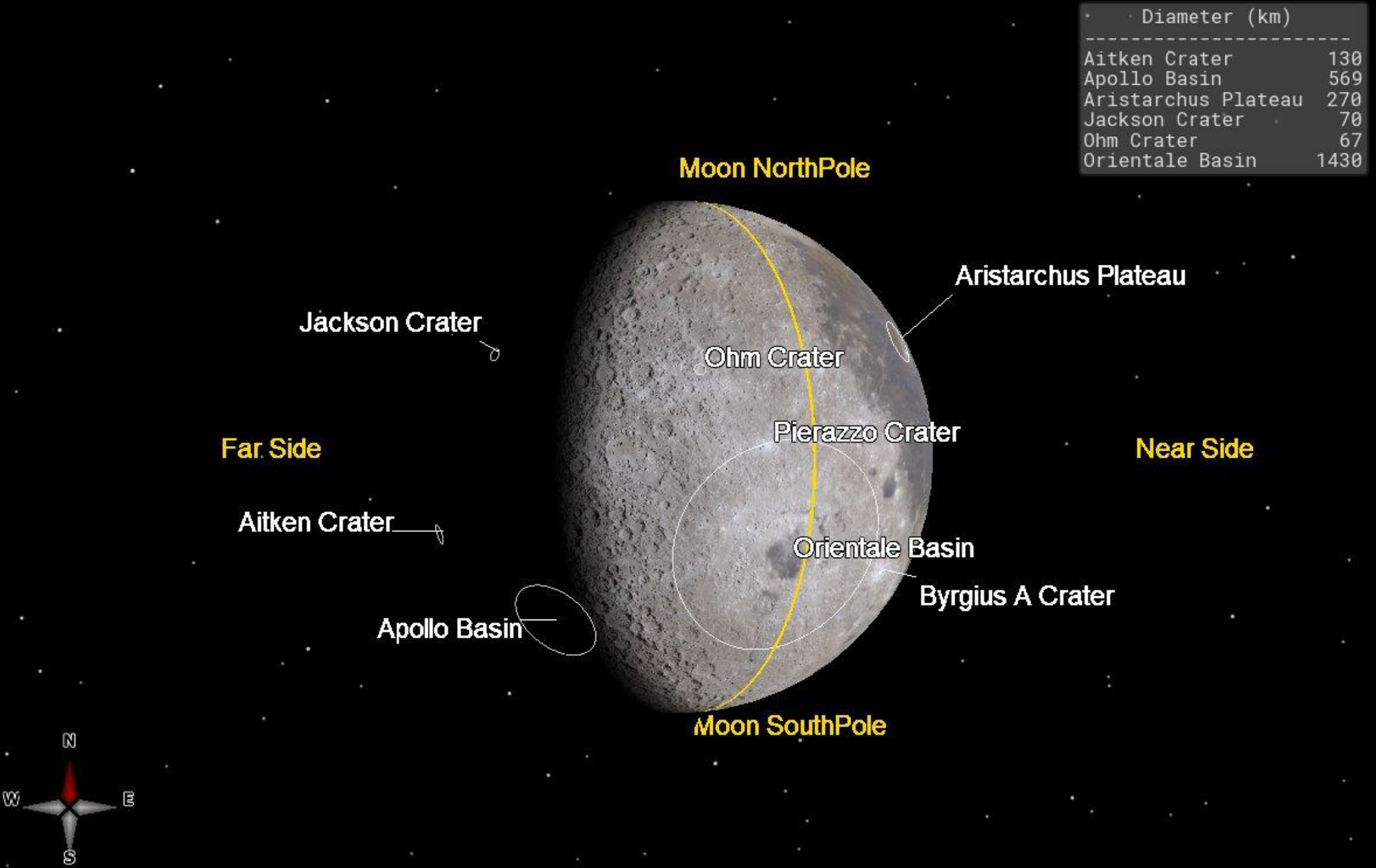
- Topics to discuss with available crew:
 - What patterns/variations in regional albedo do you see? Are they associated with specific features, such as rayed craters Pierazzo (pee ROT so) or Byrgius A (BUH gee us A)?
 - What patterns/variations in regional color or hue do you see? Are they associated with specific features?
- Capture images along with your discussion.

Unaided Eye Actions

- Topics to discuss with available crew:
 - What patterns/variations in regional albedo do you see? Are they associated with specific features, such as rayed craters Pierazzo (pee ROT so) or Byrgius A (BUH gee us A)?
 - What patterns/variations in regional color or hue do you see? Are they associated with specific features?
- Annotate your observations along with your discussion.

Science Impact

- Human vision offers a unique perception of albedo/color that cameras may not capture.
- The full lunar disk offers the ability to compare large scale albedo/color patterns.



6 Apr 2026 20:39:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

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Cue Card Off

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1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

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- Texture

5. Geologic Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?

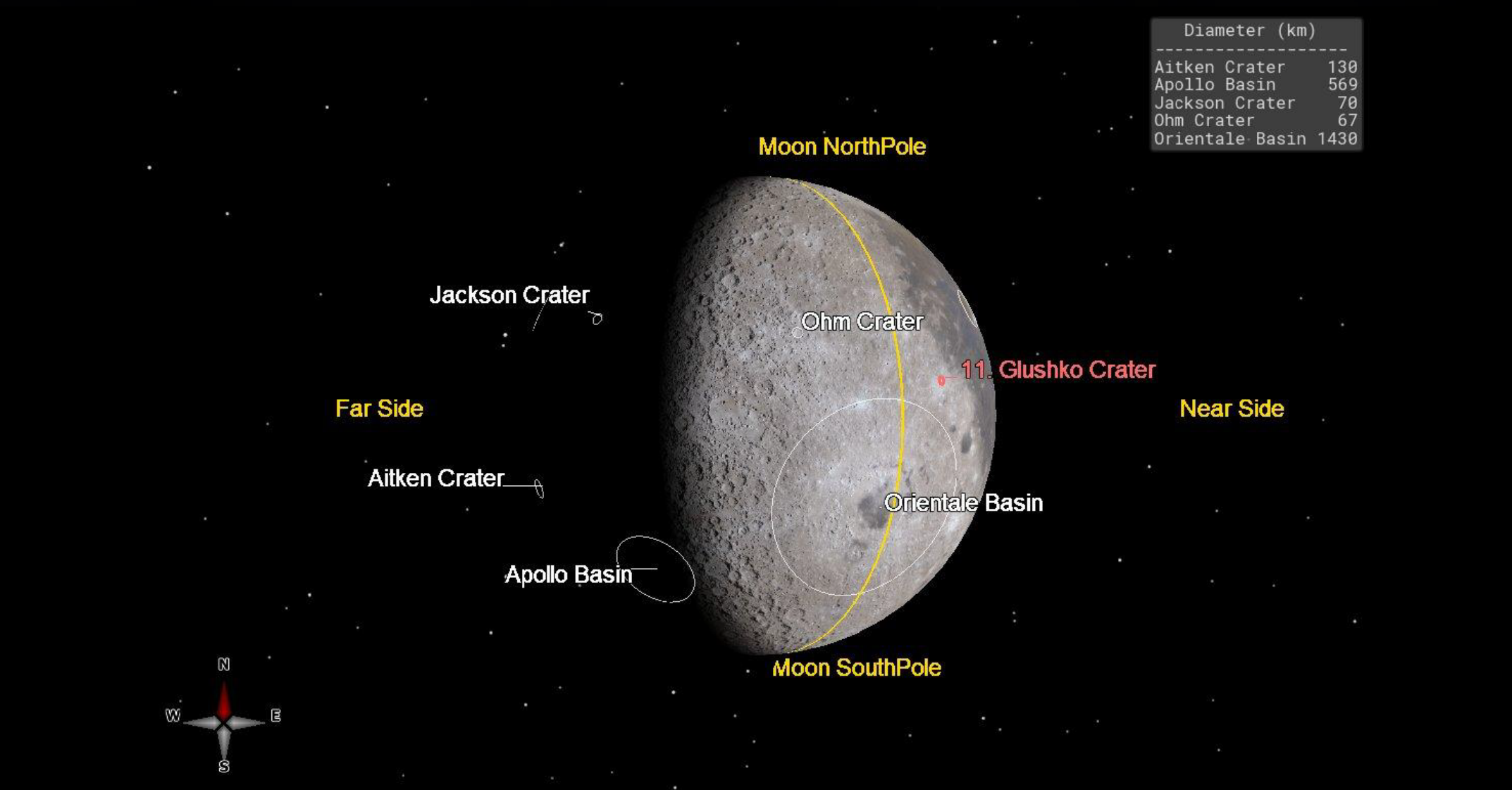


	☐	7. whole moon		20:05 GMT
	☐	8. Orientale Basin		20:15 GMT
	☐	c. Window Team Position Swap		20:30 GMT
	☐	9. Crew Choice #1		20:31 GMT
	☐	10. Discussion #3: Farside Albedo/Color		20:39 GMT
	☐	d. Cabin and Window Teams Swap		20:55 GMT
	☐	11. Glushko Crater (2/2)		21:10 GMT

d. Cabin and Window Teams Swap

Target Information

- Handover and switch with your crewmates.



Diameter (km)	

Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Ohm Crater	67
Orientale Basin	1430

6 Apr 2026 20:55:00.000

Unaided Eye135 mm200 mm400 mm

OneNoteLabels OffCue Card Off

1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?



8. Orientale Basin

20:15 GMT



c. Window Team Position Swap

20:30 GMT



9. Crew Choice #1



20:31 GMT



10. Discussion #3: Farside Albedo/Color



20:39 GMT



d. Cabin and Window Teams Swap

20:55 GMT



11. Glushko Crater (2/2)



21:10 GMT

11. Glushko Crater (2/2) *GLOOSH ko*

Target Information

- High albedo, complex crater with prominent ray system.
- W of Oceanus Procellarum, SE of Ohm, NE of Orientale.
- Second of two photometric observations of Glushko for this crew.

Camera Actions

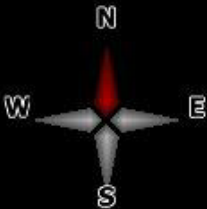
- Centered images of entire crater and ray system in a single frame.
- Images of crater and ray system at full zoom.
- Image and describe the brightness, texture, and extent of Glushko's rays.
- Describe how Glushko's rays differ in the mare vs. highlands.
- Image and describe any changes in albedo or color relative to your first observation of Glushko and its rays.

Unaided Eye Actions

- Describe the extent of Glushko's ejecta/ray system.
- Describe brightness and color variations along or between Glushko's rays.
- Describe how Glushko's rays differ in the mare vs. highlands.
- Describe any changes in albedo or color relative to your first observation of Glushko and its rays.

Science Impact

- Your observations will be used to understand material properties of a young lunar crater.
- Repeat observations will inform how changes in viewing conditions affect human perception of brightness, color, and texture.



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Unaided Eye

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200 mm

400 mm

OneNote

Labels Off

Cue Card Off



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
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3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

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- Contact relationship

* Thoughts *

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Diameter (km)

Glushko Crater	43
Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Ohm Crater	67
Orientale Basin	1430

Moon NorthPole

Jackson Crater

Ohm Crater

Jupiter

Grimaldi Basin

Far Side

Aitken Crater

Apollo Basin

Moon SouthPole

12. Orientale Basin

11. Glushko Crater

Near Side



		10. Discussion #3: Farside Albedo/Color		20:39 GMT
		d. Cabin and Window Teams Swap		20:55 GMT
		11. Glushko Crater (2/2)		21:10 GMT
		12. Orientale Basin		21:18 GMT
		13. Hertzsprung Basin		21:34 GMT
		e. Window Team Position Swap		21:41 GMT
		14. Crew Choice #2		21:42 GMT

12. Orientale Basin OR ee ent ALL

Target Information

- Youngest large basin on the Moon.
- Prominent ejecta with secondary crater chains.
- Diameter is distance between JSC and KSC.

Camera Actions

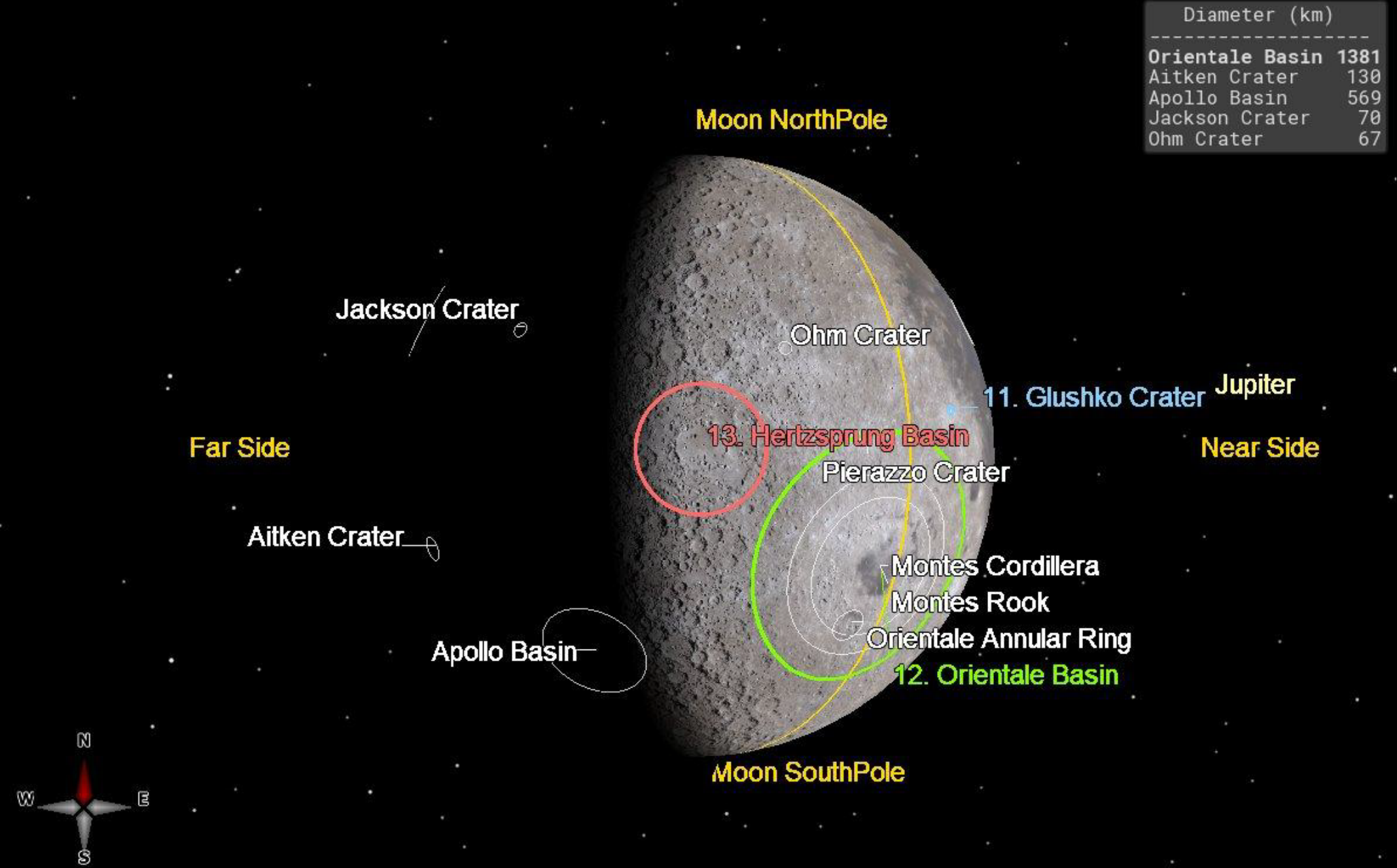
- Centered images of entire basin and surrounding craters in a single frame.
- Mosaic entire basin at full zoom w/ overlap.
- Image and describe color, albedo, texture, and topography across mare patches and ring mountains.
- Image and describe southern dark annular ring, including boundaries and texture.
- Image and describe color/albedo variations, topography, and extent of ejecta including secondary crater chains.

Unaided Eye Actions

- Describe color, albedo, texture, and topography across mare patches and ring mountains.
- Describe southern dark annular ring, including boundaries and color.
- Describe any color/albedo variations, topography, and extent of ejecta including secondary crater chains.

Science Impact

- Observations will be used to study the geologic evolution of the youngest lunar basin and to inform how large impacts change the lunar surface.



Diameter (km)	

Orientale Basin	1381
Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Ohm Crater	67

6 Apr 2026 21:18:00.000

Unaided Eye	135 mm	200 mm	400 mm
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OneNote	Labels Off	Cue Card Off			
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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
• Feature type/name • Target? (yes/no) • Location • Observation style	• Size • Shape • Boundary Preservation	• Color tone • Albedo • Shadows/ illumination	• Structures • Slopes • Texture	• Association • Contact habit • Contact relationship	• Impressions • Interpretations • Any changes?

13. Hertzprung Basin *HURTSprung*

Target Information

- Degraded basin with inner and outer rings.
- SW of Ohm, NW of Orientale.

Camera Actions

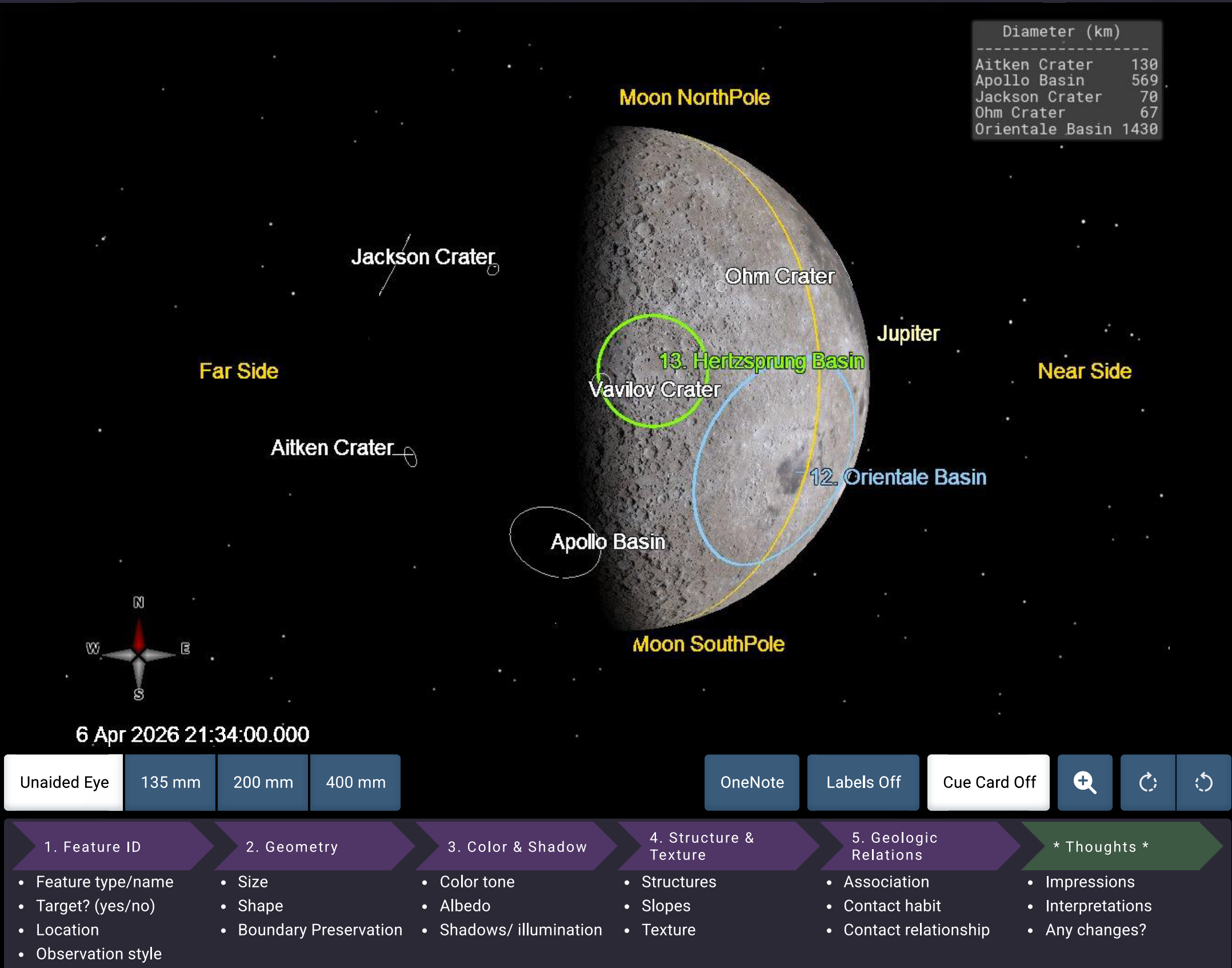
- Centered images of basin at full zoom.
- Image and describe the inner and outer rings, including their degradation.
- Compare and image this degraded basin (basin floor, rings, and ejecta) with the younger Orientale Basin.

Unaided Eye Actions

- Describe and compare the degradation of the rings.
- Describe and compare color and texture inside and outside of the inner ring.
- Describe and compare this degraded basin (basin floor, rings, and ejecta) with the younger Orientale Basin.

Science Impact

- Your observations will be used to understand how basins of different sizes reveal differences in local crustal properties and how basins degrade over time.





10. Discussion #3: Farside Albedo/Color

65

20:39 GMT
- d. Cabin and Window Teams Swap

20:55 GMT
11. Glushko Crater (2/2)

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🔊

21:10 GMT
12. Orientale Basin

🔊

21:18 GMT
13. Hertzprung Basin

21:34 GMT
- e. Window Team Position Swap

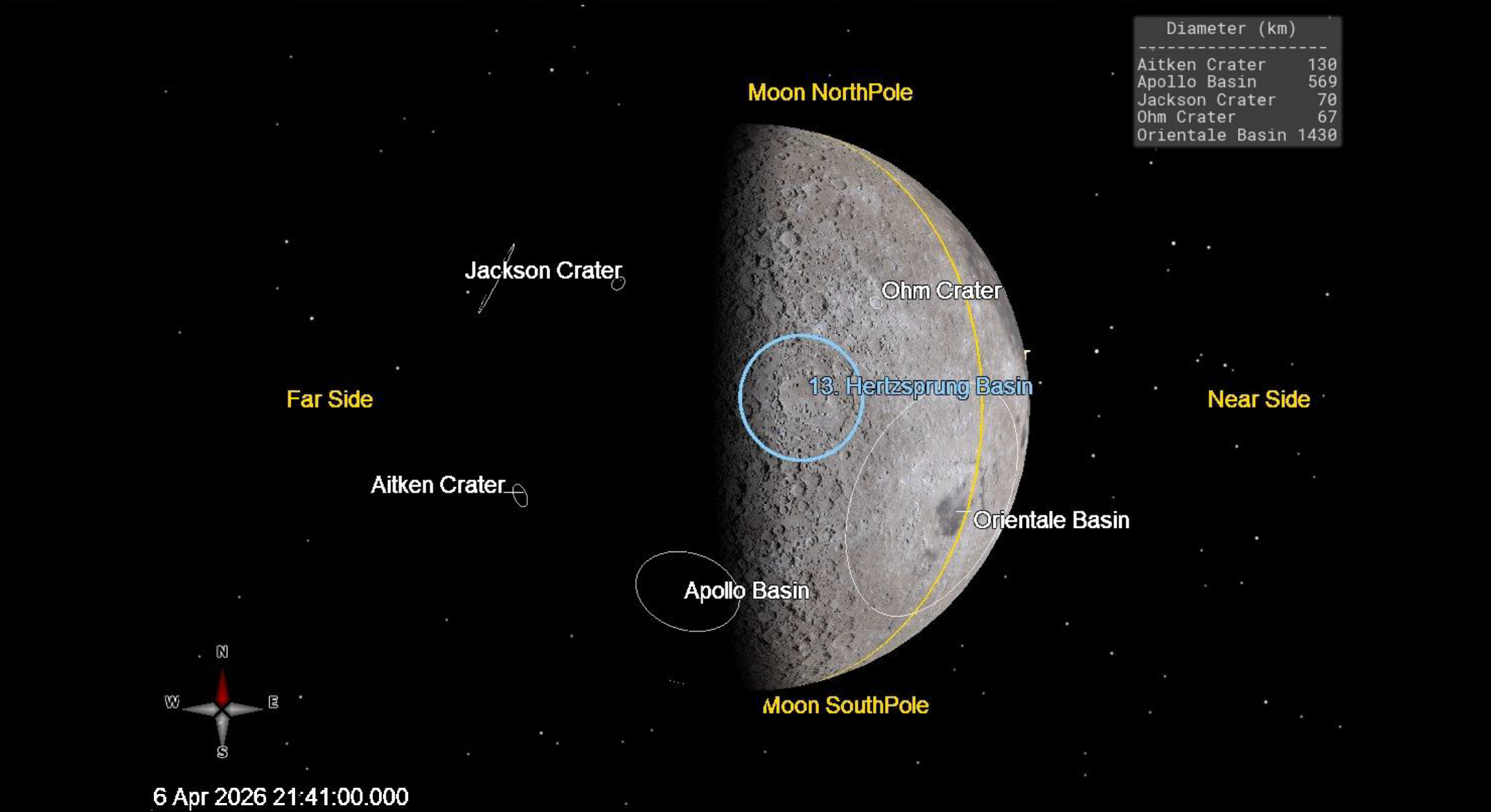
21:41 GMT
14. Crew Choice #2

21:42 GMT

e. Window Team Position Swap

Target Information

- Window team switch!



Diameter (km)	

Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Ohm Crater	67
Orientale Basin	1430

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

- Structures
- Slopes
- Texture

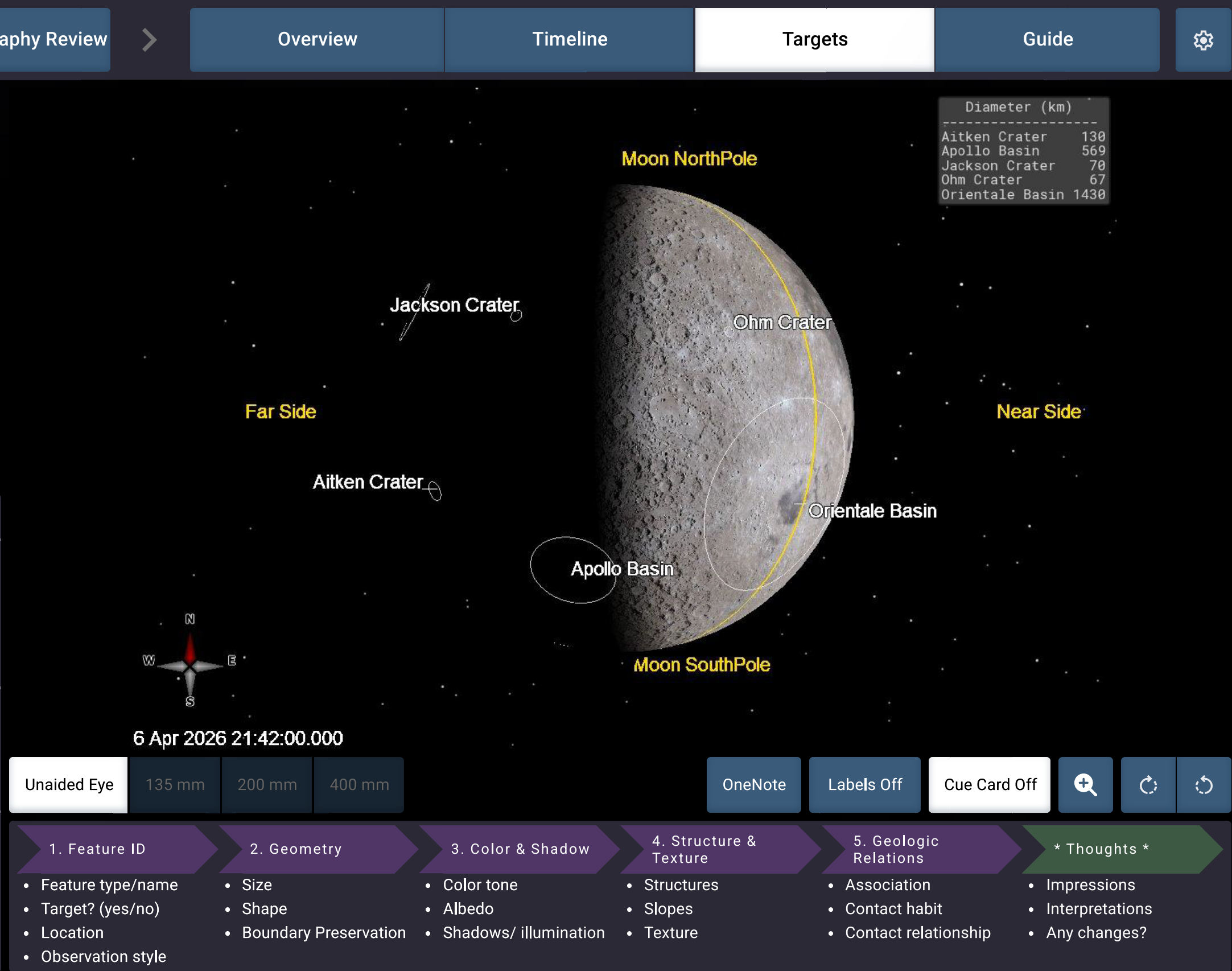
5. Geologic Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?

- ## 14. Crew Choice #2
-
- ### Camera Actions
- Focus on regions, patterns, or features that interest YOU.
 - Capture images to illustrate your choice, at multiple zoom levels.
 - Image and describe WHY certain features or regions caught your eye.
 - Remember your cue card.
-
- ### Unaided Eye Actions
- Focus on regions, patterns, or features that interest YOU.
 - Describe WHY certain features or regions caught your eye.
 - Remember your cue card.
-
- ### Science Impact
- From your unique vantage point and perspectives, you'll observe features and patterns that reveal the Moon in new ways.



Moon North Pole

Moon South Pole

Jackson Crater

Ohm Crater

Aitken Crater

Apollo Basin

Oriente Basin

South Pole-Aitken Basin

Diameter (km)	
Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Ohm Crater	67
Oriente Basin	1430

Compass rose: N, S, E, W

Target Information

- ## Camera Actions

- ## Unaided Eye Actions

- ## Science Impact

- Observations will be used to understand how viewing geometry and lighting along the terminator affect perceptions of morphology, topography, and color.

6 Apr 2026 21:50:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off

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1. Feature ID

2. Geometry

3. Color & Shadow

4. Structure & Texture

5. Geologic Relations

* Thoughts *

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

- Size
- Shape
- Boundary Preservation

- Color tone
- Albedo
- Shadows/ illumination

- Structures
- Slopes
- Texture

- Association
- Contact habit
- Contact relationship

- Impressions
- Interpretations
- Any changes?



	☐	13. Hertzprung Basin	21:34 GMT
	☐	e. Window Team Position Swap	21:41 GMT
	☐	14. Crew Choice #2	21:42 GMT
	☐	15. Discussion #4: Terminator	21:50 GMT
	☐	f. Cabin and Window Teams Swap	22:05 GMT
	☐	16. Ohm Crater	22:20 GMT
	☐	17. Discussion #5: Limb	22:28 GMT

f. Cabin and Window Teams Swap

Target Information

- Handover and switch with your crewmates.



Diameter (km)	

Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Moscoviense Basin	455
Ohm Crater	67
Orientale Basin	1430

Unaided Eye135 mm200 mm400 mm

OneNoteLabels OffCue Card Off

1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?



		13. Hertzprung Basin	21:34 GMT
		e. Window Team Position Swap	21:41 GMT
		14. Crew Choice #2	21:42 GMT
		15. Discussion #4: Terminator	21:50 GMT
		f. Cabin and Window Teams Swap	22:05 GMT
		16. Ohm Crater	22:20 GMT
		17. Discussion #5: Limb	22:28 GMT

16. Ohm Crater

Target Information

- Small, complex crater with prominent ray system.
- Size of the Eye of the Sahara in Mauritania.

Camera Actions

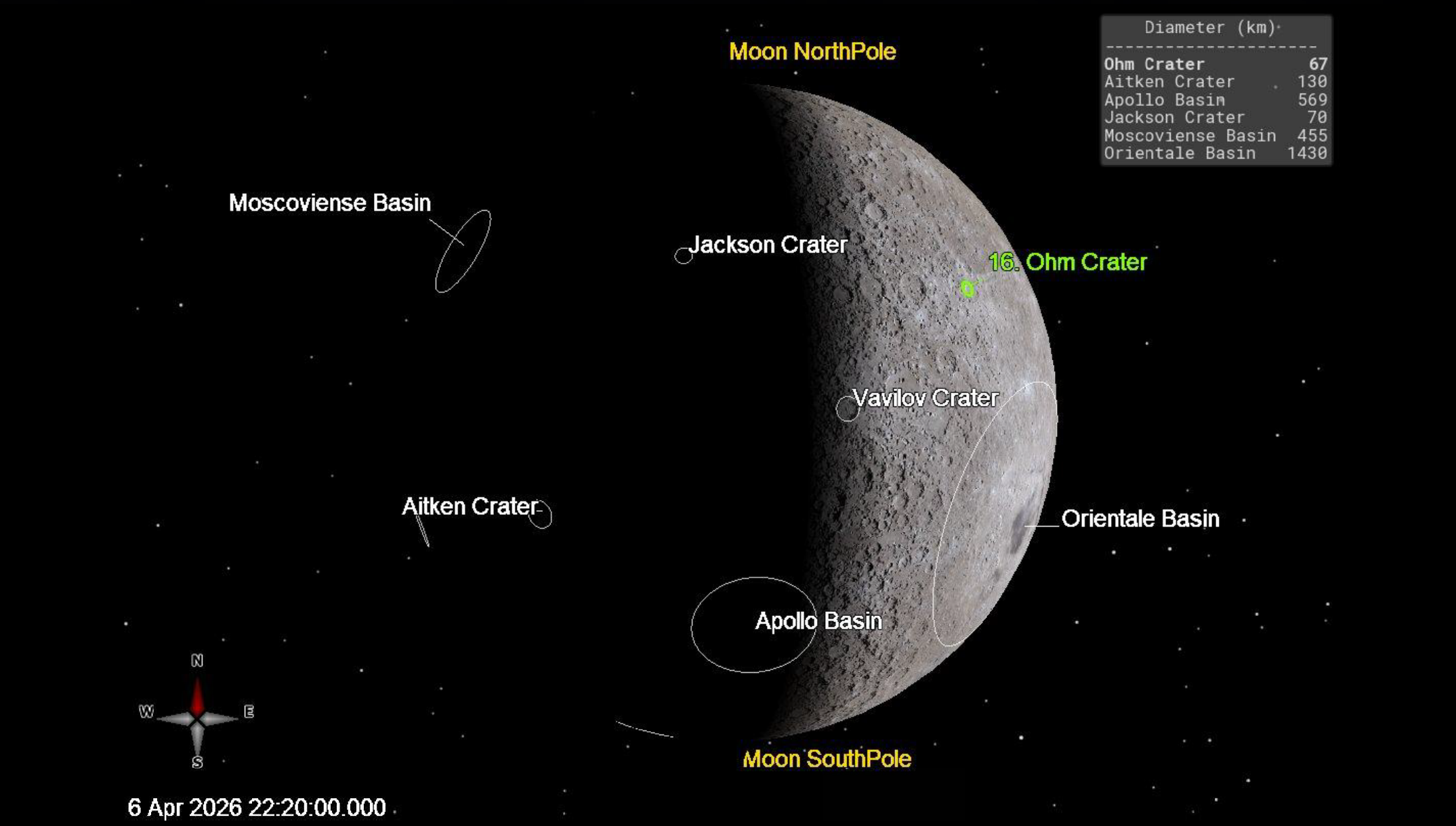
- Centered images of entire crater and ray system in a single frame.
- Images of crater and ray system at full zoom.
- Image and describe the brightness and extent of rays in Ohm's ejecta/ray system.
- Image and describe any albedo or texture variations along or between Ohm's rays

Unaided Eye Actions

- Describe the extent of Ohm's ejecta/ray system.
- Describe albedo, color, and texture variations along or between Ohm's rays.

Science Impact

- Observations will be used to understand the formation, dynamics, and weathering of extensive crater ray systems.



Diameter (km)	
Ohm Crater	67
Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Moscoviense Basin	455
Orientele Basin	1430

Unaided Eye	135 mm	200 mm	400 mm	OneNote	Labels Off	Cue Card Off			
1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *				
• Feature type/name • Target? (yes/no) • Location • Observation style	• Size • Shape • Boundary Preservation	• Color tone • Albedo • Shadows/ illumination	• Structures • Slopes • Texture	• Association • Contact habit • Contact relationship	• Impressions • Interpretations • Any changes?				

17. Discussion #5: Limb

Target Information

- Discussion theme: Topography and color of the illuminated lunar limb.

Camera Actions

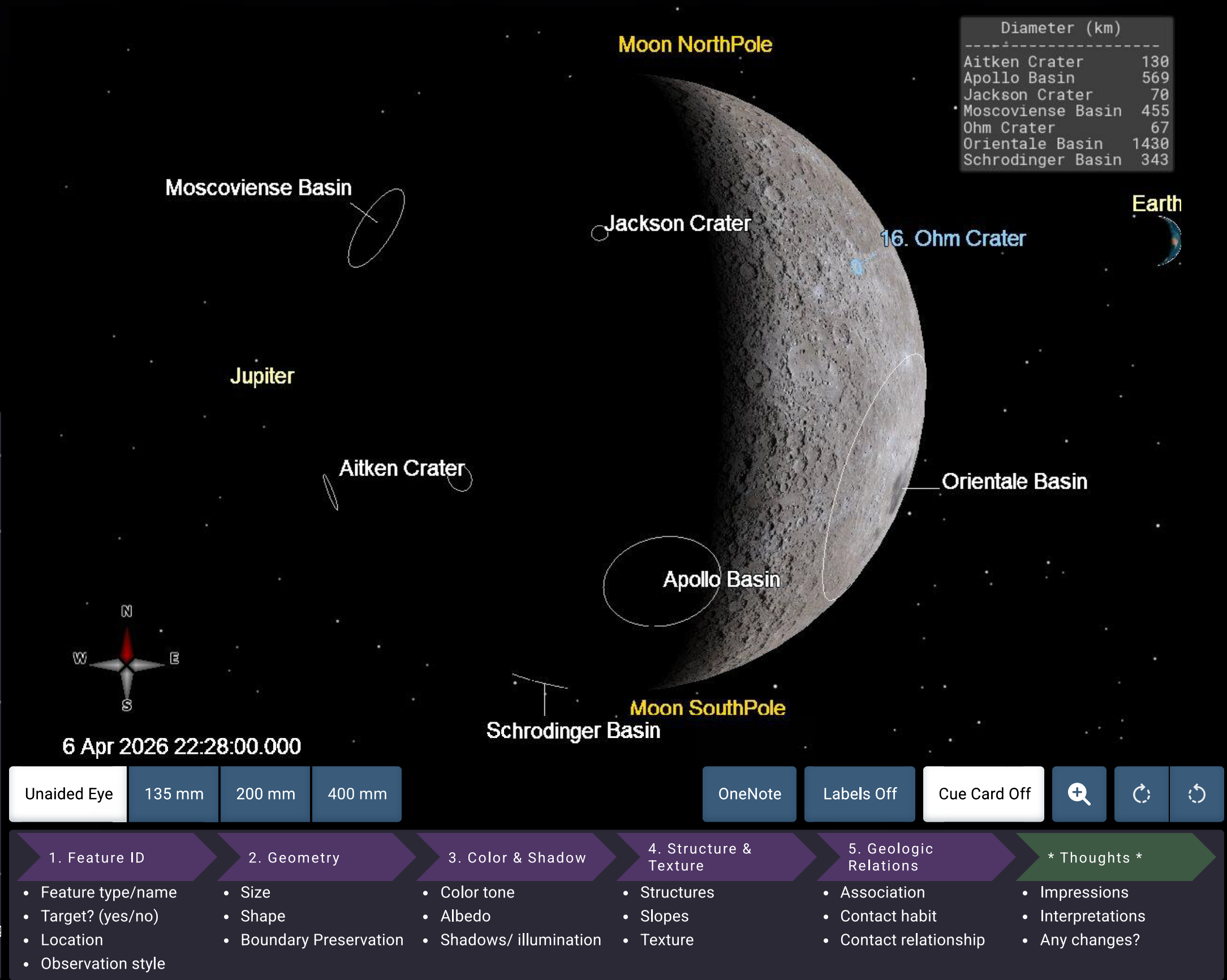
- Topics to discuss with available crew:
 1. Describe the topography of limb features, including Orientale rings and central floor depression.
 2. Describe any color and tone variations along the limb.
- Capture images to illustrate your discussion.

Unaided Eye Actions

- Topics to discuss with available crew:
 1. Describe the topography of limb features, including Orientale rings and central floor depression.
 2. Describe any color and tone variations along the limb.
- Annotate your observations along with your discussion.

Science Impact

- Observations will be used to understand how viewing geometry and lighting along the limb affect perceptions of surface features.





		f. Cabin and Window Teams Swap	22:05 GMT
		16. Ohm Crater	22:20 GMT
		17. Discussion #5: Limb	22:28 GMT
		18. Earthset	22:38 GMT
		19. Vavilov Crater	22:46 GMT
		g. Window Team Position Swap	22:53 GMT
		20. Crew Choice #3	22:54 GMT

18. Earthset

Target Information

- The Earth, setting behind the Moon.

Camera Actions

- Capture images at multiple scales.
- Ensure focal point of camera remains on an illuminated surface (Moon or Earth).
- Image and compare colors visible on the Moon and Earth.

Unaided Eye Actions

- Describe and compare colors visible on the Moon and Earth.
- Describe the appearance of the lunar horizon in front of Earth.

Science Impact

- Observations will be used to understand how perception of color on the Moon changes when Earth is in view.



Unaided Eye	135 mm	200 mm	400 mm				OneNote	Labels Off	Cue Card Off			
1. Feature ID		2. Geometry		3. Color & Shadow		4. Structure & Texture		5. Geologic Relations		* Thoughts *		
• Feature type/name • Target? (yes/no) • Location • Observation style		• Size • Shape • Boundary Preservation		• Color tone • Albedo • Shadows/ illumination		• Structures • Slopes • Texture		• Association • Contact habit • Contact relationship		• Impressions • Interpretations • Any changes?		



		f. Cabin and Window Teams Swap	22:00 GMT
		16. Ohm Crater	22:20 GMT
		17. Discussion #5: Limb	22:28 GMT
		18. Earthset	22:38 GMT
		19. Vavilov Crater	22:46 GMT
		g. Window Team Position Swap	22:53 GMT
		20. Crew Choice #3	22:54 GMT

19. Vavilov Crater VAH vill off

Target Information

- Complex crater with central peak.
- Just E of the terminator, along W rim of Hertzsprung Basin.

Camera Actions

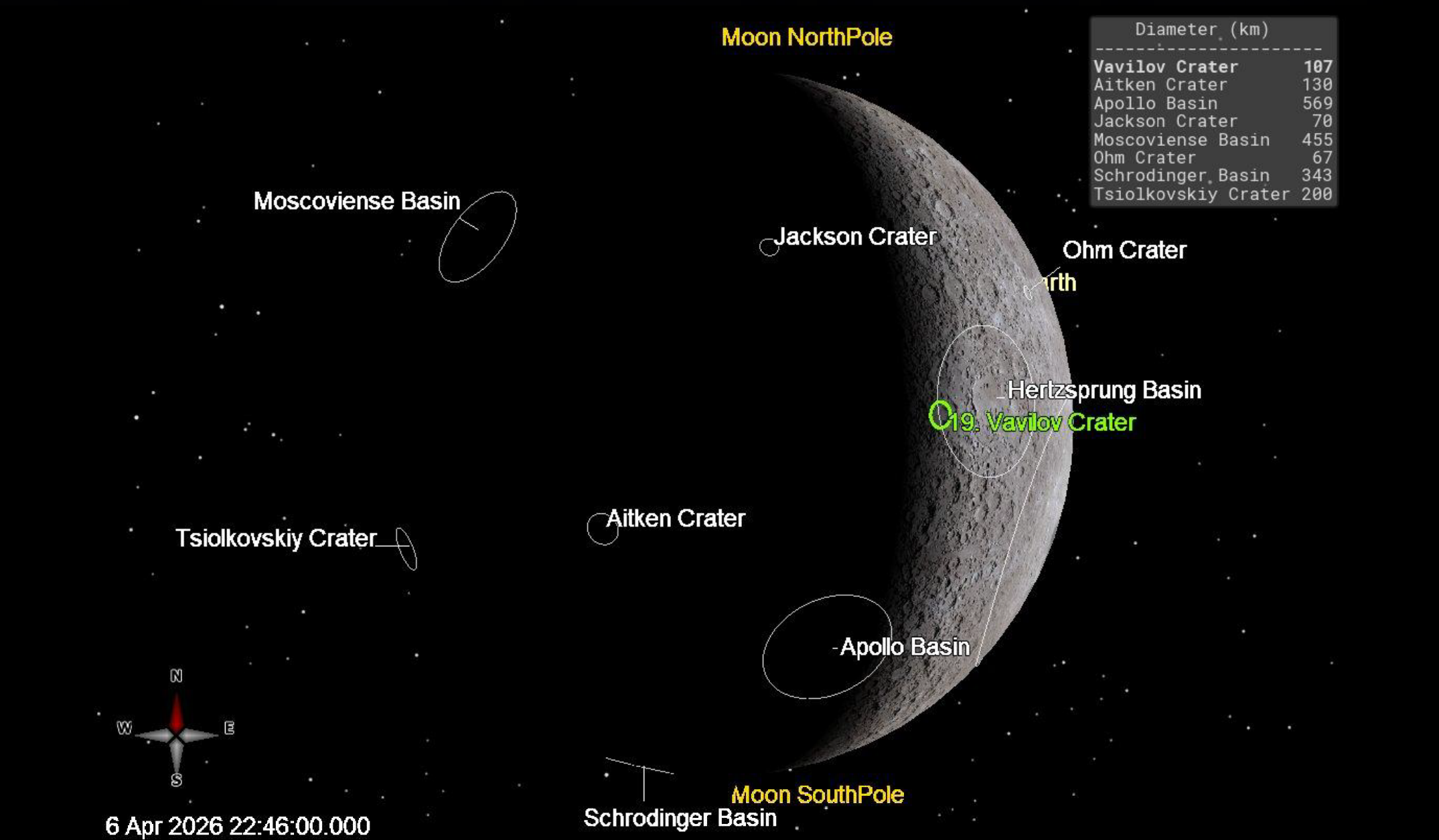
- Centered images of crater at full zoom.
- Image and describe the central peak and terraced walls.
- Image and describe color, albedo, or texture variations across the crater.
- Image and describe Vavilov s ejecta/ray system, if visible.

Unaided Eye Actions

- Can you resolve Vavilov s central peak?
- Describe color and albedo variations across the crater.
- Describe Vavilov s ejecta/ray system, if visible.

Science Impact

- Observations will be used to understand the formation, dynamics, and degradation of crater morphology.



Diameter (km)	
Vavilov Crater	107
Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Moscoviense Basin	455
Ohm Crater	67
Schrodinger Basin	343
Tsiolkovskiy Crater	200

6 Apr 2026 22:46:00.000

Unaided Eye	135 mm	200 mm	400 mm	OneNote	Labels Off	Cue Card Off			
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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
• Feature type/name • Target? (yes/no) • Location • Observation style	• Size • Shape • Boundary Preservation	• Color tone • Albedo • Shadows/ illumination	• Structures • Slopes • Texture	• Association • Contact habit • Contact relationship	• Impressions • Interpretations • Any changes?

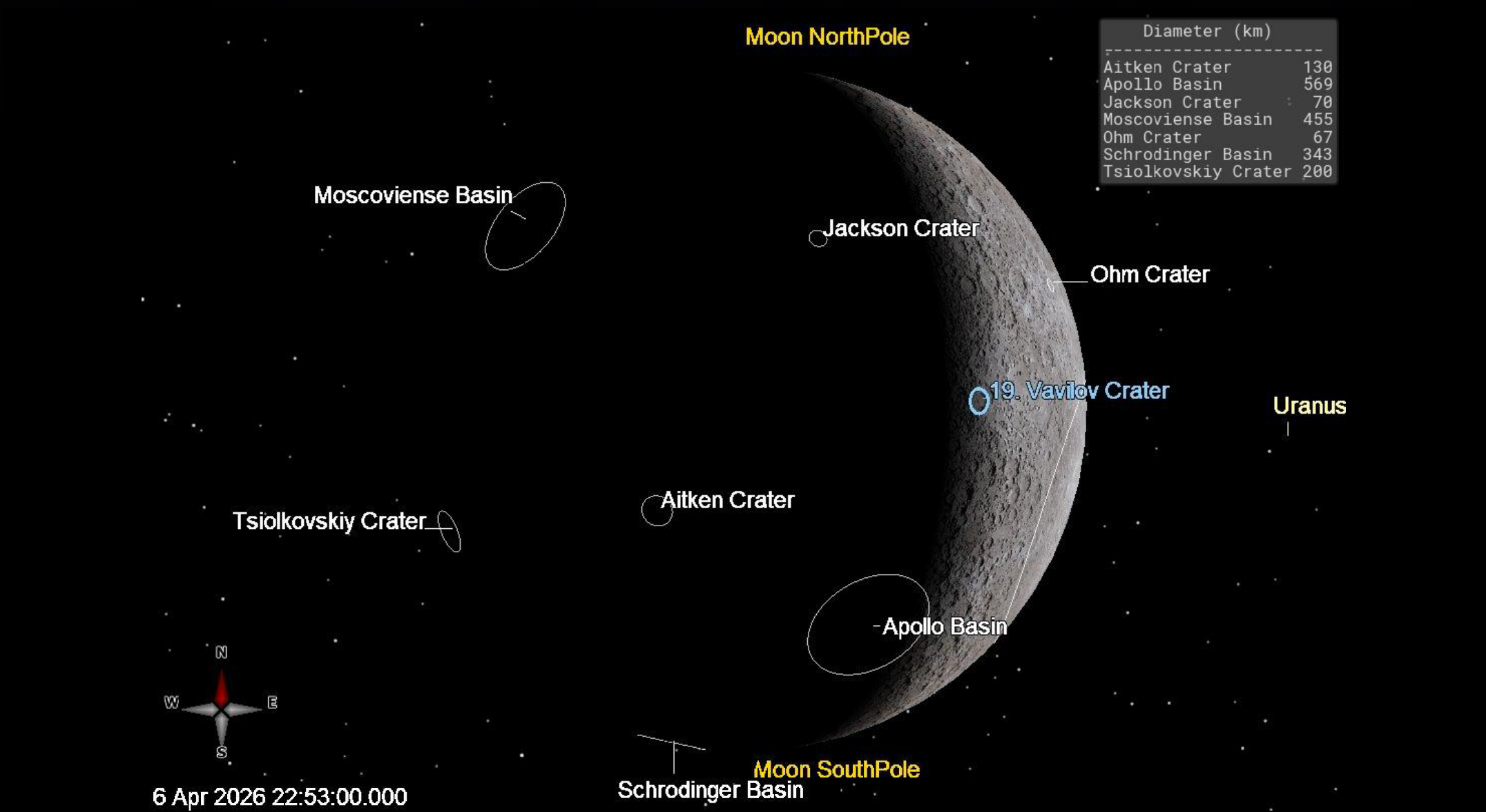


		f. Cabin and Window Teams Swap	22:00 GMT
		16. Ohm Crater	22:20 GMT
		17. Discussion #5: Limb	22:28 GMT
		18. Earthset	22:38 GMT
		19. Vavilov Crater	22:46 GMT
		g. Window Team Position Swap	22:53 GMT
		20. Crew Choice #3	22:54 GMT

g. Window Team Position Swap

Target Information

- Window team switch!



Diameter (km)	

Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Moscoviense Basin	455
Ohm Crater	67
Schrodinger Basin	343
Tsiolkovskiy Crater	200

6 Apr 2026 22:53:00.000

Unaided Eye135 mm200 mm400 mm

OneNoteLabels OffCue Card Off

1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?

20. Crew Choice #3

Camera Actions

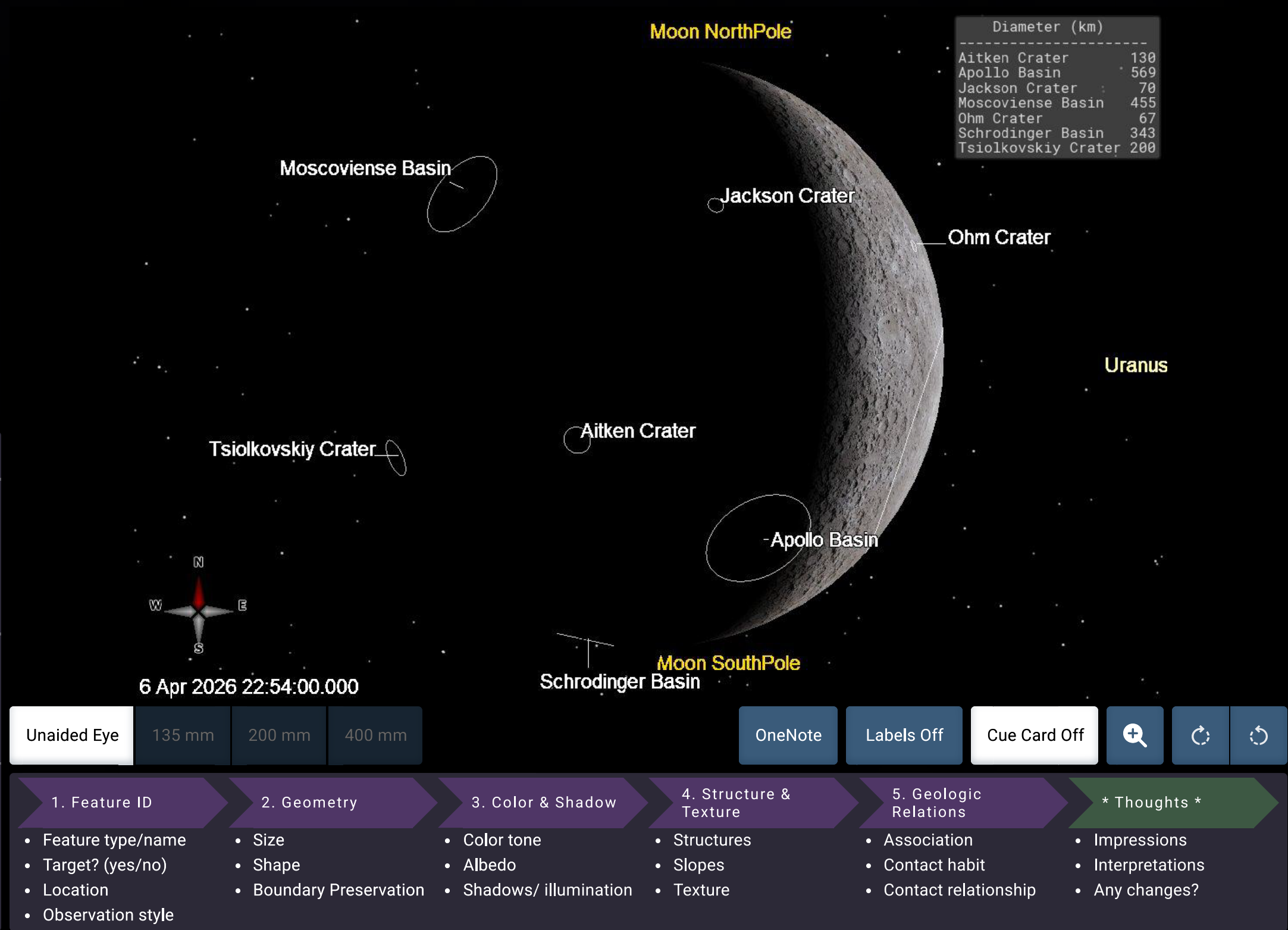
- Focus on regions, patterns, or features that interest YOU.
- Capture images to illustrate your choice, at multiple zoom levels.
- Image and describe WHY certain features or regions caught your eye.
- Remember your cue card.

Unaided Eye Actions

- Focus on regions, patterns, or features that interest YOU.
- Describe WHY certain features or regions caught your eye.
- Remember your cue card.

Science Impact

- From your unique vantage point and perspectives, you'll observe features and patterns that reveal the Moon in new ways.





	☐	19. Vavilov Crater		22:46 GMT
	☐	g. Window Team Position Swap		22:53 GMT
	☐	20. Crew Choice #3		22:54 GMT
	☐	21. Impact Flashes		23:02 GMT
	☐	22. Lofted Lunar Dust		23:10 GMT
	☐	23. Earthrise		23:18 GMT
	☐	h. Observation Break		23:30 GMT

21. Impact Flashes

Target Information

- Short lived flashes on the lunar surface caused by impact bombardment.

Camera Actions

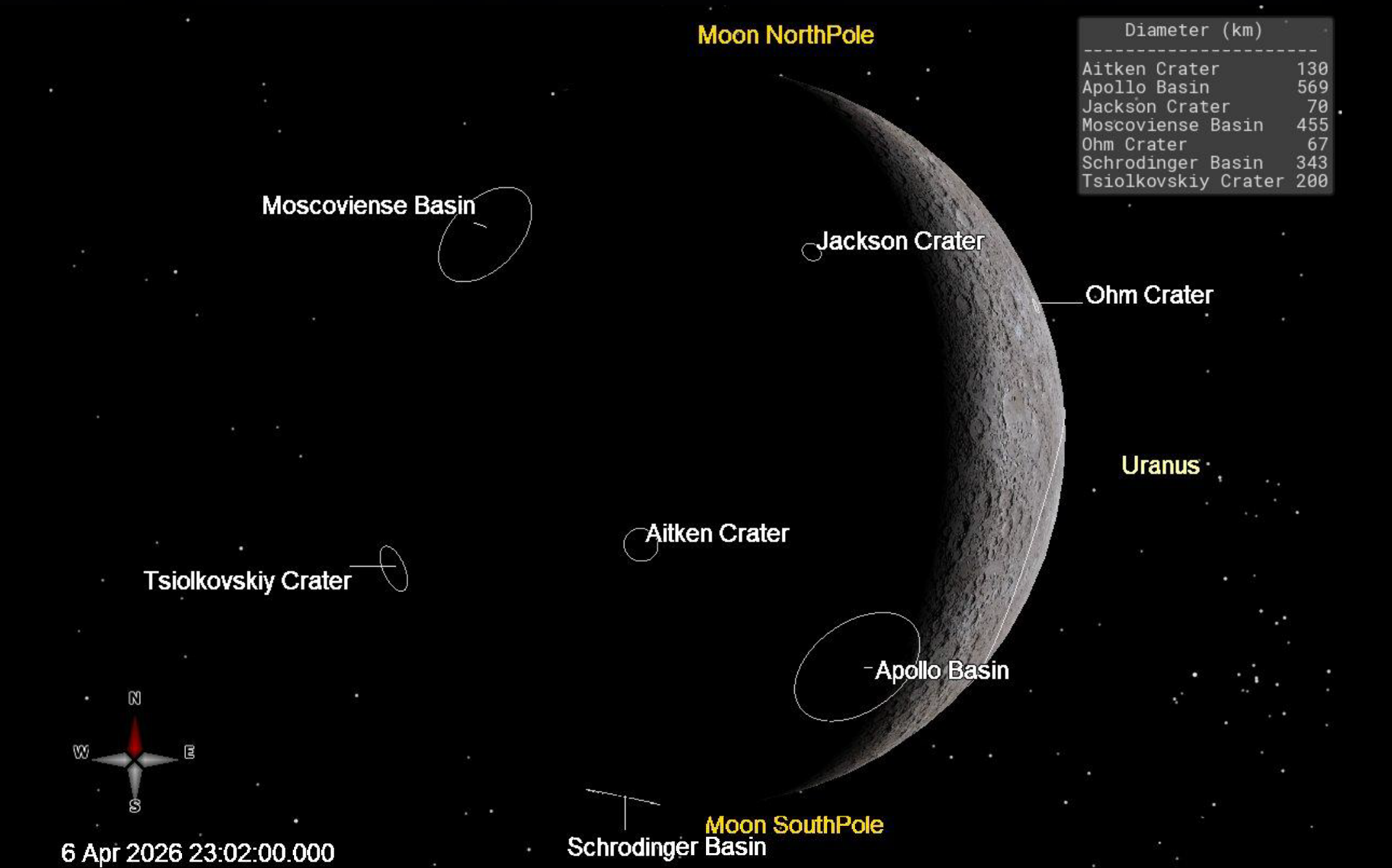
- No images required, but can use the camera as a viewfinder.
- Monitor dark regions of the Moon for impact flashes.
- If observed, report number, annotate location, and describe flash (color, brightness, shape, duration).

Unaided Eye Actions

- Monitor dark regions of the Moon for impact flashes.
- If observed, report number, annotate location, and describe flash (color, brightness, shape, duration).

Science Impact

- Observations of impact flashes will be used to provide insight into the Moons dynamic environment as well as the impactors that modify the lunar surface and build the regolith and dust environment.
- Citizen scientists across Earth are monitoring the Moon during your flyby for impact flashes!



Diameter (km)	

Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Moscoviense Basin	455
Ohm Crater	67
Schrodinger Basin	343
Tsiolkovskiy Crater	200

Unaided Eye	135 mm	200 mm	400 mm
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OneNote	Labels Off	Cue Card Off			
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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?



		19. Vavilov Crater		22:46 GMT
		g. Window Team Position Swap		22:53 GMT
		20. Crew Choice #3		22:54 GMT
		21. Impact Flashes		23:02 GMT
		22. Lofted Lunar Dust		23:10 GMT
		23. Earthrise		23:18 GMT
		h. Observation Break		23:30 GMT

22. Lofted Lunar Dust

Target Information

- Lunar dust may be lofted above the lunar surface.
- Observe just before the Earth rises, along the dark western limb NW of Tsiolkovsk
- Earthshine will illuminate any lofted dust (but the brightness of Earth will wash ou any faint dust after Earthrise).

Camera Actions

- Capture images of the dark limb at multiple scales to potentially identify dust in th exosphere.
- Is there any evidence of glow along the horizon?
- N S snaking mosaic limb at full zoom w/ overlap.
- Ensure focal point remains on an illuminated surface.
- Image and describe any colors visible along the Moons limb.

Unaided Eye Actions

- Capture images of the dark western limb NW of Tsiolkovsky at multiple scales to potentially identify dust in the exosphere.
- Comment on the sharpness or fuzziness of the lunar limb.

Science Impact

- Your observations will be used to understand the dust environment within the exosphere in the context of observations from Apollo missions and orbital spacecraft.

Moon NorthPole

Moscoviense Basin

Jackson Crater

Aitken Crater

Tsiolkovskiy Crater

Apollo Basin

Schrodinger Basin

Moon SouthPole

Diameter (km)

Aitken Crater130

Apollo Basin569

Jackson Crater70

Moscoviense Basin455

Schrodinger Basin343

Tsiolkovskiy Crater200

6 Apr 2026 23:10:00.000

Unaided Eye135 mm200 mm400 mm

OneNoteLabels OffCue Card Off

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1. Feature ID

2. Geometry

3. Color & Shadow

4. Structure & Texture

5. Geologic Relations

* Thoughts *

• Feature type/name

• Target? (yes/no)

• Location

• Observation style

• Size

• Shape

• Boundary Preservation

• Color tone

• Albedo

• Shadows/ illumination

• Structures

• Slopes

• Texture

• Association

• Contact habit

• Contact relationship

• Impressions

• Interpretations

• Any changes?



	☐	19. Vavilov Crater		22:46 GMT
	☐	g. Window Team Position Swap		22:53 GMT
	☐	20. Crew Choice #3		22:54 GMT
	☐	21. Impact Flashes		23:02 GMT
	☐	22. Lofted Lunar Dust		23:10 GMT
	☐	23. Earthrise		23:18 GMT
	☐	h. Observation Break		23:30 GMT

23. Earthrise

Target Information

- When the Earth rises above the Moons limb, returning into view.

Camera Actions

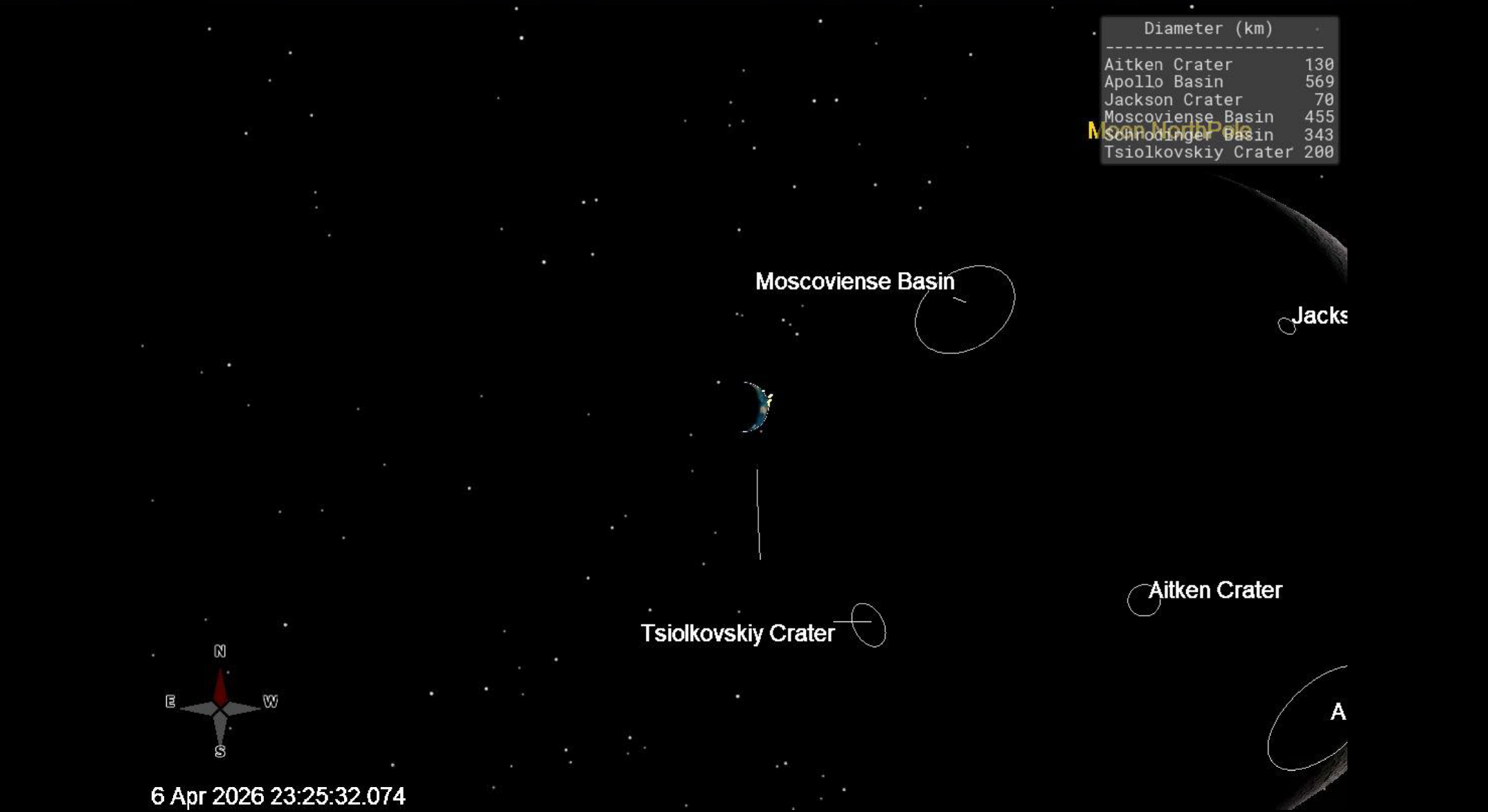
- Capture images at multiple scales.
- Ensure focal point of camera remains on an illuminated surface (Moon or Earth).
- Image and compare colors visible on the Moon and Earth.

Unaided Eye Actions

- What are your impressions of our planet rising beyond the Moon?
- Describe and compare colors visible on the Moon and Earth.

Science Impact

- Observations will be used to understand how perception of color on the Moon changes when Earth is in view.



Diameter (km)	

Aitken Crater	130
Apollo Basin	569
Jackson Crater	70
Moscoviense Basin	455
Schrodinger Basin	343
Tsiolkovskiy Crater	200

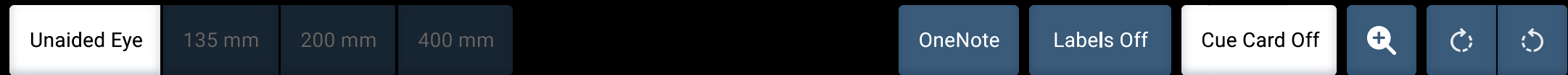
Unaided Eye	135 mm	200 mm	400 mm	OneNote	Labels Off	Cue Card Off			
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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?

h. Observation Break

Target Information

- Moon not in view.



1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
• Feature type/name	• Size	• Color tone	• Structures	• Association	• Impressions
• Target? (yes/no)	• Shape	• Albedo	• Slopes	• Contact habit	• Interpretations
• Location	• Boundary Preservation	• Shadows/ illumination	• Texture	• Contact relationship	• Any changes?
• Observation style					



	☐	22. Lofted Lunar Dust	23:10 GMT
	☐	23. Earthrise	23:18 GMT
	☐	h. Observation Break	23:30 GMT
	☐	24. Sunset	00:36 GMT
	☐	25. Discussion #6: Forward Look	00:44 GMT
	☐	26. Eclipsed Moon (1/2)	00:54 GMT
	☐	27. Deep Space (1/2)	00:54 GMT

24. Sunset

Target Information

- Solar corona: The outer atmosphere of the Sun.
- Polar plume: Thin streamers that project from the Suns N and S poles.
- Helmet streamer: Long cap like structure with pointed peaks.
- Coronal loop: Arcs close to Suns surface.
- Lunar dust: Dust from the Moon that is lofted above the lunar surface and illuminated by the Sun.

Camera Actions

- Use D5 with long lens to image continuously.
- Image and describe the visibility, color, and shape of the solar corona as a whole and its substructures (e.g., plumes, streamers).
- Is there any evidence of glow behind the horizon? If so, image and describe at multiple scales.
- Image and describe the morphology of the lunar limb, including its sharpness or fuzziness.

Unaided Eye Actions

- Describe the visibility, color, and shape of the solar corona as a whole and its substructures (e.g., plumes, streamers).
- Describe the glow behind the horizon, if glow is visible.
- Describe the morphology of the lunar limb, including its sharpness or fuzziness.

Science Impact

- Your observations and continuous image captures will be used to understand dynamics of the solar corona.
- The eclipse provides a unique viewing geometry to search for possible lofted dust above the lunar surface.



Unaided Eye	135 mm	200 mm	400 mm	OneNote	Labels Off	Cue Card Off			
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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?



	☐	22. Lotted Lunar Dust		23:10 GMT
	☐	23. Earthrise		23:18 GMT
	☐	h. Observation Break		23:30 GMT
	☐	24. Sunset		00:36 GMT
	☐	25. Discussion #6: Forward Look		00:44 GMT
	☐	26. Eclipsed Moon (1/2)		00:54 GMT
	☐	27. Deep Space (1/2)		00:54 GMT

25. Discussion #6: Forward Look

Target Information

- Discussion theme: Reflect on your science observations of the Moon.

Camera Actions

- Topics to discuss with available crew:
 - Synthesize your scientific observations throughout the flyby.
 - Reflect on the Moon that you saw, the features that impressed you most, and your experiences.
 - Look forward to how your experience can inform future Artemis science operations.
- Capture images along with your discussion.

Unaided Eye Actions

- Topics to discuss with available crew:
 - Synthesize your scientific observations throughout the flyby.
 - Reflect on the Moon that you saw, the features that impressed you most, and your experiences.
 - Look forward to how your experience can inform future Artemis science operations.
- Annotate your observations along with your discussion.

Science Impact

- The observations you made throughout the flyby will pave the way for the next generation of lunar exploration.



7 Apr 2026 00:44:00.000

Unaided Eye	135 mm	200 mm	400 mm	OneNote	Labels Off	Cue Card Off			
1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *				
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?				

		22. Lorted Lunar Dust	 23:10 GMT
		23. Earthrise	 23:18 GMT
		h. Observation Break	23:30 GMT
		24. Sunset	 00:36 GMT
		25. Discussion #6: Forward Look	 00:44 GMT
		26. Eclipsed Moon (1/2)	00:54 GMT
		27. Deep Space (1/2)	00:54 GMT

26. Eclipsed Moon (1/2)

Target Information

- When the Sun is behind the lunar disk and the only illumination on the Moon is Earthshine.

Camera Actions

- Use D5 with long lens.
- Orient yourself to the Moon, now only illuminated by Earthshine.
- Whole Moon mosaic: N S snake pattern at mid zoom w/ overlap.
- Image and describe color/albedo variations across the surface.

Unaided Eye Actions

- Orient yourself to the Moon, now only illuminated by Earthshine.
- Describe color, albedo, texture, and topography variations visible across the surface.
- Monitor for impact flashes. If observed, annotate location and describe flashes (color, brightness, shape, duration).

Science Impact

- Without the Sun in view, observations will be used to understand how perceptions of color and brightness change under Earthshine's unique spectrum.



Unaided Eye	135 mm	200 mm	400 mm
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OneNote	Labels Off	Cue Card Off			
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1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
- Feature type/name - Target? (yes/no) - Location - Observation style	- Size - Shape - Boundary Preservation	- Color tone - Albedo - Shadows/ illumination	- Structures - Slopes - Texture	- Association - Contact habit - Contact relationship	- Impressions - Interpretations - Any changes?



⌵		
⌵	23. Earthrise	23:18 GMT
⌵	h. Observation Break	23:30 GMT
⌵	24. Sunset	00:36 GMT
⌵	25. Discussion #6: Forward Look	00:44 GMT
⌵	26. Eclipsed Moon (1/2)	00:54 GMT
⌵	27. Deep Space (1/2)	00:54 GMT

27. Deep Space (1/2)

Target Information

- Observable Planets: Venus, Saturn, Mercury, Mars.
- Zodiacal light: Interplanetary dust in the plane of the Solar System.

Camera Actions

- Perform deep space image actions when D5 with short lens is available.
- Acquire full zoom images of Mars and other visible planets.
- Do you see any large scale brightness in space? If so, describe.

Unaided Eye Actions

- Can you tell the difference between the planets and stars?
- Do you see any large scale brightness in space? If so, describe.

Science Impact

- Observations of Mars feed forward for future human exploration to the Red Planet
- Eclipse observations provide the opportunity to observe zodiacal light within the Solar System.
- Your fly by timing may coincide with a comet break up due to Sun proximity.



7 Apr 2026 00:54:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off

1. Feature ID	2. Geometry	3. Color & Shadow	4. Structure & Texture	5. Geologic Relations	* Thoughts *
• Feature type/name • Target? (yes/no) • Location • Observation style	• Size • Shape • Boundary Preservation	• Color tone • Albedo • Shadows/ illumination	• Structures • Slopes • Texture	• Association • Contact habit • Contact relationship	• Impressions • Interpretations • Any changes?



	☐	25. Discussion #6: Forward Look		00:44 GMT
	☐	26. Eclipsed Moon (1/2)		00:54 GMT
	☐	27. Deep Space (1/2)		00:54 GMT
	☐	i. Window Team Position Swap		01:03 GMT
	☐	28. Eclipsed Moon (2/2)		01:04 GMT
	☐	29. Deep Space (2/2)		01:04 GMT
	☐	30. Sunrise		01:23 GMT

i. Window Team Position Swap

Target Information

- Window team switch!



Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

- Structures
- Slopes
- Texture

5. Geologic Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?



🚩	☐	25. Discussion #6: Forward Look	🔊 00:44 GMT
🚩	☐	26. Eclipsed Moon (1/2)	00:54 GMT
🚩	☐	27. Deep Space (1/2)	00:54 GMT
🚩	☐	i. Window Team Position Swap	01:03 GMT
🚩	☐	28. Eclipsed Moon (2/2)	🔊 01:04 GMT
🚩	☐	29. Deep Space (2/2)	01:04 GMT
🚩	☐	30. Sunrise	🕒🔊 01:23 GMT

28. Eclipsed Moon (2/2)

Target Information

- When the Sun is behind the lunar disk and the only illumination on the Moon is Earthshine.

Camera Actions

- Use D5 with long lens.
- Orient yourself to the Moon, now only illuminated by Earthshine.
- Whole Moon mosaic: N S snake pattern at mid zoom w/ overlap.
- Image and describe color/albedo variations across the surface.

Unaided Eye Actions

- Orient yourself to the Moon, now only illuminated by Earthshine.
- Describe color, albedo, texture, and topography variations visible across the surface.
- Monitor for impact flashes. If observed, annotate location and describe flashes (color, brightness, shape, duration).

Science Impact

- Without the Sun in view, observations will be used to understand how perceptions of color and brightness change under Earthshine's unique spectrum.



7 Apr 2026 01:04:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off



1. Feature ID

- Feature type/name
- Target? (yes/no)
- Location
- Observation style

2. Geometry

- Size
- Shape
- Boundary Preservation

3. Color & Shadow

- Color tone
- Albedo
- Shadows/ illumination

4. Structure & Texture

- Structures
- Slopes
- Texture

5. Geologic Relations

- Association
- Contact habit
- Contact relationship

* Thoughts *

- Impressions
- Interpretations
- Any changes?



🚩	📺	25. Discussion #6: Forward Look	📺 00:44 GMT
🚩	📺	26. Eclipsed Moon (1/2)	00:54 GMT
🚩	📺	27. Deep Space (1/2)	00:54 GMT
🚩	📺	i. Window Team Position Swap	01:03 GMT
🚩	📺	28. Eclipsed Moon (2/2)	📺 01:04 GMT
🚩	📺	29. Deep Space (2/2)	01:04 GMT
🚩	📺	30. Sunrise	🕒📺 01:23 GMT

29. Deep Space (2/2)

Target Information

- Observable Planets: Venus, Saturn, Mercury, Mars.
- Zodiacal light: Interplanetary dust in the plane of the Solar System.

Camera Actions

- Perform deep space image actions when D5 with short lens is available.
- Acquire full zoom images of Mars and other visible planets.
- Do you see any large scale brightness in space? If so, describe.

Unaided Eye Actions

- Can you tell the difference between the planets and stars?
- Do you see any large scale brightness in space? If so, describe.

Science Impact

- Observations of Mars feed forward for future human exploration to the Red Planet
- Eclipse observations provide the opportunity to observe zodiacal light within the Solar System.
- Your fly by timing may coincide with a comet break up due to Sun proximity.



Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off



1. Feature ID

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4. Structure & Texture

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5. Geologic Relations

- Association
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* Thoughts *

- Impressions
- Interpretations
- Any changes?



26. Eclipsed Moon (1/2)

00:54 GMT



27. Deep Space (1/2)

00:54 GMT



i. Window Team Position Swap

01:03 GMT



28. Eclipsed Moon (2/2)



01:04 GMT



29. Deep Space (2/2)

01:04 GMT



30. Sunrise



01:23 GMT

30. Sunrise

Target Information

- Solar corona: The outer atmosphere of the Sun.
- Polar plume: Thin streamers that project from the Suns N and S poles.
- Helmet streamer: Long cap like structure with pointed peaks.
- Coronal loop: Arcs close to Suns surface.
- Lunar dust: Dust from the Moon that is lofted above the lunar surface and illuminated by the Sun.

Camera Actions

- Use D5 with long lens to image continuously.
- Describe any differences in what you see now vs. at sunset.
- Image and describe the visibility, color, and shape of the solar corona as a whole and its substructures (e.g., plumes, streamers).
- Is there any evidence of glow behind the horizon? If so, image and describe at multiple scales.
- Image and describe the morphology of the lunar limb, including its sharpness or fuzziness.

Unaided Eye Actions

- Describe the visibility, color, and shape of the solar corona as a whole and its substructures (e.g., plumes, streamers).
- Describe the glow behind the horizon, if glow is visible.
- Describe the morphology of the lunar limb, including its sharpness or fuzziness.

Science Impact

- Your observations and continuous image captures will be used to understand dynamics of the solar corona.
- The eclipse provides a unique viewing geometry to search for possible lofted dust above the lunar surface.



7 Apr 2026 01:23:00.000

Unaided Eye

135 mm

200 mm

400 mm

OneNote

Labels Off

Cue Card Off



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User Guide

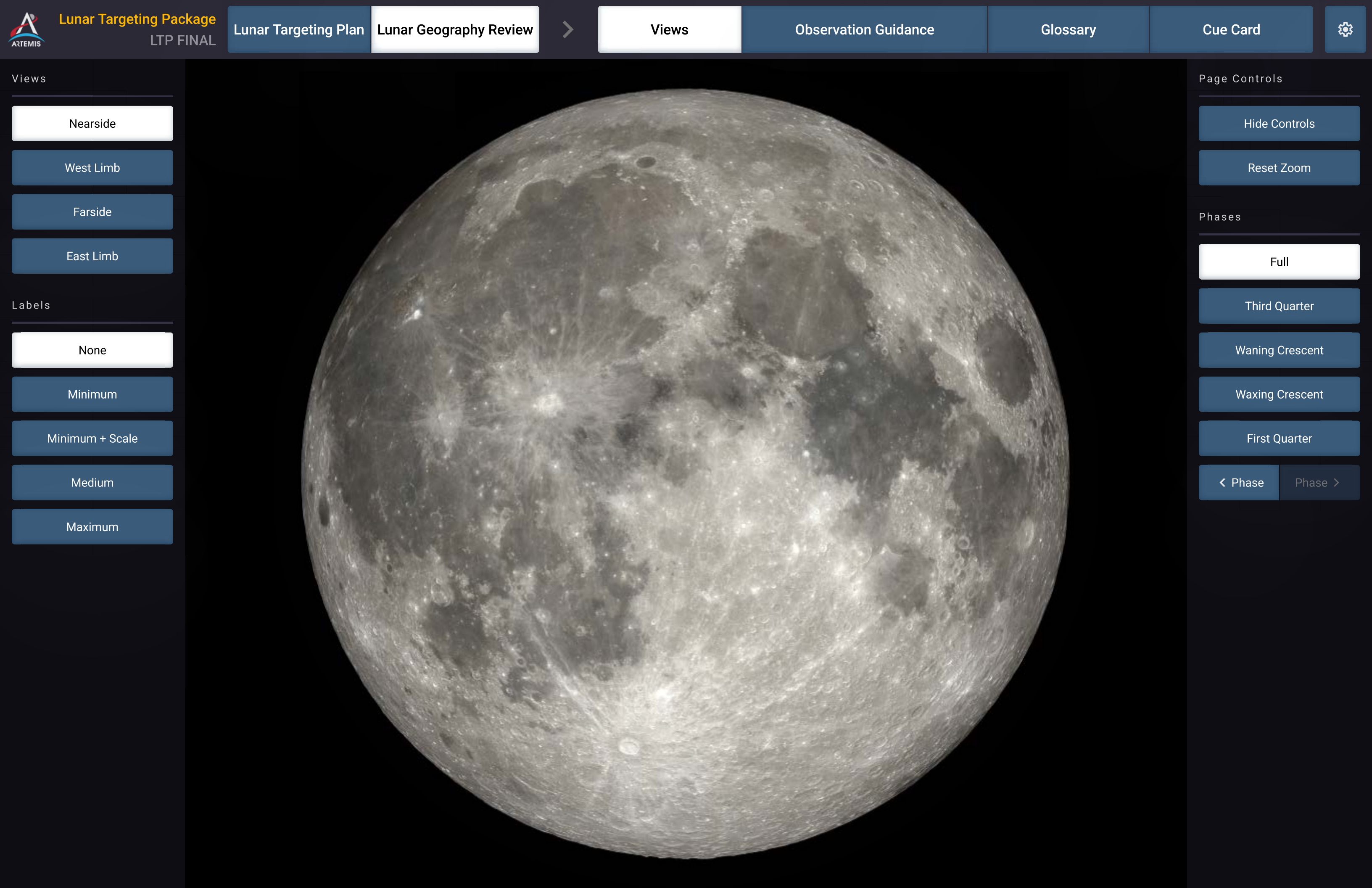
Instructions and operational guidelines for effectively utilizing the lunar targeting package.





Views

A comprehensive lunar map designed for detailed geographical review. Features references for customizable views, terrain labeling, and simulated lunar phases.



Views

Nearside

West Limb

Farside

East Limb

Labels

None

Minimum

Minimum + Scale

Medium

Maximum

Page Controls

Hide Controls

Reset Zoom

Phases

Full

Third Quarter

Waning Crescent

Waxing Crescent

First Quarter

< Phase

Phase >



Observation Guidance

Detailed advice and criteria for capturing high-quality scientific observations.



Glossary

Definitions of key terminology, acronyms, and geographical classifications used throughout the targeting package.



Albedo	Surface Brightness. <i>Scientifically</i> : the relative amount (ratio) of light that a surface reflects compared to the total incoming sunlight. A surface with a high albedo will reflect more sunlight than a surface with low albedo.
Central Peak	A central mountain rising above the floor of a crater. Material in the central peak originates from many kilometers below the surface. Typically observed in craters larger than 20 km but smaller than 175 km in diameter.
Closest Approach viewing	Features will be at their largest when at closest approach
Color provinces	The surface of the Moon has subtle variations in color, depending on the geologic material and chemistry present. Apollo crews saw regions or provinces where the surface was tan, light brown, or blue-gray.
Craters	Impact craters are excavated by meteoroid collisions.
Craters, catena	Chain of closely spaced craters. These craters usually form from impacts but could also form from subsurface processes.
Craters, complex	Large impact craters with one or more central peak mountain. 20-175 km (12-100 mi). <i>See Jackson Crater.</i>
Craters, floor fractured	Usually large (20 km+) impact craters with radial, concentric, and/or polygonal fractures on crater floor.
Craters, simple	Small, bowl-shaped impact craters. 0-20 km (0-12 mi) across. <i>See Kundt Crater.</i>
Craters, peak-ring	Very Large impact craters, where peak rings—circular mountain ranges—are formed within the crater. <i>See Orientale Basin.</i>
Crater, rays	Lunar crater rays are bright, radial deposits of ejected material extending outwards from impact craters.
Contact	Boundary between two different geological units.
Contact, sharp	Abrupt, well-defined boundary between two different geologic units.
Contact, gradational	Gradual transition between two different geologic units.
Discontinuous	Refers to a boundary that is broken or interrupted in its continuity.
Embaying	Refers to one feature that surrounds another, usually higher relief feature. The contact resembles a curved or indented shoreline.
Exosphere	The Moon's extremely thin layer of atmosphere, made up of trace amounts of gasses.
High sun angle	Ideal for color and albedo observations.
Horizon glow	Phenomenon where dust particles in the Moon's thin atmosphere create a glow during Lunar sunset on the Lunar horizon.
Hummocky	Terrain characterized by small, rounded hills or mounds.
Image mosaic mapping	Taking multiple overlapping camera images as trained enables the creation of maps and image mosaics of large regions on the Moon.
(Impact) Basin	Large craters on the Moon, usually 200 km (125 mi) in diameter or larger. Their formation impacts were so massive, they made permanent basins where the lunar crust is very thin. <i>See Korolev Basin, South Pole Aitken Basin.</i>
(Impact) Breccia	Rocks composed of fragments of older rocks, minerals, or glass. Impact breccias are lithified (formed into rock) by heat and shock compaction from impacts.
Impact flashes	Flashes on the lunar surface caused by micro-meteorite bombardment.
Limb viewing	The topographic 'skyline' can be viewed along the limb
Low sun angle	Ideal for morphological observations.
Lunar limb	The visible horizon of the Moon's surface from any vantage point. Looking north from Earth, the left horizon of the Moon is known as the 'Western Limb', the right horizon of the Moon is known as the 'Eastern Limb'.
Lunar swirls	High albedo curving surface features coincident with regions of strong magnetic fields. Apollo crews described them as swirly, wispy, and winding. <i>See Reiner Gamma</i>
Mare basalts	Basalts (dark colored igneous rock) from areas on the Moon that are darker and smoother than their surroundings.
Mare regions, patches, or fill	Dark regions paved or filled by volcanic deposits. Also called “seas”, “oceans”, “lakes”, “marshes”, or other bodies of water. Apollo 11 landed in the Sea of Tranquility, or <i>Mare Tranquillitatis</i> . Patches or Volcanic Fill simply refer to smaller areas of volcanic deposits, a common feature on the far side.
Morphology	The external structure, form, and shape of landforms.
Nadir viewing	Features are the least geometrically distorted when looking at them from the top-down.
Photometric changes	Repeat observations of the same features over different viewing angles are used to understand physical and compositional properties of lunar regions.
Photometry	(<i>photo-metry, literally 'light measuring'</i>) A technique focused on the measurement and analysis of light reflected by planets and moons in our solar system and beyond.
Pyroclastic deposits	Large, accumulated volcanic deposits from explosive volcanism.
Regolith	The fragmented layer of rocky material at the lunar surface. This covers bedrock and is often powdery with few large rocks.
Sinuous	Refers to a thin, highly curvy feature.
Solar corona	The Sun's outermost part of its atmosphere, seen during total solar eclipses.
Space weathering	Modification or changes in the surface of an airless planetary body from exposure to radiation and collisions by cosmic rays, solar wind, and micrometeorite impacts. On the Moon, this causes surface darkening.
Tectonic scarps, Fault scarps	Cliffs produced by tectonic processes.
Terminator	The Lunar terminator divides the illuminated (Lunar day) and shadowed portions (Lunar night) of the Moon viewed from Earth.
Undulating	Wavy surface or feature.
Volcanic clasts	Volcanic fragments within regolith or breccias.
Wrinkle ridges	Elongated, curving and braided, positive-relief features found in dark mare basalts. Wrinkle ridges consist of a broad low relief arch-like feature and a superimposed narrow, higher relief ridge.
Zodiacal light	The phenomenon caused by dust particles located in the inner solar system, between the Sun and Jupiter.

Cue Card

A quick-reference guide designed to aid crew members in executing productive, high-yield scientific observations during active target windows.





1. Feature ID

Feature type/name	
Target?	Is it from the targeting plan?
Location:	Hemisphere, position relative to other features
Observation style:	How are you identifying it (eyes or camera)?
Viewing geometry:	Oblique or nadir?

2. Geometry

Size:	In your FOV, relative to natural scale bars (complex craters, named features)
Shape:	Circular, elongated, polygonal, sinuous, curvilinear, ...
Boundary preservation:	Well-defined/fresh/sharp, scalloped, degraded, discontinuous

3. Color & Shadow

Color tone:	Lighter/darker gray, tan, brown, orange, ...
Albedo:	Brighter/darker, consistent, variable, streaks, ...
Shadows/illumination:	Length, coverage, direction, near terminator, ...

4. Structure & Texture

Structures:	Raised rim, peak structure, terrace, plateau, valley, ...
Slopes:	Steep, gentle
Texture:	Rough, smooth, rugged, infilled, hummocky, undulating, ...

5. Geologic Relations

Association:	Radiating/stemming from, flowing from, ...
Contact habit:	Sharp, gradational, ...
Contact relationship:	Embaying, dissecting, on top of, under...

* Optional Thoughts *

Impressions:	Human response, emotions
Interpretations:	Earth analogs, formation
Any Changes?	Since your last observation or during your observation?