

# How to Save any screen, to review the screen image now or later

| <i>Device Type</i> | <i>Keyboard keys<br/>OR button combo</i> | <i>Screen image file<br/>is stored in folder</i> |
|--------------------|--|--|
| <b>Windows</b>     | Win+PRTSCR                               | Pictures/Screenshots                             |
| <b>Macintosh</b>   | Shift+Command+3                          | Desktop  |
| <b>Android</b>     | Power+Volume Up                          | Internal storage/<br>DCIM/Screenshots            |
| <b>iOS</b>         | Home+Volume Down or<br>Power+Volume Down | Photos   |

# Get Ready for Fireworks Photos

*July 4, 2005,  
Canon EOS  
D60, Canon EF  
28-135mm lens  
@ 112mm, f/22,  
4 seconds, ISO  
200*



*First Prize,  
Architecture  
class,  
APCUG Digital  
Photo Contest,  
2018*

Presented by John Krout  
for PATACS+OPCUG, June 20, 2026

# Agenda

- My mentors
- Technical fundamentals: Why is the sky blue?
- Photo equipment you need – and have time to acquire
- Help available in person on June 27
- Checklist for the night before
- Camera settings
- Camera operation
- Aerial Fireworks clustered around July 4 in the region
- Fireworks up close and personal

# Fireworks photos can be taken at almost any time of year

In the DC region, aerial fireworks can be seen:

- **Dec 31/Jan 1**, at various sites in the region
- **January 20, 2029** Inauguration fireworks
- In **April** during the National Cherry Blossom Festival **Petalpalooza** event.
- During **baseball season**, occasionally at the ball parks.
- During the **week of July 4** all over the region. Some locales launch fireworks before July 4, and some after.

*Petalpalooza  
2015 on  
Washington  
Channel,  
Canon EOS 40D,  
Canon EF 17-  
40mm lens  
@17mm, f/11;  
2.5 seconds,  
ISO 100*



# **The 2026 National Park Service fireworks show on the National Mall**

- The normal show is 15 to 17 minutes long.
- The 1976 show, on the 200<sup>th</sup> anniversary of the Declaration of Independence, was 2 hours long.
- The 2026 show on the 250th anniversary will be scaled up too. Current plans call for 30 minutes in duration. Some opportunities for good photos.

# Giving credit where credit is due: my mentors

My late dad, **Homer Lee Krout**, was his high school's yearbook photographer in the mid-1930s, and worked for Ritz Camera in Richmond VA after graduation, commuting using a Model T Ford.

Movie newsreels made him so eager to get involved in WWII that, in the late 1930s, he hitchhiked to Toronto to join the Canadian RAF. The newsreels shown in movie theaters made the war sound glamorous.

He became an aerial recon photographer. He also shot personal photos using a Kodak Bantam compact bellows camera.

He generously supported my initial interests in photography at age 10 by giving me a Kodak Brownie. Over time, he gave me a Polaroid Swinger, a Petri rangefinder 35mm pocket camera, a Yashica MAT-124D twin lens reflex, and finally a 35mm Asahi Pentax SLR.

# Giving credit where credit is due: my mentors

In the summer of 1974, before my senior year of college, I worked as a photography intern for the National Park Service in DC. My boss was **Jack Rottier**, a career NPS photographer.

Jack was a great guy, a good mentor and easy going. He had been forced to shoot the National Mall fireworks for 20+ years, and he wanted to stay home for once. So Jack taught me how to do it right.

That summer, I shot photos of the NPS DC aerial fireworks show as Jack's substitute. I was very well paid for that work on a federal holiday.

I am very grateful to Jack. Even 50+ years later, I have never lost my enthusiasm for photographing fireworks. My fireworks photos have won contest prizes.

# **TECHNICAL FUNDAMENTALS**

# In case the money and/or the tech seem daunting

- If the fundamentals I describe seem alien to you or are beyond the reach of your budget, I can help.
- For budget issues, consider looking on eBay, Craigslist or even camera store sites like B&H Photo for used gear. That often costs much less than new gear.
- For alien technical matters, join me and bring your camera to the **Lorton workhouse fireworks show on June 27**. I will be happy to examine and explain your camera settings there. That gives you a week to buy the other gear needed.
- The next slide asks and answers the most significant tech question involved in aerial fireworks photography.

# Why is the sky blue? Why do you need to know?

The sky is blue because Nitrogen molecules, which make up roughly 70% of the atmosphere, ***scatter blue light*** from the sun.

Nitrogen in the air also scatters blue light from **any other light source, including aerial fireworks**. The farther away you are from the light source, the more severe the blue scatter.

Therefore, blue and green streaks of aerial fireworks are ***much dimmer*** than red and yellow streaks, especially if you are 100 yards or more away from the fireworks.

The opening photo of the Iwo Jima Memorial included fireworks roughly 10,000 feet away from the camera.

# Why is the sky blue? Why do you need to know?

The remedy:

Digital: set **Manual White Balance to Incandescent**.

Film: Use **daylight film and conversion filter 80A**.

These remedies *increase sensitivity to blue and green streaks*, since incandescent light produces dim blue and green light. Our brains compensate for different white balance, but our cameras need our guidance.



This 2005 photo was shot roughly 10,000 feet west of the NPS National Mall fireworks launch site, and contains **vivid blue** fireworks.

# **Photo Equipment**

# Photo Equipment needed

**Camera** with manual exposure control including either Bulb or shutter speeds of 2-10 seconds, and manual sensitivity control (ISO). Read your camera manual to figure out how to set these controls manually.

**Lens:** Wide-angle lens for close up work or for bursts + water reflections; 100+mm for aerial fireworks at a distance of half a mile or more.

**Tripod**, to hold the camera rock steady, because aerial bursts appear and grow over at least 1 second. I use 4 or even 10 seconds at the start of most aerial shows. Tripod height at should be least 50 inches tall. Expect to spend at least \$50 for a new one. Tariffs may apply.

**Get your hands off the camera!** Use a **Shutter release cable**, or infrared remote control, or Wifi release via phone app, or radio remote control. Release cable is most reliable and responds faster.

# Can a smartphone camera app do this?

- Pro Manual mode in Samsung Galaxy camera apps can do manual ISO control, manual shutter speed setting up to 30 seconds, except manual aperture control.
- Since the lens lengths are fixed, find a spot as close as possible to the fireworks launch site.
- Do not use digital zoom. That essentially crops the image and reduces its resolution.
- The shutter can be activated remotely by voice command. Tripod adapters exist.
- You will learn the Samsung details later in this presentation.
- My iPhone 11 running iOS 26 does not offer a manual camera mode. I could not find a zero-cost third-party camera app.

# **SHUTTER RELEASE OPTIONS**

**Wired, infrared (older cameras),  
Wifi, 2-part radio control**

# Shutter release cables

This is what I use. Effective and inexpensive.

Very reliable. Never fails to activate the shutter.

Shutter responds *very quickly*.

Can include a lock-open switch for Bulb.

Over the long run, physical cable exterior can wear out, exposing wires.

Typical price \$13 to \$30 on Amazon.

Buy one that is specifically for your camera model.



# 2-part radio control shutter releases

**Receiver** is attached to the camera body, and plugs into the shutter release cable socket.

**Transmitter** is held in your hand.

Buy fresh batteries, or charge rechargeable batteries, the night before. Both parts require batteries.

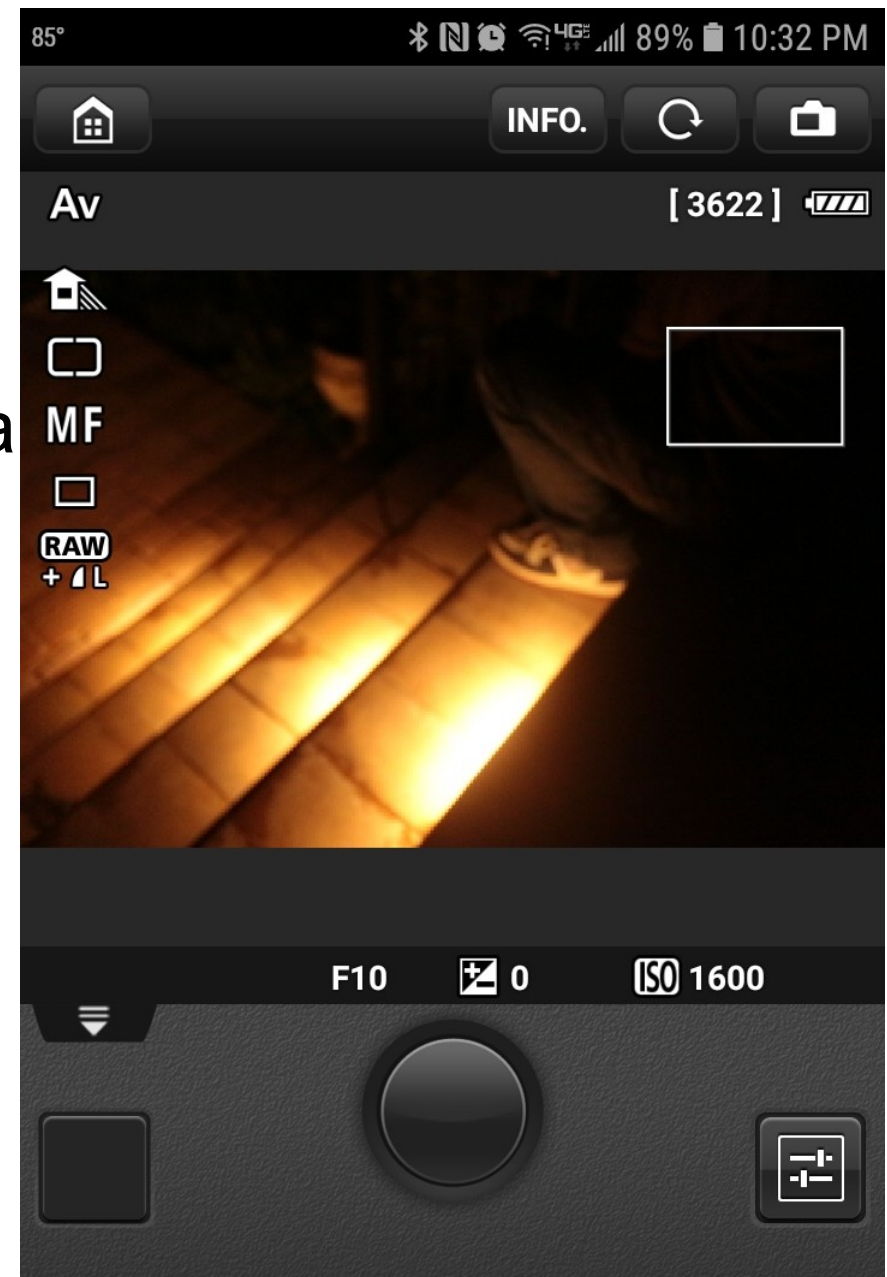
Transmitter has limited range; stay close to camera.

System is not 100% reliable to trigger the shutter.



# WiFi remote control app

- Least expensive of the various options.
- Not available for every camera; camera must include a built-in WiFi transceiver, acting like a local router.
- Activating WiFi in camera drains the camera battery more quickly.
- Use a **smart phone app** to connect to the camera WiFi transceiver and trigger the shutter.
- Often a noticeable delay to trigger the shutter.



# Infrared (IR) remote controls

- Not available for every camera.
- Works on line of sight only; you aim it at the camera's built-in receiver.
- Camera's built-in receiver is usually on the **front of the body**, so the remote can be used for selfies.
- Difficult to use when you do ***not*** want to appear in the photo, especially with wide angle lenses.
- Camera responds quickly to the remote.

***The Samsung Galaxy S5 phone and Samsung tablets from that same time frame included an IR output. At the time, apps were available to use that IR output for camera control.***

**PREPARATION  
AND  
CAMERA OPERATION**

# Preparation Check List for the night before

- **Install a fresh blank camera memory card**, possibly bring a spare too
- **Recharge camera battery**, possibly bring a spare too
- **Replace or recharge all other batteries** (smart phone, wireless receiver and transmitter, infrared remote control, external strobe flash)
- **Pack** camera, lens, tripod + mounting plate, shutter release device (cable, smart phone, wireless r+t, infrared remote control)

# Recommended camera settings

- **Sensitivity (ISO):** 50 to 100
- **White Balance:** set to **Incandescent (3200K)**  
**K=Kelvin**
- **Shutter speed:** 4 seconds initially, or Bulb  
Bulb= stays open as long as you hold the shutter open. Some shutter cables include a lock for holding it open.
- **Aperture:** f/13 initially.  
Use smaller aperture (e.g., f/16) if photos seem too bright (white instead of color in streaks).  
Use larger aperture (e.g., f/11) if photos seem too dim.

Change shutter speed to at most 2 seconds during rapid-fire finale.

# Use Manual focus

- ***Auto focus does not work fast enough*** to determine that fireworks are far away. Each burst appears, expands and disappears before the camera can make an auto focus decision.
- On SLRs, the switch to disable auto focus is usually on the lens close to the SLR body.
- Set focus to Infinity manually for aerial fireworks. The relatively tiny aperture buys you plenty of depth of field, meaning the range of sharp clear details from near to far.

# Operational specifics

- Watch for a rocket launch to go up
  - Open the shutter
  - Bursts appear
  - Close the shutter (if using Bulb)
- 
- Early in the show, during slow launch rates, it may be easier to get multiple bursts in one photo by using Bulb rather than a fixed shutter speed.
- 
- During the **finale**, use 2 second shutter speed to avoid overexposure.



*July 4, 2008, Falls Church VA,  
Canon EOS 40D, Canon EF  
28-135mm lens @28mm, f/22,  
4 seconds, ISO 100*

**DC REGION  
AERIAL FIREWORKS SHOWS**

# National Park Service aerial fireworks near the National Mall 2021-23

- Start Time 9:09 PM. Total show duration is usually 15 minutes, this year 30 minutes.
- In 2021, launch site for aerial fireworks was *not* at the usual spot at the World War II Memorial on 17<sup>th</sup> Street NW.
- The NPS contractor instead used ***two launch sites*** and ran a coordinated show.
- I decided on the spot to shoot only photos of the left-hand bursts, since those appeared between the Washington Monument and the Lincoln Memorial from my viewpoint.
- First prize, Hometown Pride class, APCUG 2021 Digital Photo Contest



*Canon EOS 6D, ISO 50, f/11,  
3.2 seconds, Canon EF 28-  
135 IS lens @ 50mm.*

# **Where to shoot photos of the National Park Service aerial fireworks on July 4**

**Steps of the Lincoln Memorial**, for reflections in Tidal Basin, using a wide angle lens. This site will be crowded!

**Potomac shoreline in Virginia between Roosevelt Island and 14<sup>th</sup> Street Bridge**. For water reflections and silhouettes of watercraft, using a wide angle lens and set up at the **top** of the slope.

**Steps of the Jefferson Memorial**. Not sure if NPS will allow tripods on the steps. Elevation is needed to get photos including water reflections.

**Gravelly Point Park**, north of Reagan National airport, with the 14<sup>th</sup> Street Bridge in the foreground.

# Where to shoot photos of the National Park Service aerial fireworks on July 4

- **Freedom Plaza** and other high points in Rosslyn.
- The **Iwo Jima Memorial statue** was not on a straight line to the two launch sites in 2021. I used a 200mm lens there in 1985.
- Since roughly 2005, the NPS police have established perimeter at the Iwo Jima Memorial and used entry points to search bags. The police confiscate alcohol, weapons etc.

# Where to shoot photos of the National Park Service aerial fireworks

Watercraft tend to hang around just upriver from the 14<sup>th</sup> Street bridge (shown below) and the Memorial Bridge.



You can include  
watercraft silhouetted  
by the water reflections  
of aerial fireworks.

*July 4, 2018, Canon  
EOS 6D camera,  
Canon EF 28-135mm  
lens @50mm, f/14, 10  
seconds, ISO 50*



# One of my best from the Salute to America aerial fireworks on July 4, 2019

Just about 100 yards downriver from the Memorial Bridge. The fireworks were launched simultaneously from a mile-long line of flatbed trucks on the DC side.

This Phantom Fireworks show lasted half an hour, but the smoke was **blocking** much of the show after the first five minutes due to an accelerated launch rate.

*July 4, 2019, Canon EOS 6D camera,  
Canon EF 17-35mm lens @31mm, f/13, 4 seconds, ISO 50*



# June 20 news

- I woke up, looked at the WTOP news app, and found this less-than-ideal news from the US Coast Guard.

## Potomac, Anacostia rivers to close to boaters for Fourth of July weekend

Valerie Bonk

June 18, 2026, 10:59 AM



Boaters planning to head to the D.C. area on 4th of July will have to plan ahead for some major closures of local popular boating spots.

The [U.S. Coast Guard announced](#) that large sections of the Potomac River and the Anacostia River will be closed to recreational boaters during the holiday celebration.

The closures include all waters of the Potomac River from the Francis Scott Key Bridge to 200 yards south of the 14th Street Bridge from 8 a.m. on July 2 through 6 a.m. on July 5.

# Building illumination notes

- The **US Capitol West Face is lit by TV lights during this event**, but the East Face is lit by the normal mercury vapor lights, installed in the 1970s, which make the building look green.
- The **Washington Monument lights** in the 80s and 90s were on for the first few minutes and then are turned off by NPS for most of the show. The lights were turned on again to signal the end of the show.
- The Monument lights appear to be on, maybe not their brightest, throughout the 2020s shows. Ditto for the Lincoln Memorial.

# More good ideas for photo sites from Associated Press photographers

<https://wtop.com/fourth-of-july/2019/06/donations-make-trumps-july-4-salute-fireworks-show-dcs-biggest-ever/slide/1/>

Scan the QR code  
to see the web page



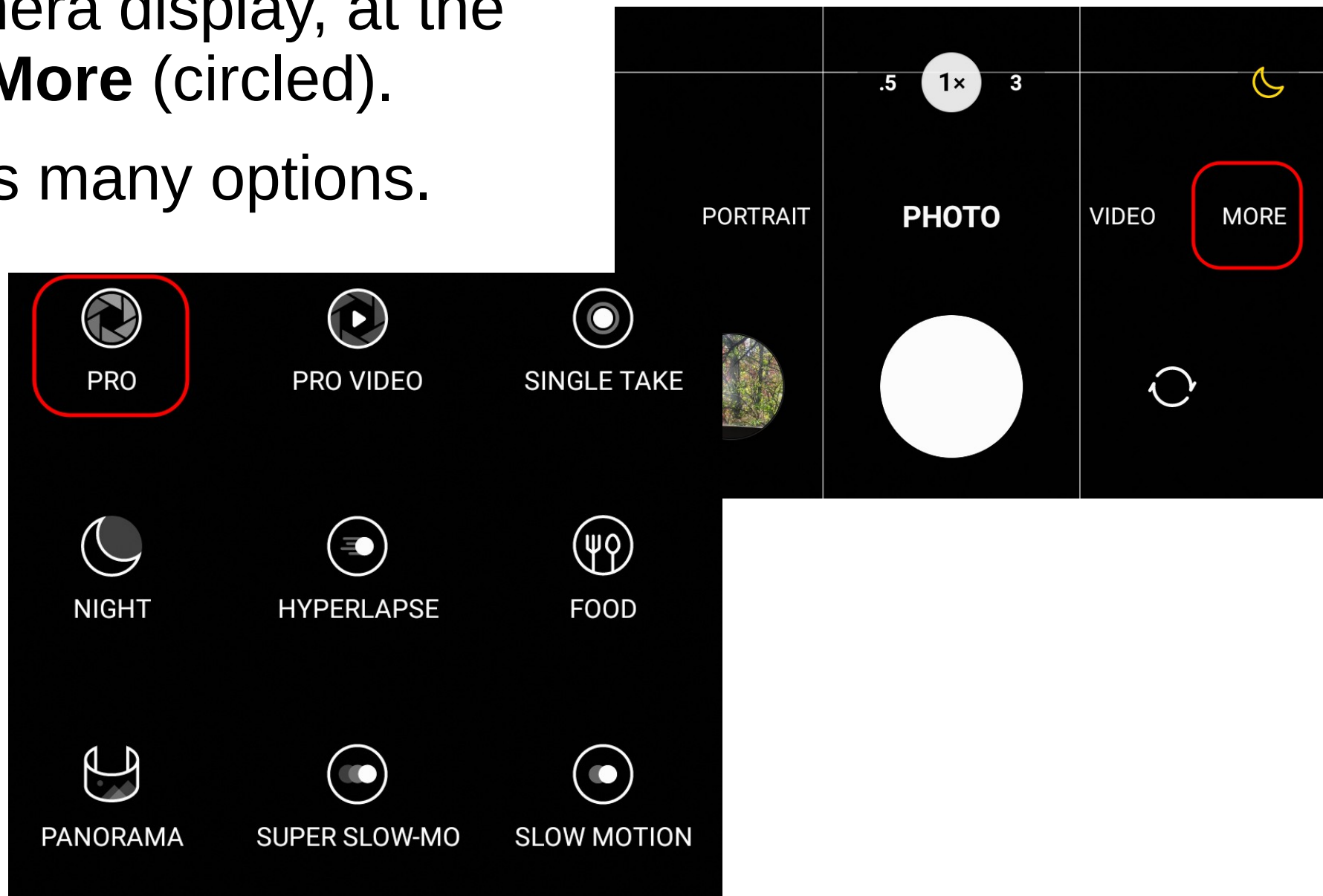
The AP photo slide show appears in the middle of the article. The photos were shot from various locations around DC on July 4, 2018 by Associated Press photographers. The article is still online as of 6/11/2024.

# Samsung Android smartphone photo techniques

- This section was developed with a Samsung Galaxy S20 smartphone now running Android 13.
- The same camera app behaved the same way with when the smartphone was running Android 11 and 12.
- Using Pro mode in the smartphone camera app, you can control the color balance, the ISO, and the shutter speed.
- You cannot control the aperture because the aperture range is very minimal, less than 2 stops.

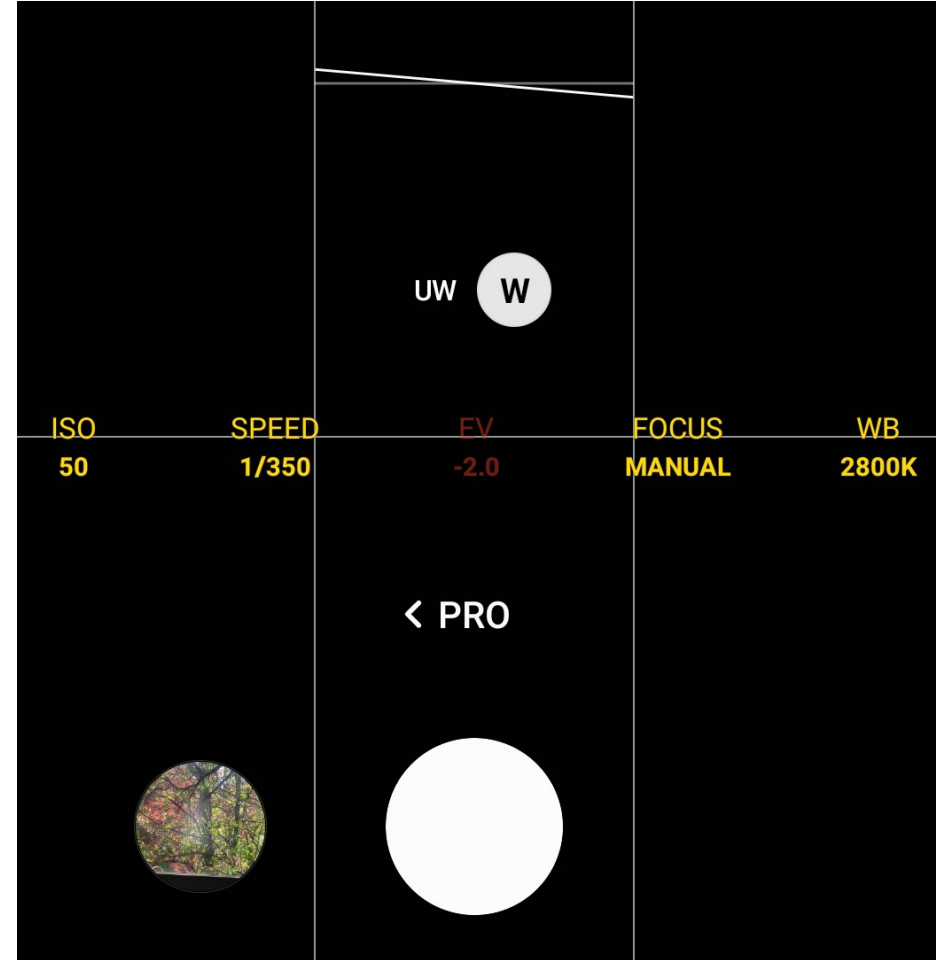
# How to find Pro Mode

- In the default camera display, at the bottom right, tap **More** (circled).
- The screen shows many options.
- Tap **Pro** (circled).



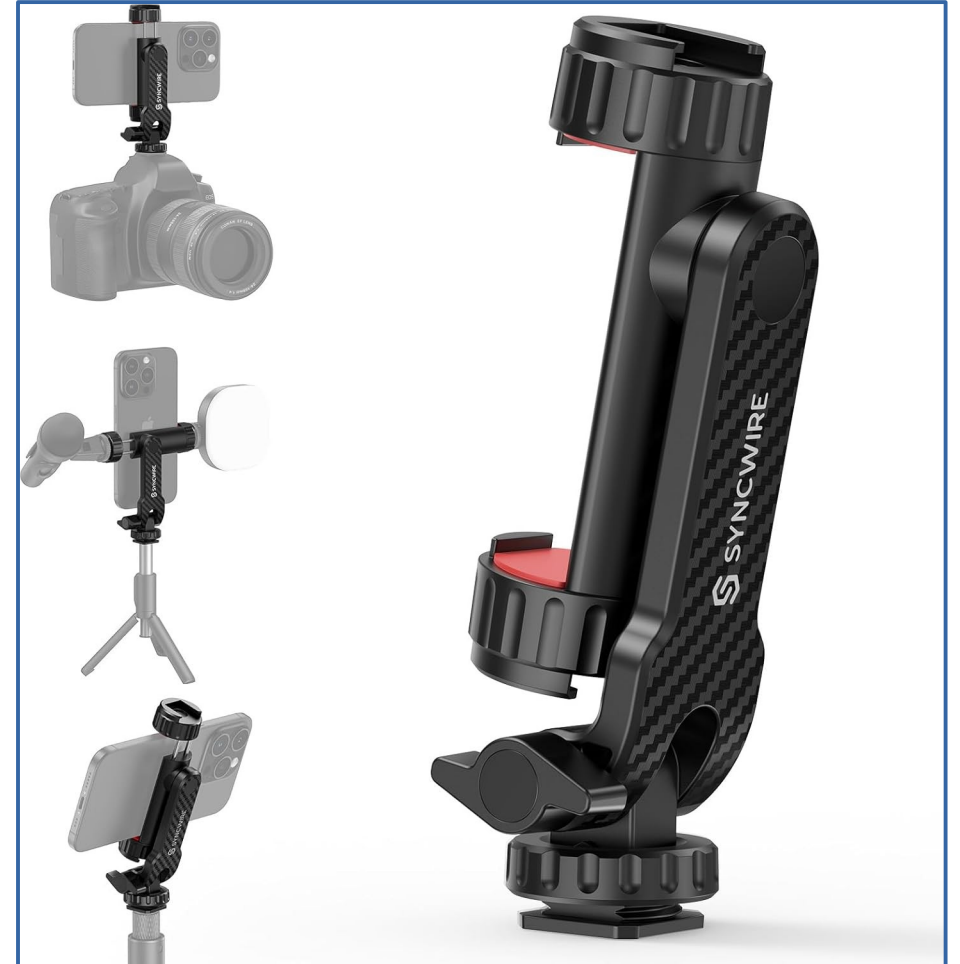
# Using Pro Mode

- Tap a yellow setting to adjust the setting with a slider control.
- ISO lowest setting is 50.
- Shutter speed ranges up to 30 seconds. I use 10 seconds at the start, 4 most of the time, and 1 second during the finale.
- WB I set to 3200K. My DSLR says that incandescent is 3200K.
- I focus manually. The range 0 to 1. I use 1 if the fireworks are more than 50 feet away.
- Above the UW and W lens choices, the tilted line is a level indicator.



# Holding the phone steady

- Like any camera, the phone should be held steady while taking photos with such long shutter speeds.
- Most selfie stick phone holders have a standard 1/4th inch diameter threaded socket on the bottom, which can be attached to a tripod.
- This SYNCWIRE adapter typically sells for \$10 on Amazon.



# Three words guide your prep for July 4, 2026: practice practice practice

- In **1976, the 200<sup>th</sup> anniversary** of Independence Day, the National Park Service aerial fireworks show on the National Mall was **2 hours long**. I shot three 36-frame rolls of tungsten Ektachrome during that show from the Jefferson Memorial plaza. That was a magical evening.
- In **2026, the 250<sup>th</sup> anniversary**: as of now the NPS show is said to be **30 minutes duration**. The intent, as is customary for the Phantom Fireworks contractor, is to launch five times the usual number of aerial bursts in only twice the normal duration. Smoke blocked the view after the first few minutes during their shows in 2018 and 2019.
- If you can influence the weather, then beg for high speed breezes aloft, or hope for a much longer duration such as 75 minutes. Otherwise, smoke may obscure fireworks bursts after the first few minutes.

# Impeccable Timing!

- While I was updating my presentation on Monday, June 15, this first-ever postcard ad from Phantom Fireworks was delivered.
- Phantom retail stores have a sweetheart deal with the Pennsylvania state government. The Phantom stores in Pennsylvania can sell fireworks that are not legal in the state to anyone with a drivers license from out of state.

**ANY \$54.99 FIREWORK ITEM now only \$19.99**

0 38269 90495 8

**\$179.99 ROLLING THUNDER ASSORTMENT now only \$79.99**

0 38269 90495 1

**ANY \$99.99 FIREWORK ITEM now only \$39.99**

0 38269 90494 4

**LIMIT ONE. WHILE SUPPLIES LAST. VALID THRU 07/12/26**

MUST PRESENT THIS PHYSICAL COUPON. SELECTION VARIES BY LOCATION. EXCLUDES ASSORTMENTS. VALID IN PHANTOM FIREWORKS SHOWROOMS ONLY. NOT VALID ON CURBSIDE PICKUP ORDERS.

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# Shooting video of aerial fireworks

- For at least twelve years, consumer video recorders have included a fireworks video mode. My Canon Vixia HF R800 camcorder is one. Its fireworks video mode works very well for aerial shows.
- The poor microphones built into camcorders and cameras do not capture the low frequencies from fireworks. Add a good quality mic if you want good sound for your video.
- Keep in mind that the speed of sound in air can cause the sound of fireworks to be out of sync with the video of fireworks.
- There is roughly a one-second audio delay for each 1,000 feet of distance from the launch site. The Marine Corps Memorial (Iwo Jima) Statue is roughly 10,000 feet from the launch sites used in recent years. So the sound is delayed by about 10 seconds.

# Aerial fireworks on other days around DC, 2026

- **Normally, each show is 10 to 15 minutes long.**
- **Reston: Lake Fairfax, June 27, 9:15 PM.** Rain date June 30. Fee for parking. Aerial drones with lights replace fireworks.
- **Lorton Workhouse, June 27, 9 PM.** Corner of Ox Road (Rt 123) and Workhouse Road. The big parking lot fills up early. The lot does include restrooms or porta potties. Here, I can help with your camera controls.
- **Vienna: July 2, 9:30 PM,** Yeonas Park. Relatively easy to sit close to the launch site. Parking can be a challenge. Park includes restrooms.
- **Mt Vernon plantation: July 3 and 4, 9:30 PM.** Admission fee charged.
- Lorton and Vienna are my favorite warm-up shows.

# Aerial fireworks on other days around DC, 2026

Before and after July 4 in **Maryland**:

<https://www.visitmaryland.org/article/4th-of-july-celebrations>

Includes a long list of shows on July 2 and 3 around the Eastern Shore.



- More before and after July 4 in **Loudoun County VA**:

<https://www.loudoun.gov/fireworks>



- **Alexandria, July 11, 9:30 PM**: celebrating the 277<sup>th</sup> anniversary of the founding of Alexandria. At Oronoco Bay Park (100 Madison St).

<https://www.alexandriava.gov/Birthday>



# Fireworks up close and personal

- Incandescent white balance is usually not necessary, because blue light scattering is minimal when camera is close to the fireworks.
- Try using a strobe flash to freeze the subject, and a long exposure to catch the fireworks spray. Set white balance to Strobe.



*Shot on film, exposure data not recorded. Shutter speed was 2 seconds.*

**A Second Look with  
a black background**









**THE END**