

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,
Association of
Personal Computer
User Groups (APCUG)
Photo Contest, 2018*

Presentation by John Krout, January 14, 2022
for OLLI Photo Club

Agenda:

Technical fundamentals

Photo equipment needed

Preparation check list for the night before

Camera settings

Operational specifics

Petalpalooza aerial fireworks

July 4 National Park Service + Salute to America
aerial fireworks launch sites and photo sites

Other aerial fireworks shows during July

Photographing personal fireworks at home

*Lorton
Workhouse,
June 29, 2019,
Canon EOS 6D,
Canon EF 28-
135mm lens
@135mm, f/9,
10 seconds,
ISO 50*



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 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.

Similar photo techniques work for **personal fireworks in your neighborhood.**

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



Giving credit where credit is due

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.

He was so eager to get involved in WWII that he hitchhiked to Toronto to join the Canadian RAF in the late 30s. The media made the war sound glamorous.

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

He generously supported my initial interests in photography at age 10 by giving me a Kodak Brownie, which I lost on a New York City subway car 18 months later. Over time, he gave me a Polaroid Swinger, a Petri rangefinder 35mm pocket camera, a Yashica MAT-124D twin lens reflex, and finally an Asahi Pentax. I too became a high school yearbook photographer.

Giving credit where credit is due

In the summer of 1974, 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 year, I shot photos of the NPS 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 because I have never lost my enthusiasm for photographing fireworks, and because my fireworks photos have won contest prizes.

TECHNICAL FUNDAMENTALS

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.

In 2020, during the pandemic, I shot the NPS National Mall show from the top of the Ballston Mall parking garage. That was more than 20,000 feet from the launch site, and I could not even see any blue or green in the fireworks.

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

The remedy:

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

Film: use Tungsten film, or **daylight film and a conversion filter 80A**.

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

This 2005 Iwo Jima Memorial 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.

Lens: wide angle 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. Tripod height at least 50 inches. 65 inches is preferable. Expect to spend at least \$30.

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.

SHUTTER RELEASE OPTIONS

Shutter release cables

This is what I use.

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.



Wireless 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

Higher priced than cables, at least \$45



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.

Remote uses a battery; buy a new battery, or charge the rechargeable battery, the night before.

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

WiFi remote control app

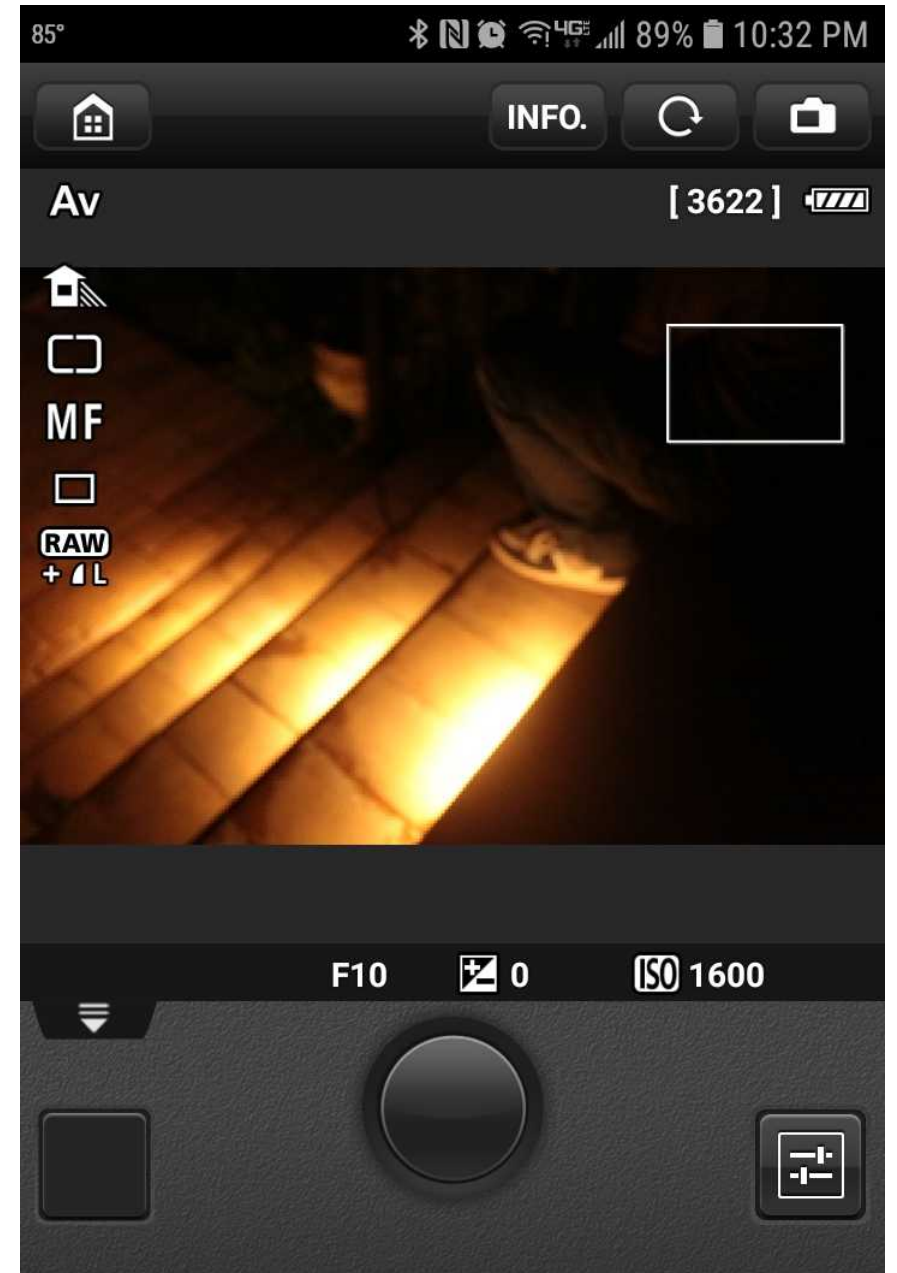
Least expensive of the various options.

Not available for every camera; camera must include a built in WiFi transceiver.

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.



**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**
- **Shutter speed:** 4 seconds initially, or Bulb
- **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 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.

Operational specifics

- Wait for a rocket launch to go up
- Open the shutter
- Bursts appear
- Close the shutter (if using Bulb)

Early in the show, 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

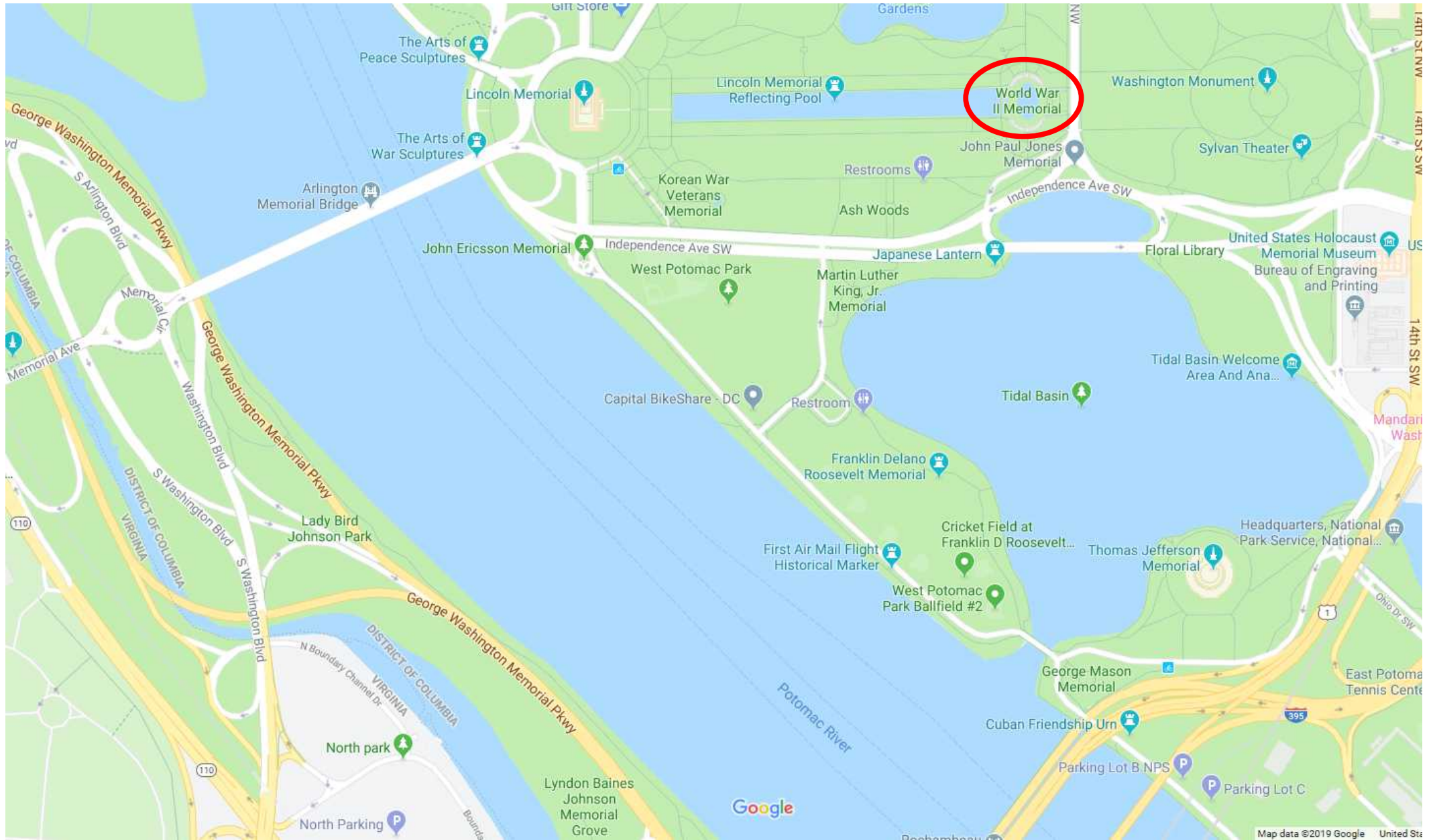
**DC REGION
AERIAL FIREWORKS SHOWS**

National Park Service aerial fireworks near the National Mall 2021

- Launch point for aerial fireworks was *not* at the usual spot, the World War II Memorial on 17th Street NW.
- The NPS contractor used ***two launch sites*** and ran a unique 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.
- Total show duration is usually 17 minutes.



Canon EOS 6D, ISO 50, f/11 3.2 seconds,
Canon EF 28-135 IS lens @ 50mm.
First prize, Hometown Pride class, APCUG
2021 Digital Photo Contest



World War II Memorial

Lincoln Memorial

Washington Monument

The Arts of Peace Sculptures

Lincoln Memorial Reflecting Pool

John Paul Jones Memorial

Sylvan Theater

Arlington Memorial Bridge

The Arts of War Sculptures

Korean War Veterans Memorial

Restrooms

Independence Ave SW

Ash Woods

United States Holocaust Memorial Museum

John Ericsson Memorial

Independence Ave SW

Japanese Lantern

Floral Library

Bureau of Engraving and Printing

West Potomac Park

Martin Luther King, Jr. Memorial

Tidal Basin Welcome Area And Ana...

Capital BikeShare - DC

Restroom

Tidal Basin

Franklin Delano Roosevelt Memorial

Mandan Wash

Lady Bird Johnson Park

First Air Mail Flight Historical Marker

Cricket Field at Franklin D Roosevelt...

Thomas Jefferson Memorial

Headquarters, National Park Service, National...

West Potomac Park Ballfield #2

George Mason Memorial

East Potoma Tennis Cente

North park

Cuban Friendship Urn

Parking Lot B NPS

Parking Lot C

Lyndon Baines Johnson Memorial Grove

Google

Map data ©2019 Google United States

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

US Air Force Memorial hillside is generally too steep for tripods and soccer chairs. Shoot photos from the top with a telephoto lens. USAF Band Concert started at 8 PM there in 2019.

North of the Memorial Bridge Traffic Circle, close to shore, with the bridge leading to the fireworks around the Lincoln Memorial.

The **Iwo Jima Memorial statue** was not on a straight line to most of the launch sites in 2019. Since roughly 2005, the NPS police have established perimeter there 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 up just upriver from the 14th 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.

This show lasted half an hour, but the smoke was **blocking** much of the show after the first five minutes.

July 4, 2019, Canon EOS 6D camera, Canon EF 17-40mm lens @31mm, f/13, 4 seconds, ISO 50



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 are turned on again to signal the end of the show. The lights appear to be on, maybe not their brightest, throughout the 2021 show.

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



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 1/8/2022.

Aerial fireworks on other days around DC, 2019

- **Reston: June 29**, 9:15 PM. Rain date June 30.
- **Lorton Workhouse, June 29**, 9 PM. Corner of Ox Road (Rt 123) and Workhouse Road.
- **Gaithersburg: June 29**, time not provided, Bohrer Park, 512 S. Frederick Ave, Gaithersburg. Rain date June 30
- **Mt Vernon plantation: June 29 and June 30**, 9:30 PM. Admission fee charged.
- **Bowie: July 2**, 9:15 PM, Prince George's Stadium.
- **Chantilly: July 3**, 9:15 PM, South Riding Community Center, 43237 Golf View Drive, Chantilly

POST-JULY 4

- **Ashburn: July 5**, 9:15 PM, Ashburn Village HOA, 44078 Cheltenham Circle, Ashburn
- **Laurel: July 6**, 9:15 PM, at the lake.
- **Lansdowne Resort: July 6**, 9:00 PM., 44055 Woodbridge Parkway, Leesburg.
- **Alexandria, July 13**, 9:30 PM, Oronoco Bay Park, 100 Madison Street, Alexandria

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.*

Prepare for July 4, 2026: Practice practice practice

- In **1976**, the 200th 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.
- In **2026, the 250th anniversary**, the NPS show may be similar in scale. ***Practice in the coming years to be ready for the big one.*** I will likely shoot more than 300 digital shots for a 2 hour show.

**A Second Look with
a black background**









THE END