

### Equipment you Require

*- Untracked Photos-*

- Tripod
- Camera with adjustable settings
- Remote trigger for camera
- Ability to manual focus and set ISO
- Lens 16-20mm Portion of lens -Full Frame camera
- Lens 10-12mm Lens on cropped sensor Cameras
- F4 or smaller (1.4, 1.8, 2.8, 4.0) available
- No Filters !!
- A cellphone you can put apps on
- A Level in the hot shoe is very useful !
- Headlamp with red filters & \or a very small light - *Useful*
- A lens warmer can be useful to stop condensation




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### Software Used to Plan -Phone

- **Photopills** (\$10.99 Once) **MUST HAVE**  
 -Provides preview of where in a scene the milky way/moon/sunrise-sunset will appear and at what time in relation to the object, at the scene you pre-visuallize the MW over the object
- **Planet Pro** (about \$7.00/year) Really Should Have  
 Allows you to pre-plan best day/time to shoot including angle and times moon & MW rises/falls  
 It also provides previews of where the MW will be vs the object/site VERY IMPORTANT APP

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### Software (computer)

- \*\* **SEQUATOR** (Free) *Must Have*  
*If shooting multiple exposures*
  - \*\*Needed to synchronize multiple exposures and often removes airplane light trails  
*Starry Landscape Stacker for MAC*
- For processing multiple shots same exposure and location. The total adds to the exposure thereby reducing noise and any streaks not in all the images

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**Weather Software (phone)**

"Metoblue" is helpful, of course Weather network or weatherCan can be useful as well.  
 Mostly looking for lack of cloud cover  
 Of Course just watch weather report and opening the door works best as the final check

"Dark Sky Map" can help to find just how light polluted an area is but don't give up

Fun just to see what is in the sky- free  
 SKY VIEW, STAR WALK and SKY TONIGHT

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First Find Locations

You will always shoot towards the South

Milky Way rises SE first, moves to SW

Best Time of Year is March to September  
 BUT

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**1-Pre-Plan Locations**

- Always keep an eye out
- Look for old buildings, dead interesting trees, old machinery, abandoned buildings and ....
- The Milky Way Core rises SE in the early season, swinging to SW later
- My car has a compass and I use that all the time (watching what is South as I drive)



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### And now the date arrives

- Be early enough to set up allowing for the confusion of working in the dark
- Use photopills
  - First make sure you have set **your** location
  - Use Night AR to find the MW, the time for the core and the place to set your tripod
  - Since it doesn't change, you should have already checked the exposure for your camera and lens Combo – Likely 7-10 seconds. Remember that !

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### Set Location/Date on PhotoPills



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### On Site, Setting Up

- Camera is on manual
- Focus on manual, NO image stabilization
- NO filters of any kind
- On your camera you have an infinity mark
- GUESS WHAT – that is NOT infinity
- It is likely just before that mark

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### Setup

- Camera on tripod and *leveled*, focal length 16-20mm & f stop set to F4 or higher
- Set your ISO high like 6400 for a test shot
- Use back screen and the magnify option to largest (mine is x10), move the camera around the sky until you find a star
- Move to out of focus back to pin-sharp and note where the focus point on the lens is. It will likely NOT be on infinity
- DON'T CHANGE THAT FOCUS POINT all night –Could tape it
- Take a shot and again enlarge to check the star focus
- This shot is not what you want to capture, just for the focus and to see what you will capture in this shot
- Change where the camera will capture and test again

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### Setup

- Now with the camera set for what you want in the final image using the back screen, but hard to see
- Still with the ISO high take about a 15-30 second exposure
- This is to actually see/confirm what will be in the actual capture. May still have to reset position more than once to get what you want in the end. Don't forget you can do panos (horizontal or vertical) but the tripod and camera had to be level or joining will be poor

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### Ready, Set, GO

- You may wish to put tape over the viewfinder
- Tripod should be stable with no extension on the top portion
- You should have preset your f stop to f4 or higher, the mm to between 16 to 20mm
- Time to expose is from Photo Pills "Spot Stars"
- In manual mode, set the exposure as above
- ISO for F2.0 to 2.8 could use 1600-3200, for f4 will likely need to use 3200-6400

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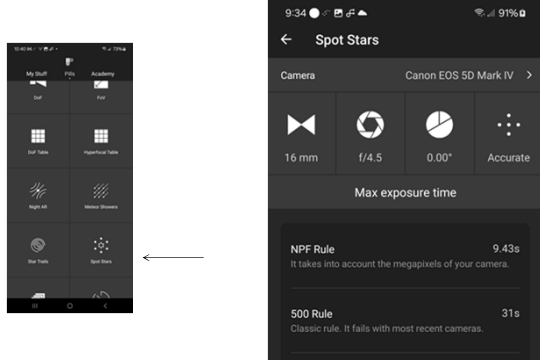
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## Photo Pills –Spot Stars



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Clouds don't mean stop  
You can use a pano to add width or height

Still do multiple exposures, then change the area captured and again multiple sets for the Pano

Once you have used sequator to blend each set separately, I use photoshop to create a pano just like any pano set

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I often Cut-Out the foreground, it is then placed at the top of the stack of images  
Then I can work on the sky separately



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### How to cut-out a foreground Photoshop

- 1 –Click on "Select", then "Sky"
- 2 – again "Select" then "Inverse"
- 3 – Press "Q" to enter quick mask
- 4 – Press CTRL/CMD "L" to bring up a Quick Mask levels layer. Move the right and middle sliders toward each other noting the mask gets tight to the object. When happy click "OK" and then "Q" to exit the Quick mask
- 5. Refine the mask if needed, then Copy, Paste and the new layer is the object only . As you process move this layer to the very top of the stack

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### Replace Sky

Also from Richart Tatti, Step behind the bins, shoot the Milky Way, Finish it and do a sky replacement for the image of the bins you worked on.

It is my shot same night, both the bins and the sky but before I knew I could have cut-out the bins. In Photoshop you have to add that sky to the sky replacement under "EDIT" "SKY REPLACEMENT"

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### Process your raw and convert

- Sequator will work with RAW files BUT, any adjustments you made will be lost
- Convert them to TIFF files

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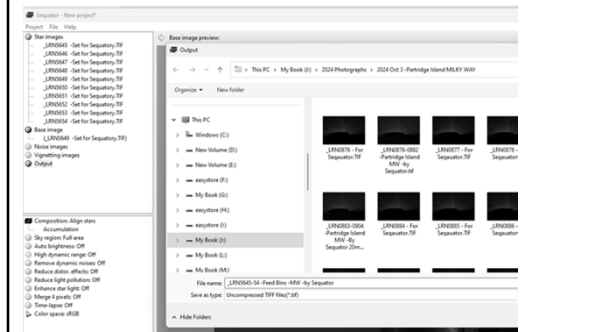
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Converted, Drag set to Sequator  
Click on Output and type what and  
where to be sent



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Next click on "Composition"



Then Align Stars  
Click "Select Best Pixels"  
Click on "Freeze Ground"

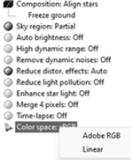
Then Click on "SKY REGION: Full Area"  
And Paint the sky and close to objects

Last click on "Color Space:sRGB and I change to  
Adobe RGB

Bottom, click on "Start" and wait

When completed, Click on "CLOSE"  
Then exit the program and select  
"Exit Sequator without Saving  
Current Project", click yes

It will be where you sent it




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Yippee !!!

- You have now completed either a single shot capture with a little raw or lightroom adjustment
- Or a multiple exposure set turned into one by Sequator
- They still don't look that great –DO NOT BE DISAPOINTED !!
- The detail IS there and help is coming to process them

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### Review

- Planning is the key, as is arriving early so you are able to take your time to make it right
- Again, take a minimum of 10, but 20 is even better, and that is all you need
- Try a different position to place the Milky Way over or beside the target
- Consider either vertical or horizontal Pano Sets
- AND THAT IS A WRAP –UNLESS -----

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### Richard Tatti

- Much of my success is due to ideas and training from Richard, then I adapt
- His instruction is clear and easy to understand
- More important his videos are ALL available for free !!!
- His NIGHTSCAPE series is outstanding !!
- I use his website but view the videos on YOUTUBE because---

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### Copying YouTube Videos

- I use the following to capture those videos I need to learn from, and then view at my leisure



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Photographers I have learned from

1. Richard Tatti – His entire Nightscapes series are free !!
2. PhotoPills video tutorials -free
3. Dan Zafra –Some free good instruction
4. Adam Woodward –I have his book but have moved beyond it now
5. Tim Shields –some free videos

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