

Mission to Iwo Jima: Recording the Solar Eclipse of July 22, 2009 by Ernie Piini

The solar eclipse of July 22, 2009 offered me a unique opportunity to see another eclipse and to pay homage to my brother's war-time service aboard an aircraft carrier during WWII. On February 21, 1945 his ship was sunk in the cold waters off the coast of the island of Iwo Jima by two Japanese suicide planes that continued to shoot at the survivors in the water. Enos Piini was one of 605 crew members who were miraculously saved after many terrifying hours in the darkness. My quest to go to the vicinity of Iwo Jima to see this special total solar eclipse, the longest of this century, was determined by three factors:

1. To witness from within the Moon's shadow my 27th, and daughter Elaine's third, total solar eclipse.
2. To observe my third viewing of an unusually long eclipse cycle, that of the Saros #136 family.
3. To pay homage to those who didn't survive the sinking of my brother's aircraft carrier, and to express my gratitude for his survival.

Initially we were to fly to the Island of Iwo Jima on the morning of the eclipse and then fly back to Guam for a one week stay. We hoped to observe the eclipse from Iwo Jima, but on October 16, 2008, the Japanese Foreign Ministry cancelled our island visit due to problems created by multiple eclipse groups.



Elaine with
camcorder stabilizer

One recourse was to sign on to Roy MayHugh's ship excursion that planned to cruise to a location east of Iwo Jima at the time of maximum duration and view the *Eclipse of the 21st Century* from there. We did this on November 10, 2008. This meant it would be my first time to observe and photograph an eclipse from on board a ship and not from terra firma. Redesigning my equipment became a necessity. So instead of using my 3-Way camera telescope with special coronal streamer filters, perfected on previous eclipse trips, I had roughly seven months to design and build a stabilized mount for Elaine's camcorder and my digital camera.

The camcorder stabilizer consisted of a bearing assembly using a 3-inch wooden croquet ball cut in half to form the upper bearing. This was attached to the camcorder mount above and a weight extension bar below. The lower bearing was made of Teflon to provide smooth mating and movement of the upper assembly. This bearing rested on a platform attached to a tripod. At the bottom of the weight rod was a 12-inch diameter plate where three one-gallon jugs, filled with water, provided the needed 24 pounds of stabilizing weight.

The camcorder mount had to be adjustable to an awkward elevation of up to 85 degrees — where the Sun would be at eclipse time. A manual up-down (Declination) adjustment was made using 1/4-20 threaded rod. Fast and slow Right Ascension capability was provided using two dc motors. Tracking the Sun was performed with the aid of a control box.

Our results were quite promising from our first real test. Total angular movement during the eclipse was less than 1/2 degree — about the diameter of the Sun. Another try at the design will most likely reduce movement close to zero.

After arriving on the coast of China, east of Beijing, we boarded the Italian cruise ship *Costa Classica*. It made stops on the Southern Korean Island of Cheju, and Kagoshima, and Kobe in Japan; the latter the victim of a deadly Earthquake in 1995 killing more than 6,000 people.



300 mm lens,
1/4th sec. exposure



Ernie & Elaine Piini

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On the morning of the eclipse, we were treated to our first view of Iwo Jima. The island is only 6 miles long and 2 miles wide. Mt. Suribachi, where the US flag was raised on February 23, 1945, loomed prominently into the clear blue sky. Our Tour Director Roy MayHugh's father, Bill, saw action there during the WWII battle. Roy and Bill were instrumental in getting the ship's captain to alter course and sail closer to the island for a better view.



The *Costa Classica* cruised in view of fluffy clouds on the horizon to a point 50 miles to the northeast for our encounter with the eclipse. During the viewing nearly 1,000 travelers and 300 crew members crowded the upper deck. Soon the jewel in the sky



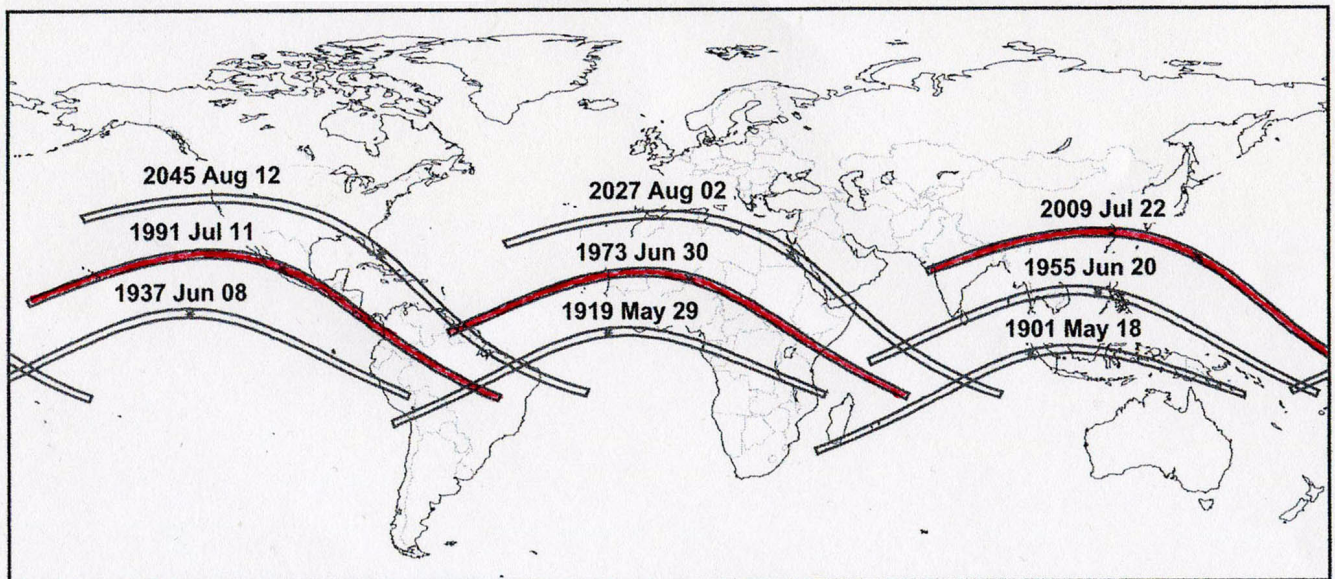
appeared, greeted with noisy approval from the observers. The eclipsed Sun was almost featureless due to a minimum of sunspot activity, and the horizon during totality was remarkable. The low-level clouds lined the distant horizon making this scene surreal! The best I have ever seen.



This eclipse was the third I have seen of the Saros #136 family. For you non-astronomer readers, the Saros cycle is a family of eclipses with a period of about 6585 plus 1/3 days (approximately 18 years 11 and 1/3 days), which can be used to predict future eclipses of the Sun and the Moon. One Saros period after an eclipse, the Sun, Earth, and the Moon return to approximately their same places but because of the 1/3 day approximately 120 degrees to the west (See diagram).

I have been obsessed with eclipses since I saw my first one from Mitla, Mexico on March 7, 1970. I had joined a Foothill College expedition to witness that event. The heavenly sight was so remarkable that I knew

Eclipses from Saros 136: 1901 to 2045



Fred Espenak and Jean Meeus, NASA

Eclipses Ernie witnessed are traced in red.

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I wanted to see many more. I have now made 27 adventures into the Moon's shadow. I have observed an eclipse lasting only 9 seconds and some over 7 minutes in duration. The exceptionally long eclipses belong to the aforementioned Saros family #136. There are approximately 36 Saros families currently active, each involving between 70-80 eclipses and spanning 1200 to 1400 years.

My first view of Saros #136 took place in Akjoujt, Mauritania on the African Sahara Desert on June 30, 1973. It lasted 7 minutes and 4 seconds, a long time for an eclipse event. For it I designed and build a special telescope with three camera ports to take advantage of the time to do many experiments. Of special interest for this eclipse was the flight of a prototype of the French built Concorde super-sonic transport. It chased the Moon's shadow across the African continent for an unprecedented length of 74 minutes of totality!

I saw the second eclipse of this same Saros family from San Jose del Cabo, Baja California, Mexico on July 11, 1991. (18 years, 11 1/3 days later) That was the *Eclipse of the 20th Century* with unbelievable coronal streamers and long pink prominences. It lasted 6 minutes and 53 seconds at the center line a little north of my viewing site.



**USS Bismarck Sea
loading aircraft for battle.**

My third view of this Saros family lasted 6 minutes and 39.4 seconds at the centerline north of our site east of Iwo Jima, but with our ship cruising and chasing the eclipse path (like the Concorde), we were able to extend our viewing to 6 minutes and 42.3 seconds, a gain of approximately 3 seconds.

As our cruise ship, the *Costa Classica*, turned and headed west towards Kobe, Japan, I walked to the stern to spend time near the area where Enos' carrier, the USS Bismarck Sea (CVE-95), was sunk during those terrible waning days of WWII. Fortunately, my brother survived the terrible ordeal of that long night, but 318 crewmen did not. My

prayers went out to all of them and to the thousands of others whose lives were sacrificed to capture that bleak island with its strategic airstrip which made possible for U.S. airplanes to reach Japan and hasten the end of WWII.

MISSION ACCOMPLISHED!



Enos Piini

The author wishes to thank Joe Heim for editing this article, and to Fred Espenak and Jean Meeus for the use of their Saros map.