

# OUR MISSION TO IWO JIMA: Recording the Solar Eclipse

By Ernest W. Piini



*Ernest Piini and daughter Elaine on cruise ship*

When humankind was in its infancy, a solar eclipse was an awesome and terrifying event. Total eclipses are caused when the moon moves directly between the sun and the earth, covering it completely to cast a shadow on earth. When the sun, the source of all life slowly disappeared, it was feared this would be permanent.

Now that we know much more about these astronomical events, we no longer fear them. But for astronomers, both professional and amateur, the wonder and fascination is still there. So it was for me and my daughter Elaine during our trip to the vicinity of Iwo Jima island for the July 22nd, 2009 total Solar Eclipse, the longest of this century.

Although our cruise was motivated primarily by the eclipse, my third long period family eclipse of Saros #136, I also wanted to see the island of Iwo Jima where my brother, Enos' aircraft carrier was sunk during WWII and to pay my respects to him and all the others who fought for our country in the Pacific.

My brother Enos was on board the aircraft carrier USS Bismarck Sea (CVE-95) when on February 21, 1945 the ship was sunk somewhere off the coast of Iwo Jima by two Japanese suicide

planes. Enos was one of 605 crew members who were saved after many hours in the cold waters being shot at from enemy aircraft.

Okay, you're not an astronomer and don't know what the term "Saros" means. The Saros cycle is a family eclipse cycle. It is a period of about  $6,585 + 1/3$  days (approximately 18 years 11 &  $1/3$  days) which can be used to predict eclipses of the sun and the moon. One Saros period after an eclipse, the sun, earth and the moon return to approximately the same places but approximately 120 degrees to the west.

A total solar eclipse is a rare event which happens on average of only about once every few hundred years from a given place on earth. On Wednesday, July 22, 2009 a total eclipse of the sun would be visible from within a

narrow corridor that traverses half of earth.

Starting off in India just after dawn, the eclipse could be seen across a large part of Asia before moving over southern Japan

and then off into the Pacific ocean. Improved means of transportation make getting to the site of these awesome spectacles an easier task. And so my daughter and I set out

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to view this eclipse, the third of the Saros #136 family from a ship off the coast of Iwo Jima island.

This was my first eclipse viewed from a moving ship which required developing a camcorder mount stabilizer for my daughter. It took most of six months to develop and it performed fairly well.

My very first eclipse was observed in Mitla, Mexico on March 7, 1970. I had joined the Foothill College expedition to witness this event. The heavenly sight was so remarkable that I knew then I wanted to see many more.

During my 27 ventures into the moon's shadow, I have observed eclipses lasting only 9 seconds and up to over 7 minutes in duration. The exceptionally long eclipses belong to the aforementioned Saros family #136. There are approximately 36 Saros families each involving between 70 to 80 eclipses and lasting around 1,200 to 1,400 years. By studying global maps of 20 year intervals, a Saros family is easily detected by its similar eclipse footprint repeated 18 years, 11 1/3 days approximately 120 degrees to the west. Astronomers are a patient lot.

My first time view of this Saros #136 took place in Akjoujt, Mauritania on the African Sahara Desert on June 30, 1973 which lasted 7 minutes and 4 seconds. For this event I designed and built a special telescope with three camera ports to take advantage of the large amount of time for experiments as eclipses go. Of special interest was the flight of French built Concorde prototype which



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chased the moon's shadow across the African continent to view an unprecedented 74 minutes of totality!

The second eclipse belonging to this same Saros occurred in Baja California on July 11, 1991. (18 years, 11 1/3 days later) This was the eclipse of the 20th century with unbelievable coronal streamers and long pink prominences. This eclipse lasted 6 minutes and 53 seconds at the center line to the north.

The third eclipse of this Saros family lasted 6 minutes and 39.4 seconds north east of Iwo Jima in a

fixed location. But with the ship chasing the eclipse path, unlike a Concorde aircraft, it extended the record to 6 minutes and 42.3 seconds.

Chasing solar eclipses, which allows one to see the world, is only a small part of my astronomical endeavors. Astronomy is the branch of Physics that studies celestial bodies and the Universe as a whole.

I love to design special purpose equipment and telescopes of many kinds. This also includes working on a Parabolic mirror for the Group-70 project. It is 72 inches in diameter and weighs approximately 2,300 pounds. It is known to be the largest amateur built telescope in the world.

One of my favorite projects was designing and building an 8-inch Newtonian telescope mounted on wheels so it is easily moved from its garage location out to my front yard observation area. I have used it also to provide star parties for our neighborhood. Star gazing has always been fascinating even for the layman.

As our cruise ship, the Costa Classica, turned around and began heading west towards Kobe, Japan, I walked to the rear of the ship to spend some time near where Enos' carrier was possibly sunk. Although my brother did survive the ordeal that evening, 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 strategic airstrip and the island of Iwo Jima.