Causes of the Sultana Disaster Still Studied by Professionals Today - By Jerry Potter

On May of 2000, my wife and I were invited to attend the 69th General Meeting of the National Board of Boiler and Pressure Vessel Inspectors held in Toronto, Canada. This international organization was created in 1919 to promote greater safety to life and property through uniformity in the construction, installation, repair, maintenance and inspection of boilers and pressure vessels. The National Board membership oversees adherence to codes involving the construction and repair of boilers and pressure vessels. Therefore, they were very interested in hearing the circumstances surrounding the Sultana disaster. This turned out to be a tremendous opportunity for me to spread the story of the Sultana on an international level.

Paul Brennan, Director of Communications for the National Board, read my book, "The Sultana Tragedy" and asked me to come to Toronto to give a speech to the 69th Meeting and to give an interview for a feature story on the Sultana in the National Board Bulletin, Summer 2000 issue.

The annual meeting was held May 15-18, 2000. The opening speaker on Monday was Jerry Lewis. The opening ceremony was very moving with the Royal Canadian Mounted Police Band marching into the auditorium to the sound of drum and bagpipes. The convention was held at the elegant and historic Royal York hotel. I gave my speech Tuesday morning for more than 150 engineers and inspectors. I never went into my opinions as far as the exact cause of the disaster but I did give the three possible scenarios, including sabotage, defective repairs and lack of water in the boilers. Afterwards, I asked those present to give their input as to what they thought the cause of the disaster was. It turned out to be a fascinating fifteen minutes. Most of the engineers and inspectors who make their living trying to determine the cause of explosions and disasters primarily agreed that the cause was probably the defective repairs done at Vicksburg.

It turned out to be a very rewarding experience for both my wife and I. Due to the efforts of the National Board, many people worldwide are now familiar with the Sultana and her tragic story.

What follows below is the interview with Jerry which did indeed appear in the National Board Bulletin. We are proud of you, Jerry, for doing such an excellent job, and grateful to you for taking the time out to do it. -Editor

Looking Back at the Sultana Steamboat Explosion

On this, the occasion of the 135th anniversary of the Sultana incident, the National Board Bulletin recently published an article titled "Construction of the western steamboats...was light and flimsy, making them little more than an orderly pile of kindling wood."

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necessity dictated that large numbers of soldiers be transported quickly to some impeding battle. When the *Sultana* steamed from Vicksburg, she was not taking the soldiers to some battle, because the war was over. Instead, the men were going to the north, where they would be mustered out the army and could return to their homes. There was no reason to place so many men on one steamboat. There were several steamers at Vicksburg that could have taken a portion of the men.

Further more, the middle starboard boiler on the *Sultana* was not safe and needed extensive repairs. The boiler was examined by a boilermaker at Vicksburg before the soldiers were loaded onto the steamer. The boilermaker told the captain and the chief engineer of the boat that extensive repairs were needed. Ultimately, the captain convinced the boilermaker to place a small patch on the boiler. Afterward, the repairman told the captain the repaired boiler was not safe. It is clear to me that the *Sultana* should never have been allowed to leave Vicksburg.

**Bulletin: How extensive were the inspection procedures during this period in history?**

Mr. Potter: Starting in 1838, the federal government attempted to regulate the safety of steamboats on the major river systems in the United States. Unfortunately, the early laws proved to be fairly ineffective. In 1852, Congress passed an act that greatly improved the safety of steamboat travel in the country. Two significant changes occurred under this act. For the first time, both engineers and pilots of steamboats were required to take an examination and be licensed. Furthermore, the Act of 1852 established a system of inspectors with wide-ranging powers. The Act established districts along the rivers which would have two inspectors per district along with a supervising inspector. One such district was located in St. Louis.

The inspectors for the St. Louis district examined the *Sultana* on April 12, 1865, while the boat was at St. Louis. After inspecting the boilers and the rest of the machinery of the *Sultana*, the two inspectors certified that "the vessel may be employed as a steamer upon the waters herein specified, without peril to
Mr. Potter: In addition, there were 100 civilian passengers 21 military guards and a crew of 85. Besides the human cargo, there were several tons of sugar, 97 cases of wine, 70-100 mules and horses, and 100 hogs on the boat. The strangest cargo on the steamer was the crew's pet, a large alligator house in a wooden crate.

Bulletin: Were there any signals of forewarning aboard the Sultana that might have indicated dangerous conditions prior to the explosion?

Mr. Potter: Something clearly happened between the time the Sultana left Vicksburg and her arrival at Memphis. History is silent on exactly what had occurred, but we do know that by the time the Sultana reached Memphis, J. Cass Mason, captain of the Sultana, confided in one of the prisoners that "he would give all the interest he had in the boat if it was safely landed in Cairo." It is obvious that Mason had to be concerned about the condition of the boiler because the boilermaker, after the repairs were made in Vicksburg, told Mason that the boiler was not safe. Unfortunately for him, as well as for many of the passengers aboard the Sultana, Mason told the boilermaker that he would have complete repairs done in St. Louis.

Bulletin: How old were the boilers on the Sultana?

Mr. Potter: The Sultana was built in January of 1863 in Cincinnati at the Litherbury Boat Yard. There were four huge high-pressure tubular boilers, built by Moore and Richardson of Cincinnati, measuring 18-feet long and 46 inches in diameter. Tubular boilers, not commonly found on steamboats of their era, were lighter in weight and smaller in bulk but were designed to generate more steam than the conventional type.

Bulletin: Was it ever determined what caused the bulging seam on the middle starboard boiler?

Mr. Potter: The only evidence as to the cause of the problem with the boiler is found in the testimony of R. G. Taylor, the boilermaker at Vicksburg, which he gave before the military commission convened by Major General C. C. Washburn. Taylor reported that his examination of the boiler of the Sultana indicated the boiler appeared burnt and that an inadequate supply of water was probably to blame.

Bulletin: What caused the fire to spread so rapidly after the boiler exploded?

Mr. Potter: In many ways, steamboats were not a very safe mode of transportation. The boats that traveled the river system across America faced many dangers, including snags and collisions with other vessels. But the greatest danger was from fire. The Sultana disaster is a perfect example of why a fire was such a deadly threat to steamboats. Within twenty minutes of the explosion aboard the Sultana, the entire superstructure was in flames. There were several major design flaws in steamboats of this era that made them dangerously vulnerable to fires. First, the construction of the western steamboat above the main deck was light and flimsy. Thin floors and partitions, light framing and siding, soft and resinous woods, the whole exterior dried out by sun and wind and coated with oil and turpentine from paint, all made the steamboat superstructure of that era little more than what one writer called an "orderly pile of kindling wood." Furthermore, often packed through the steamboat was combustible cargo. Placed in the midst of this "orderly pile of kindling wood" was a large furnace. And near the furnace were the four huge boilers.

The force of the blast completely destroyed the center of the boat, causing the overloaded decks to collapse like a house of cards. The blast blew the pilot off the boat and completely destroyed the steering mechanism. Pieces of flaming timber and burning coal were hurled like pieces of shrapnel throughout the boat. The fire that probably originated around the furnace and boiler area of the boat quickly spread upward through the wreckage of the superstructure. Unfortunately, many of the passengers aboard the Sultana were trapped in this wreckage. One survivor would later recount the horror of the burning wreckage when he wrote: "It was agonizing to listen to the beseeching of our comrade while we were so helpless. We could not escape from his hoarse cries, and cruel as it seems, we were relieved when death ended his horrible agony."
THE OVERLOADED SULTANA DOCKED AT HELENA, ARKANSAS ON APRIL 26, 1865

Bulletin: Were the boilers ever found and examined following the accident?

Mr. Potter: The Sultana burned down to her hull and finally sand beneath the flooded waters of the Mississippi River. In late May and June of 1865, after the flood waters had receded, salvagers boarded the wreckage. According to an article that appeared at the time in a Memphis newspaper, the remaining boiler was salvaged and taken to Memphis. Unfortunately, I have been unable to find any record as to what happened to that boiler. It was also reported that the other three boilers were "blown to atoms."

Bulletin: There were a number of different theories on the accident. What, in your person opinion, was the specific cause?

Mr. Potter: There were many theories at the time of the disaster as to its cause. The immediate reaction was to blame sabotage, though this was, for the most part, discounted. The other theories were: lack of water in the boilers; design flaws; and the inadequate repairs done a Vicksburg. My examination of all the evidence has lead me to believe that the boilers, in all probability, had sufficient water in them at the time of the explosion. I am relying upon the testimony of Samuel Clemens (not the noted author), the second engineer, who was on duty at the time of the explosion. He testified shortly before he died from burns received in the explosion that the boilers were operating perfectly at the time of the explosion and had sufficient water in them.

It is my opinion that it actually was a combination of causes that lead to the explosion. Nathaniel Wintringer, the chief engineer aboard the Sultana, believed that the explosion resulted from he boilers' experimental design. A type newly introduced to the lower Mississippi, the flues on the Sultana's boilers were arranged in a zig zag configuration, which made them very difficult to clean. The rapid accumulation of sediment rendered them subject to overheating or burning. This was especially true during floods when the river had a much higher concentration of sediment. In support of his argument, Wintringer pointed out that after the Sultana and two other steamers exploded, the use of the experimental type of boiler on the lower Mississippi River was discontinued.

There may be some merit to Wintringer's theory, and it may have been this experimental design that led to the problems with the middle starboard boiler. It is my firm belief that it was the repairs at Vicksburg that ultimately led to the explosion. In fact, the boiler in its repaired condition was a bomb and the small patch that measured 11 by 26 inches was the lit fuse. The evidence is overwhelming that the Sultana should never have left Vicksburg on the evening of April 24, 1865, with the boiler in this condition. I am basing my opinion primarily upon the testimony of J. J. Witzig, who was the supervising inspector of steamboats of the
Fourth District, which included St. Louis and Memphis. After the tragedy, Mr. Witzig conducted his own investigation as to the cause of the explosion. He concluded that the repairs performed on the boiler at Vicksburg were inadequate. In his report, he pointed out that the small patch placed on the boiler was made out of iron, a quarter of an inch in thickness, while the boiler was made out of iron 17/48 of an inch in thickness. This variation in thickness was critical because, in Witzig’s opinion, the patched boiler could only withstand pressure of up to 100.43 psi. Since the Sultana’s boilers carried the normal working pressure of 145 pounds from Vicksburg to Memphis, Witzig concluded that the pressure within the boiler was too great for the patch, which finally gave way.

**Bulletin: From your perspective, were any of the investigations and inquiries conducted after the accident credible?**

Mr. Potter: It really depends on how you define the word “credible.” After the disaster, there were basically three military investigations. All three were credible in the sense that many witnesses were questioned extensively regarding the events which led up to the disaster. My problem with the investigations is that I feel that there was a concerted effort by the military commissions to keep the military from being viewed in a bad light.

After all the investigations were concluded, one Union officer, Captain Frederic Speed was found guilty and sentenced to dishonorably discharged from the U.S. Army. The guilty verdict was reviewed by Judge Advocate General Joseph Holt, who reversed the guilty verdict. Thus, the end result of all of the government investigations regarding the worst maritime disaster in American history was that no one was punished. Clearly, the government and the military covered up their own sins.

**Bulletin: There are a variety of theories as to the number of passengers aboard the Sultana, as well as to the number of people who died. Based on your extensive research, what do you feel were the actual counts?**

Mr. Potter: To give you some idea how grossly overloaded the Sultana was on her final voyage: before the steamer left Vicksburg, the crew had to place additional supports between the decks to keep the decks from collapsing from the great weight. Furthermore, when the boat docked at Helena, Arkansas, she almost capsized when a large portion of the soldiers rushed to the western side of the boat upon learning that a photographer was on the bank about to take their photograph. It is this photograph that is the last known photograph of the Sultana.

One fact that all of the military investigations agreed upon was that there were approximately 19,000 Union soldiers loaded on the Sultana at Vicksburg. This number came from the testimony of Captain George Williams, the officer in charge of counting the men as they left the trains and boarded the Sultana. Williams had counted the men from only two trainloads, while in reality three trainloads of men had boarded the Sultana. Without question, the 1,900-count was too low. It is my opinion that the number of passengers and crew aboard the Sultana on her final voyage up the Mississippi River was closer to 2,500. Of this number 1,800 died. By comparison, there were 1,522 killed on the Titanic.

**Bulletin: How did the accident affect those passengers who survived?**

Mr. Potter: Anyone who has survived a war, confinement in a prison camp, or a disaster like what happened to the Sultana, will never be the same. Clearly, many of the people who survived this tragedy lost loved ones, such as Dewitt Spikes, who lost eight members of his family. Ann Annis lost her husband and child. S. A. Hardin, a banker from Chicago, was on his honeymoon when the disaster struck. He searched in vain along the riverfront for the body of his bride. Several men like Pleasant Keeble lost brothers, and others lost fathers. Many of the survivors were disabled for the rest of their lives from the mental and physical injuries they suffered. Probably the most poignant stories I have encountered in my years of researching the Sultana was that of Samuel Jenkins. Jenkins, who lived in the Knoxville, Tennessee area, enlisted with the Third Tennessee Cavalry at the age of 15. In September of 1864, he was captured along with several hundred members of the Third Tennessee Cavalry by forces under the command of General Nathan Bedford Forrest in Alabama. The men were taken to Cahaba, a Confederate prison camp near Selma, Alabama. Here, after witnessing all the suffering of his fellow soldiers, Jenkins promised God that if he would be allowed to survive, he would become a doctor. Ultimately, Jenkins, along with over 500 other Tennesseans, was placed aboard the Sultana. Jenkins' first knowledge that a disaster had occurred was when he woke up flying through the air with his clothes on fire. He received injuries to his should and, after his rescue, was placed in the hospital in Memphis. When he was released from the hospital Jenkins walked over 400 miles from Memphis to Knoxville. This young soldier kept his promise and became a doctor who settled and practiced medicine around Chattanooga, Tennessee. When he was 68 years of age, his wife gave birth to a daughter. It was from this lovely, elderly lady that I first heard the story of Samuel Jenkins. His daughter related to me that her father had delivered thousands of babies in his years of practice as a doctor. With tears in her eyes, she described the time when her father, in his mid-30s, was sitting in front of the fireplace. Noticing that her father had grown quiet, she asked him what was wrong. The old man slowly shook his head and said, "I can still hear the screams and there wasn't anything I could do."
Samuel Jenkins, even though he had spent the better part of 60 years trying to save lives as a doctor, was still haunted by the lives he was unable to save on that dark April morning in 1865.

Bulletin: You have located what is believed to be the grave of the Sultana in Arkansas, just northwest of Memphis. Is there any possibility that the Sultana will ever be excavated and its remnants retrieved?

Mr. Potter: I seriously doubt that the remains of the Sultana will ever be excavated. In the early 1980s, I, along with several other individuals, spent a lot of money and a great deal of time searching for the remains. I collected all the maps of that particular stretch of the Mississippi River, trying to pinpoint the exact location of the wreckage. The problem we faced was that the present channel of the river had shifted eastward to the point that it is now probably a mile from where the channel was in 1865. We were actually looking for the wreckage in a fairly flat soybean field. Using magnetometers and other metal-detecting gear, we were able to get a reading over what we suspected was the actual hull. We were able to locate what appeared to be the salvage pile that had been left following the salvage operation in June of 1865. We also drilled and hit what we thought was the hull. It was approximately 30 feet beneath the soybean field. An excavation would be extremely expensive and, unlike the Arabia, would not yield many valuable artifacts. The Arabia struck a snag and quickly sank, while the Sultana exploded and burned down to the waterline. In all probability what would be present, if you did excavate the Sultana site, would be a great deal of burned timbers, rusty machinery and fairly well-preserved human remains. It is my opinion that what would be found would not justify the cost of the project.

Bulletin: Are there any remnants of the accident that can be seen today?

Mr. Potter: There are really no remnants of the disaster that are visible today other than the few pieces of rusty steamboat parts that we found during the search for the Sultana. My research has indicated that the hull was quickly covered as the river shifted eastward. One thing that has always puzzled me is the fact that I have never found a photograph of the wreckage. It is my opinion that the wreckage would have been partially visible for a few years after the disaster. One would have thought that, given the magnitude of the disaster, someone would have taken a photograph of the wreckage.

Bulletin: It was remarkable to learn the U.S. government never memorialized or provide compensation to Sultana survivors or to the families of the deceased. Is it too late for Congress to formally recognize this tragedy?

Mr. Potter: The government did eventually provide special pensions to some of the survivors and families of those who died, but it took many years for this to occur. I really think it is too late for the government to memorialize this tragedy. In the years following 1865, survivors from Sultana Survivors Associations and would meet each year on April 27th to commemorate the disaster and their fallen comrades. These groups petitioned the federal government for the erection of an appropriate monument, which the government refused to do. Many of the survivors became bitter because of the inaction on the part of the government. One survivor, James H. Kimberlain, wrote the following shortly before he died on April 28, 1924, regarding the failure of the government to erect a monument:

"The men who had endured the torments of a hell on earth, starved, famished from thirst, eaten with vermin, having endured all the indignities, insults and abuses possible for an armed bully to bestow upon them, to be so soon forgotten does not speak well for our government or the American people"

In my opinion, what we as a nation must do is not erect a monument to the Sultana but instead remember what occurred on April 27, 1865. It is of critical importance that the men did not die in vain.
Our fourteenth annual reunion, set for Saturday, April 28th is almost upon us! Time does pass quickly. I have a photograph on my bookshelf of my wife Peggy holding our son as a baby at one of our early meetings. He's now twelve years old!

One element missing from our gathering over the past couple of years has been the presence of Federal reenactors - usually the result of their attending another Civil War event scheduled the same day as ours. But, there is not a conflict this year! I have been in touch with Robert Queen, Jr., who serves with the 8th Tennessee regiment (U.S.) He estimates that 5-10 reenactors will be available for the opening ceremony at the Sultana monument at 11:00 AM. Some of these men will be from another unit, the 26th Wisconsin, who will be traveling from Chattanooga, Tennessee to be with us. There may even be a few soldiers from the 79th Highlanders, a regiment that fought at the Battle of Ft. Sanders here in Knoxville in 1865. I have invited all the reenactors to participate in our formal ceremony at the church and to stay for lunch. Everyone might consider bringing a little extra food to feed the troopers.

It's always a thrill to have an unexpected source tell the story of the Sultana. Each form of communication, whether newspaper, magazine or broadcast, helps fulfill our mission in keeping the public informed of the greatest U.S maritime disaster. In that regard, I was contacted a few months ago by a writer for The Tennessee Magazine who recently sent me several copies of the April 2001 edition. Trish Milburn wrote a nice piece on the Sultana entitled "Cruel Fate: The Mississippi's own Titanic Disaster near Memphis." Gene Salecker also contributed information and photos for the article.

I hope to allow more time for visiting each others' displays so be sure to bring all of your artifacts and memorabilia. Hope to see you on April 28!

- Norman Shaw,
Founder of the Association of Sultana Descendants and Friends

From the city: Take I-40 (near downtown Knoxville) to the Alcoa Highway (US 129), the "Airport" exit, 386B); go south on this (crossing over the Tennessee River and passing the University of Tennessee Hospital complex on the left) - about 2 to 3 miles. Turn left on Maloney Rd. (1 1/2 miles after passing the Southgate Shopping Center) and go to Maryville Pike. Straight in front of you, across the Pike, is Mt. Olive Baptist Church. (To go to the cemetery, turn left here onto Maryville Pike and Mt. Olive Cemetery will be about 50 yds. down the Pike on your right. The Sultana monument is not hard to find - the cemetery is small. Look for the people gathered there.)

From the airport: Take the Alcoa Highway from the airport - go north approximately 6 1/2 miles. Turn right on Maloney Road, a little less than a mile and a half after passing the Gov. John Sevier Highway (State Road 168). Follow directions above, (starting with Maloney Rd.) to church.