

The Day the Earth Shook:

Collapse of a Crane Owned and Operated by Deep South Crane & Rigging at LyondellBasell's Houston Refinery

By Laura Bernal



The refining industry in Texas, particularly in Houston, has played an important role in the city's history and culture. Refineries emerged around the Houston Ship Channel following the discovery of oil in the region, providing jobs for people in the surrounding areas and those coming from out-of-state. Among thousands of employees in this industry is my father, Martin Bernal, who has worked at LyondellBasell Houston Refinery since 1989. During that time, he has seen the refinery grow and has experienced various ownership changes.

On July 18, 2008, my father could have been at the wrong place at the wrong time when one of the world's largest cranes collapsed at the refinery. He could have been one of the dead or injured workers. I have always been conscious of

this accident, but it was not until formally interviewing him about it and his role as part of the emergency response team that I realized the magnitude of this event. This accident differed from those usually associated with refineries, which are explosions due to the types of products the facilities produce. A crane collapse and other accidents are equally important, however, because they jeopardize the safety of the workers and the reputation of the location.



Martin Bernal came to the United States from Mexico in 1981, one month after his seventeenth birthday, and began working at LyondellBasell Houston Refinery in 1989.

Photo courtesy of author.

The Netherlands-based LyondellBasell Houston Refinery sits on 700 acres of land located on Lawndale Street in Houston, Texas, between Texas State Highway 225 and the Houston Ship Channel. The company notes this refinery was "one of the first petroleum refineries constructed on the Houston Ship Channel and traces its origin to 1918." At its creation,

Sinclair Refining operated the refinery, followed by Atlantic Richfield Company (ARCO). After 1993 the refinery was "part of a joint venture with CITGO Petroleum," and remained so until 2006 "as Houston Refinery LP [but] is now a wholly owned subsidiary of LyondellBasell."¹ Although the refinery has changed names and ownership multiple times, it has continued to yield the same products.

THE CRANE

The monstrous red crane that collapsed at the refinery belonged to the Deep South Crane & Rigging Company (DSC). One of the largest mobile cranes in existence, the Versa TC36000 had "a 420' boom, 240' mast, 61 spar and 836,000 pounds of auxiliary counterweight [that] was to be attached to its pendants suspended from the mast tip from 105' from the axis of the crane." My father remembers it as "the second largest crane in the world."²

About four weeks before the tragedy, the crane was assembled at the refinery because "in the city of Houston, there is no crane inspection. It is up to the company to make sure it's set up correctly." Standing about thirty stories high and capable of lifting up to one million pounds, it "had been shipped to the refinery in pieces ... [and] was to be used to remove large drums from inside a coking unit, [as] part of the regularly scheduled maintenance of the refinery."³

THE ACCIDENT

In the beginning stages of a large turnaround job, the crane fell when only a handful of the approximately 3,000 employees and contractors were at the refinery.⁴ A typical week for most contract workers consists of four ten-hour days (Monday through Thursday); however, some work extra hours during an emergency or busy week. The day the crane

On July 18, 2008, one of the world's largest cranes, which belonged to the Deep South Crane & Rigging Company, collapsed at the LyondellBasell Refinery in Houston, bringing the smaller yellow support crane with it, killing four and injuring six.

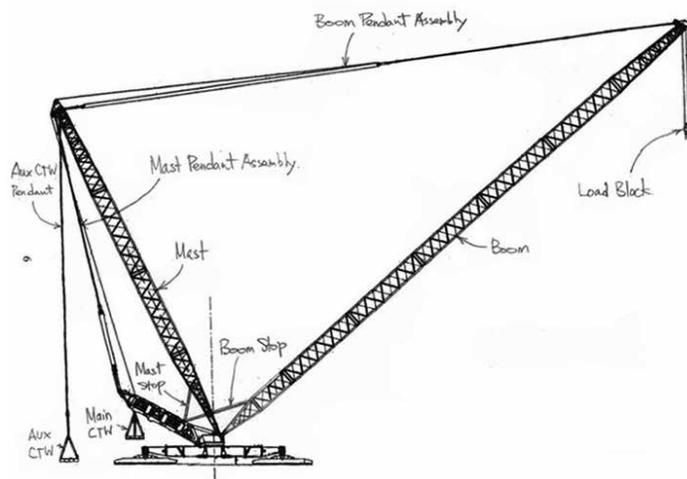
Photo by Steve Ueckert/©Houston Chronicle. Used with permission.



fell, my father was at the refinery working on a leak at a water unit located about ten minutes away from the crane.

The day seemed like any other workday: the red crane was standing, proud and tall, as workers labored in their assigned units. At the crane's unit, a substitute filled in for the regular operator who was absent. The Occupational Safety and Health Administration (OSHA) found that "the man at the helm of one of the world's largest cranes when it flipped...had never been in the machine's cab before and was not qualified for the job... [I]t was the operator's first day driving the giant TC36000."⁵ The crane and its impacted area were located near a lunchroom. Also in the immediate area stood a yellow 80-ton Demag assist crane.

The men in the unit were putting the final additions on the DSC crane. That morning, "DSC started the process of positioning the auxiliary counterweight that was to be attached to the suspended pendants to achieve the super-lift capacity." At about 9:00 a.m. "the main winch stopped working." The winch was essential for lowering and raising the mast and boom together. As OSHA officials continued their investigation, they learned that the crane's supervisor called the Deep South Crane & Rigging main office in Baton Rouge, Louisiana, for assistance regarding the winch malfunction. Through that phone call, he was able to test the control panel and replace the winch operational lever. Before the group's lunch break, "two ironworkers with DSC were in a JLG [John L. Grove Industries] aerial lift attempting to attach two metal bars on the auxiliary counterweight tray" and then went to the yellow assist crane to facilitate the process.⁶ After completing this task, the workers stopped to eat their lunch.



The diagram of OSHA's report on the accident, released January 13, 2009, illustrates the crane's status in the final moments before its collapse.

Photo courtesy of the Occupational Safety and Health Administration.

The turning point in the crane collapse timeline was the workers' half-hour lunch break at noon. For some, it was their last meal. After the break, the workers continued using the yellow crane because they had "to connect the upper end of the metal bars to pendants suspended from the tip of the mast" of the DSC crane. Simultaneously, the "ironworkers were giving signals to the [red] TC36000 crane operator to adjust the tip location of the mast."⁷ This proved to be a fatal mistake because at about 1:40 p.m., the operator lost

control of the red crane, and it began to fall backwards. The only warning was the loud boom heard by workers at the refinery. As the red crane fell, it brought the yellow assist crane along with it.

After hearing the boom, workers received snippets of information, via the radios they carried. They learned that the red crane had fallen, and that they needed to evacuate the premises. My father remembers that "not a lot of details" came through the radio, but the alarms were going off all around the refinery. He looked back to the crane's location and saw it was gone. After the workers had evacuated the premises, all the entrances to the refinery closed, and the refinery conducted a "head count" to determine if anyone was missing.⁸

To evacuate as quickly as possible, the company shared the evacuation process and limited information through the workers' radios. The transmission reported the situation in code, describing the level of the accident's intensity. The refinery identifies three levels of evacuation: Level One (evacuate the unit), Level Two (go to a designated area for a headcount), and Level Three (evacuate the entire refinery and get as far away from the refinery as possible). My father remembers that the collapse was immediately classified as a Level Three accident, skipping the first two.⁹

The workers' experiences during the accident depended on where they were located in relation to the crane. The ones in the immediate area were either injured or killed. Unfortunately, the man operating the crane was one of the deceased. Those who were farther away heard the crane fall and felt the earth shake. Some also reported screams as they evacuated the refinery.

CIMA (Channel Industries Mutual Aid), a non-profit organization designed to help refineries in the Greater Houston Metropolitan Area during emergencies, was among the reinforcements that arrived to offer aid. Sheriffs, police officers, helicopters, and ambulances also arrived. The *Houston Chronicle* showed images of ambulances and a Life Flight helicopter with first responders outside the refinery to tend the injured. Some of the injured went to nearby hospitals, such as Memorial Hermann-Texas Medical Center and Ben Taub General Hospital, while others received medical attention at the scene. Six men were injured, and four died, including Hubert Odom III, John D. Henry, Daniel "DJ" Lee Johnson, and Rocky Dale Strength, although that information was not released at that time.¹⁰ With this kind of pressure, most of the workers wanted to contact their families to tell them they were fine before the media, which had arrived on the scene, reported the accident.

THE EMERGENCY RESPONSE TEAM AND ITS HELP

Eventually, the refinery allowed the workers to return home, with the exception of members of the Emergency Response Team (ERT). Between an hour and an hour and a half after the evacuation, ERT members re-entered the refinery to help as needed. As part of that team, my father recalls that their biggest task was fixing a leak caused when the crane landed, hitting a pipe and leaving a seven- to eight-foot rupture in the earth. They had to fix the leak before the gash grew deeper. As the day neared an end, they helped set up lights to keep working and continued refueling the emergency trucks parked at the scene. My father clocked out at 4:00



Martin Bernal with William Pope, a fellow member of the Emergency Response Team. Photo courtesy of author.

p.m. and returned at 11:00 p.m. that same day; his shift ended at 7:00 a.m. Saturday morning, but he continued assisting with repairs throughout the weekend.

On Monday, when my father returned to his normal hours, the mood was somber. No one could believe that the red crane was gone. To help ease the transition, the companies “arranged for counseling, as well as meetings with workers to come to grips with what happened.”¹¹ It took time, but the shock eventually began to wear off.

OSHA installed itself in the unit to investigate the accident. On July 20, two days after the crane fell, OSHA “sent in federal investigators and cordoned off the area... LyondellBasell and Deep South [were] also conducting their own investigations.”¹² Access to the area was immediately restricted to the investigators, and workers could not enter for about a week. The refinery and contract companies notified their employees about the accident as soon as information became available. This was very important, since it took about a month for OSHA to give workers permission to remove the crane’s pieces from the refinery’s property.

THE AFTERMATH

Just three days after the accident, though, it was back in the news on July 21, 2008, when another crane owned by Crane Rental Division, Inc., collapsed northeast of Houston in Kingwood.¹³ No fatalities occurred at this collapse, and the brief article in the *Houston Chronicle* dealt primarily with the tragedy at LyondellBasell instead. The LyondellBasell



The 700-acre LyondellBasell Houston Refinery is located on Lawndale Street, between the Houston Ship Channel and Texas State Highway 225.

Photo courtesy of The Center for Land Use Interpretation.

incident remained in the news, especially after two other major cranes collapsed in Florida and New York, although they were not at refineries.

On January 13, 2009, OSHA released its investigation report that revealed the substitute crane operator lacked the proper training and skills to manage such a massive crane. OSHA held Deep South Crane & Rigging responsible for the accident, allowing LyondellBasell to clear its name. OSHA issued eight citations against the crane’s company, six of which were serious, and penalties of \$71,500.¹⁴ Additionally, family members of the dead filed lawsuits against the company, however, my father does not remember hearing talk about that delicate matter at the refinery. The refinery’s United Steelworkers chapter, Local USW 13-227, included the accident in its 2008 fatality report. The biggest consequence was LyondellBasell terminating its contract with Deep South Crane & Rigging indefinitely. DSC picked up the scraps of the crane before its departure.¹⁵

Each year on the anniversary of the accident, workers at the refinery hold a minute of silence in memory of those who lost their lives that day. Through their radios, the laborers receive orders to stop what they are doing and observe the minute of silence. As a memorial, the refinery has a small white cross with the names of the four men who died. Even though the men who lost their lives were Deep South Crane & Rigging employees, their deaths forced LyondellBasell workers and officials to develop new programs and training that address all possible accidents and injuries. One of these programs was GoalZero, “developed [in 2010]...to help cultivate a workplace free from injuries, incidents, and defects.” Each year, the refinery holds an annual Global Safety Day to remind employees of the program. They receive free items and participate in “educational activities” organized by officials.¹⁶ The program typically occurs in the summer, about a month before the anniversary of the crane collapse.

When the 2015 United Steelworkers strike occurred, union members focused on improving safety in refineries. In their rallies and demonstrations, the strikers failed to mention the crane collapse at LyondellBasell even though it was “the deadliest incident in the industry since a 2005 explosion at the BP refinery in Texas City, Texas, that killed fifteen workers and injured 180 other people.”¹⁷ The crane accident redefined some concepts of safety and strikers could have used this accident to support their concerns given how it unfolded and its impact.

My father and I hope an accident like this never happens again. When the crane collapsed, families lost loved ones. My father could have been among the dead if he had been closer to the crane. Although nothing can guarantee that cranes will not collapse in the future, the improvements to safety regulations help decrease some of the dangers. Even though LyondellBasell was not to blame, the refinery received most of the attention because the accident happened on its property. It is not a great moment in the refinery’s timeline, but it is an important part of its history.

Laura Bernal lives in Baytown, Texas, and is the proud daughter of a refinery worker. She graduated from the University of Houston with her BA in history in May 2016 at the age of twenty and is currently pursuing a master’s degree in public history at UH.