MAI-2009-05

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Limestone)

Fatal Machinery Accident

February 19, 2009

Master Aggregates, Toa Baja Corp. PTA 3
Cantera Carolina Pta #3
Carolina, Fajardo County, Puerto Rico
Mine I.D. No. 54-00374

Investigators

Jose J. Figueroa
Supervisory Special Investigator

Terence M. Taylor, P.E.
Senior Civil Engineer

Michael C. Superfesky, P.E.
Civil Engineer

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Mine Safety and Health Specialist

Originating Office
Mine Safety and Health Administration
Southeastern District
135 Gemini Circle, Suite 212, Birmingham, Alabama 35209
Wyatt S. Andrews, District Manager

OVERVIEW

On February 19, 2009, Carlos M. Cruz, Carpenter/Laborer, age 61, was fatally injured when he was struck by the boom of a crane. The boom collapsed as the crane was lifting a crusher that was being removed as part of a demolition project at the mine. Cruz was hospitalized and died on April 12, 2009, as a result of his injuries.

The accident occurred because the crane was used beyond the manufacturer's design capacity. The total lift exceeded the design capacity of the crane and the two wire rope bridles being used for the lift. The demolition crew failed to accurately determine the total weight of the lift. The crane was used to lift the crusher, but the crusher was not completely detached from its supporting structure. This resulted in a severe loading of the crane's boom. The crane was not properly leveled and oriented to prevent boom side loading. The load chart and boom lacings were not being properly maintained. Additionally management did not provide task training to the victim.

GENERAL INFORMATION

Cantera Carolina Pta. #3, a surface limestone operation, owned and operated by Master Aggregates Toa Baja Corp. PTA. 3 (Master Aggregates), was located at Carolina, Fajardo County, Puerto Rico. The principal operating official was Ricky Alicea, Vice-President of Operations. The mine normally operated one 8-hour shift a day, five days a week. Total employment was 22 persons.

Limestone was drilled, blasted, loaded into haul trucks, and transported to a plant. The material was crushed, screened, washed, and conveyed to stockpiles. Finished products were sold for use in the construction industry.

The last regular inspection of this operation was completed on October 31, 2008.

DESCRIPTION OF ACCIDENT

On February 19, 2009, the day of the accident, Carlos M. Cruz, (victim) reported to work at 6:00 a.m., his normal starting time. Cruz was part of a six man demolition crew assigned to remove an old aggregates plant and associated structures. In addition to Cruz, the crew consisted of Felix Nieves, Welder, Carlos Manon, Welder, Miguel Hance, Carpenter/Laborer, Jose Salgado ,Crane Operator, and Marcos Bonilla, Project Manager/Signal Man. The crew had been working on this project about three weeks.

Salgado arrived at 8:00 a.m., conducted a safety meeting with the crew, and discussed the work to be done that day. He then moved the crane and positioned it at the job site. During the morning, the crew removed walkways, the control booth, and the structure below the booth. After lunch, Nieves, Hance, Manon, and Cruz , started to loosen the crusher from its base.

Prior to the accident, Salgado called Jaime R. Ruiz, Production Manager several times and asked him to provide information about the weight of the crusher. Ruiz told Salgado that he could not obtain the information.

Ruiz told Salgado that he would check and verify the crusher weight from another source. Ruiz obtained the information from a similar crusher at another Master Aggregates operation. That crusher had the same capacity; however, it was a different model than the crusher involved in the accident. The weight of that crusher was 28 tons. Using that weight, Ruiz and Salgado calculated the weight of the crusher to be lifted to be between 17 and 18 tons because the crusher was smaller and the covers and other components had already been removed from it.

Salgado checked the load chart before he set-up the crane for the lift and positioned the crane configuration for a 19.5 ton lift capacity. About 2:00 pm, Manon and Cruz started to install the rigging on the crusher. They used two double chain slings equipped with grab hooks and two wire rope bridles for the rigging.

After the master link of each bridle was attached to the crane hook, Salgado attempted a load test by trying to loosen and free the crusher from its base but the crane could not lift it. Two chain slings were then connected to the front section of the crusher as the crew tried to loosen the crusher from its base. The rear of the crusher broke free so the same procedure was used on the front section of the crusher. After the crusher was completely freed from its base, the crew attempted to perform a load test.

Manon and Cruz completed the crusher rigging and hooked it to the crane. The crane and the crusher were located on different levels so two signal men were used. Cruz was standing in the lower area where the crusher was located. He provided signals to Bonilla who was standing on the upper level where the crane was located. Bonilla then relayed the information to Salgado.

About 2:50 p.m., the crew started performing the load test and lifted the crusher approximately 6 inches from its base. Bonilla directed Salgado to stop since the shift was over. Cruz used a hillside path to quickly advance up to the dump point where the crane was positioned. Cruz walked under the boom to determine if the crusher had been lowered back down on the support frame so he could signal to Salgado to cease lowering the crusher. Salgado released the strain on the crane cables and heard a loud noise. He saw the crane boom twist and fall, striking Cruz.

Immediately Bonilla called for emergency medical services. Cruz was conscious and transported by ambulance to a local hospital. He was hospitalized and died on April 12, 2009, as a result of his injuries. Death was attributed to blunt force trauma.

INVESTIGATION OF THE ACCIDENT

On the day of the accident, the Mine Safety and Health Administration (MSHA) was notified at 3:00 p.m., by a telephone call from Ricky Alicea, Vice-President of Operations to The National Call Center. An investigation was started the same day. An order was issued pursuant to section 103(k) of the Mine Act to ensure the safety of the miners.

MSHA’s accident investigation team traveled to the mine, made a physical inspection of the accident scene, conducted interviews, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management and employees.

DISCUSSION

Crane

The crane involved in the accident was a BLH Lima 700-TC crane (Class 15-392) with a maximum rated capacity of 75 tons. It was a truck crane with a lattice boom that could be configured to lengths ranging from 50 to 200 feet, depending on the number of inserts used. It could also be equipped with a jib section, up to 50 feet long. The crane had four outriggers that, when fully extended, would give the machine its maximum stability. The crane carrier had two cabs: one at the front for driving the carrier and one at the rear for operating the crane, referred to as the operator's cab. For tipping stability, the crane had a 20,260 pounds counterweight.

Loads were picked using a ¾-inch-diameter wire rope. At the point sheave of the crane, the wire rope was reeved around the point sheaves and the load block sheaves using a five-part-line configuration. The load block was a McKissick 35-ton capacity, 3 Sheave, size 14RB Figure 333. The boom was supported at its tip by two fixed 1 3/8 -inch-diameter wire rope pendant lines. The suspended pendant lines were attached to a yoke located near the carrier. The sheaves on the yoke were reeved with a 10-part topping line to the sheaves on the gantry of the crane. The length of wire rope extending from the boom hoist controlled the distance between the yoke and the gantry which in turn controlled the angle of the suspended boom.

The crane was rented from a local vendor and had been on site for three days when the accident occurred. Reportedly, the crane was used by the vendor for at least 22 years. BLH Lima is no longer in business, but their records were kept by MinnPar, a global parts supplier. While the exact age of the crane could not be determined, MinnPar stated this model has not been manufactured for more than 30 years.

Crane Inspection

The crane was last inspected on September 26, 2008, by the Cranes and Heavy Equipments Institute of P.R. Inc. At that time, the crane was certified as being in safe operating condition with a September 25, 2009, expiration date.

Crane Boom

The crane boom was 100 feet long and consisted of 4 lattice (truss) sections: a butt section, two inserts, and a tip section. A jib was not being used with the crane. Both the butt and tip sections of the boom were tapered in shape, while the two inserts were straight. The butt section was 20 feet long and was pinned at its bottom end to the turntable of the crane. One pin was located at each side of the tapered end (base) of the butt section. The two insert sections were referred to as the lower insert and the upper insert. They were 30 and 20 feet long, respectively. The tip section was 30 feet long and included the 4 point sheaves at the top of the section.

The four sections were connected together with pins located at the four corners of the truss. Each truss section consisted of four 3¼-inch diameter chords (tube sections), one at each corner of the truss. The chords were connected together by a system of diagonal and perpendicular tubular lacings, with diameters varying from 1¼ to 1½ inches. The boom chords were constructed with steel having a yield strength of 100,000 pounds per square inch (psi). Ultrasonic measurements of the chords indicated the walls were approximately 0.2-inches thick.

Crane Set-up

At the time of the lift, the front and rear outriggers were fully extended. The distance between the centerline of the 21-inch square steel pads was 21 feet. The carrier had 12 wheels, but only the right-side rear tires, as viewed from the crane operator's cab, were up in the air. The foundation beneath the pads was a firm gravelly soil.

Reportedly, a hand level was used to determine if the crane was level after it was positioned to lift the crusher. Investigators placed an electronic level on the crane's turntable and found it was 0.9 degrees off level in the side-to-side direction. The high side of the crane was to the right, as viewed from the operator's cab looking toward the load. In the rear-to-front direction, the crane was found to be 0.4 degrees out-of-level, with the uphill direction being the rear of the crane.

Crusher

The crusher involved in the accident was a Universal New Holland Impact Crusher, Model 4555. Reportedly, the crusher had been taken out of service approximately five years ago. Specifications and dimensions from the manufacturer indicated the crusher weighed 20.5 tons.

The crusher had a 36-inch-diameter, 8-sheave flywheel attached on the left side, a structural modification made to the top of the unit, and skirting and additional structure attached beneath the unit. There also was a clump of hardened earthen material on part of the structure.

After the accident, a crane that was calibrated was brought to the site to determine the weight of the crusher. Investigators determined that the crusher weighed 42,400 pounds or 21.2 tons.

Crane Capacity

The crane was older and not equipped with a load moment indicator (LMI). The capacity of the crane for various boom lengths, jib attachments, with and without outriggers, and different pick radii were stated on a load chart posted behind the operator's chair in the cab. The chart was found to be partially illegible. Six out of the ten footnotes associated with the use of the chart and some crane capacities associated with various configurations had been scratched or worn off. The illegible notes specified: machine to be leveled, not to side load the boom, and to include the hook block weight and lifting tackle as part of the total load. The crane boom was equipped with a boom angle indicator.

The configuration (Figure 1) at the time of the lift was a 100-foot boom, a 45-foot operating radius (measured during the investigation), and the four outriggers were extended. A 45-foot radius corresponded with a 65-degree boom angle. The crane capacity for this configuration was listed as 32,325 pounds or 16.2 tons.

To compute the total picked load at the time of the accident, the weight of the McKissick load block and rigging tackle had to be included. The manufacturer's literature indicated the load block weighed 610 pounds and the rigging was estimated to be 300 pounds. This made the total pick at the time of the accident 43,310 pounds or 21.7 tons.

The crane's capacity was 5.5 tons less than the total pick of 21.7 tons. Investigators noted that the crane capacity for this boom length and pick radius was from the part of the load chart limited by the stability (tipping) of the crane, rather than a structural failure of the crane.

The allowable lift was 85% of the tip load of the crane; therefore, with a 65-degree boom angle, it would take a load of 38,029 pounds to tip the crane over. The tip would occur if the load was swung from the rear of the crane to over the side of the crane, where the machine has less effective counterweight to prevent tipping. At the time of the accident, the crane was lifting over the rear, with the boom pointing toward the east, and had not swung to the side so tipping did not occur.

Boom Cracking and Corrosion

Reportedly, the crane has been used as a dragline in the past. This type of use would subject a boom to repetitive loading and possible fatigue cracking of the lacings. The lacings provide lateral support to the four load carrying chords which are under compression. In addition, the lacings resist lateral loads transmitted to the boom, either from side loading or from bending loads applied to the boom. Repairs made to the welds of several lacing joints were evidence of prior lacing fracture. In addition, several of the lacings were pitted from corrosion. There were variations in lacing sizes, indicating that some of the lacings had been replaced. The crane operator stated he was aware of three lacings that had to be repaired due to rust and fracture. A segment of one lacing had been replaced and splice welded.

Investigators found that one horizontal lacing, spanning between the two top chords in the butt section of the boom, had a corrosion hole through it. Weld repairs made at several joint locations appeared to be of poor quality, not likely original, or not made by a certified welder. The crane operator stated that company welders made the repairs to the boom. No maintenance logs were kept. An operator's manual was not available.

A combination of over-welding and a lack of adequate weld material created an environment favorable to additional cracking. Observations of failed lacings near the location of the boom failure confirmed poor quality repair welds, brittle-type fractures, and lacing corrosion.

Rigging

The final lift was conducted using two double-chain slings, equipped with grab hooks, attached to the crusher by looping the chains around the lifting lugs on the crusher. One 22-foot long sling was attached to the left side and one to the right side of the crusher. The master link of each chain sling was attached to a two-legged wire rope bridle. Two bridles were used; one per chain sling. The master link of each bridle was attached to the hook on the crane.

The wire ropes were 5/8-inch diameter and the chain links were ½-inch diameter. The 21½-foot long, two-legged wire rope bridles were rigged in a straight pull such that both legs of each bridle were hooked to a chain's master link. A wire rope bridle in a straight pull has a capacity of 6.8 tons; therefore, two bridles had a combined capacity of 13.6 tons.

At the time of the accident, the total load lifted was 21.7 tons, this weight exceeded the combined capacity of the bridles; however, they did not fail due to a built-in safety factor in their rated capacity. The two double-chain slings had a combined capacity of 47,700 pounds (or 23.9 tons) when rigged at an 84-degree angle from horizontal. Consequently, the double-chain slings had adequate capacity to lift the crusher.

Pre-Lifts and Collapse Lift

Reportedly, there were three attempts to lift the crusher prior to the final collapse lift. In the first lift attempt, they could not move the crusher because the crew failed to determine that the substructure attached to the crusher was still attached to the support frame by four steel plates. This first attempt would have put considerable strain on the boom, as the effective load would have been much greater than the self weight of the crusher.

The four plates were then indentified and burned off for a second lift attempt. On the second attempt, the crew used one double-chain sling to pry up the rear of the crusher, which they were able to accomplish. On the third attempt, they used one double-chain sling to pry up the front of the crusher, which they were also reportedly able to do. During the attempted lifts, it was reported that the outriggers positioned behind the operator's cab were lifting off the ground.

The fourth attempt was the final catastrophic lift in which the crane was able to lift the complete crusher off its support frame and hold it suspended. The crane operator indicated that at the time of the accident he was lowering the load with the controls when the collapse occurred. He indicated that he heard a load noise and then saw the topping and pendant lines shaking. He then saw the boom twisting and falling. He indicated that the right side bottom chord appeared to drop. As the boom was twisting he hit the brake, but did not try to steer the collapsing boom. Further, the operator indicated that he saw bending and not breaking occurring in the lower insert section.

Side Loading

Note number 3 of the crane manufacturer's load chart indicates that side loading of the boom is to be prevented. Side loading occurs when the load to be lifted is not directly centered beneath the boom (Figure 2). Side loading places additional, unnecessary stresses on the boom and its lacings.

After the accident, the butt section of the boom was found to be approximately 2 degrees offset to the right of the centerline of the load. This offset was a consequence of the turntable being out-of-level by 0.9 degrees in the side-to-side direction, with the high side being to the right. Wind can also create side loading on the boom. However, the recorded wind speed at 2:56 p.m. in San Juan, Puerto Rico, (the closest observation point) was only 9.2 miles per hour and blowing toward the east, the same direction the boom was pointing.

Failure Damage

The collapsed boom broke into two major sections: a 65-foot-long upper piece and a 35-foot-long lower piece. The boom tip and butt sections were completely intact and undamaged. The upper insert was mostly intact with some impact damage from landing on the crusher. The lower 30-foot-long insert sustained significant damage, with a majority of the damage in the lower part of the insert, spanning a distance of approximately 9 to 11 feet. In this area, the four chords were completely severed and the lacings were buckled and fractured. Two segments of the top chord were completely detached from the two main boom sections after the collapse.

The right top chord segment was 9 feet, 4 inches long and the left top chord segment was 6 feet, 9 inches long. Based on the observed damage, both top chords appeared to be folded or hinged upward. This was further evident by the curved upward shape of the two lower chords that were hanging over the 20-foot-high dump point after the collapse and the bowed shape of the left boom-stopper pipe. In addition, the bowing or buckling pattern of every other diagonal lacing in the bottom plane of the lower insert indicated that a side loading condition existed.

Analysis of Failure Modes

The boom was analyzed for two compression-related failure modes: overall boom buckling and local chord buckling. Calculations confirm that the boom was structurally adequate to resist an overall buckling failure and the lack of total deformation to the boom further supports the analysis results.

With respect to local buckling, it was determined that the chords would not buckle between the lacing support points under the loading at the time of the accident. However, with the lacing support removed from one joint, investigators found the chords would buckle from that same loading because the unsupported length of the chord would effectively double from the absence of lateral support from the lacings. The localized nature of the damage to the lower insert over a distance of 9 to 11 feet and the presence of failure hinges within that distance indicated a local chord buckling mode of failure.

Investigators determined that either pre-existing fatigue-related cracks were present in the lacing connections near the hinge location or that those lacings had fractured during the three pre-lift attempts. The boom was side loaded and used to pry the rear and front of the crusher off its support structure. Investigators determined that the lacings were weakened or embrittled by poor quality weld repairs and corrosion. In fact, near the failure hinge on the top left chord, a side panel lacing pulled out of a previously repaired weld connection without failing the weld. This is an indication that the lacing base metal was not properly preheated at the time of the repair.

A loss of lacing support at the suspect chord joint allowed the chord to buckle and fail under the combined compression forces from the heavy crusher load and the bending effects from the following conditions: side loading (out-of-level condition), boom self-weight, and the resultant offset of the topping and lift force with respect to the axis of the boom.

Training and Experience

Carlos M. Cruz had 11 years and 33 weeks of mining experience and had worked at this mine intermittently for 22 weeks. He had received 24 hours of new miner training that was completed on June 24, 2008. Cruz had not been trained to perform the task of signal man working in and around suspended loads as required by 30 CFR, Part 46.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following root causes were identified.

Root Cause: Management did not conduct a risk assessment to determine the potential hazards or to establish safe work procedures prior to lifting the crusher.

Corrective Action: Management established and implemented procedures that require risk assessments to be conducted that identify and correct potential hazards associated with the task to be performed. Procedures were developed and implemented to ensure the safety of all persons working near the crane by determining the weight of material to be lifted and using the proper load chart to prevent the crane from being used beyond the manufacturer's design capacity.

Root Cause: Management policies, procedures, and controls were inadequate and failed to ensure that all persons were given the required training in all the hazards associated with crane lifts.

Corrective Action: Management implemented a comprehensive training plan that covers all the hazards associated with all the persons performing tasks.

CONCLUSION

The accident occurred because the crane was used beyond the manufacturer's design capacity. The total lift exceeded the design capacity of the crane and the two wire rope bridles being used for the lift. The demolition crew failed to accurately determine the total weight of the lift. The crane was used to lift the crusher, but the crusher was not completely detached from its supporting structure. This resulted in a severe loading of the crane's boom. The crane was not properly leveled and oriented to prevent boom side loading. The load chart and boom lacings were not being properly maintained. Additionally, management did not provide task training to the victim.

ENFORCEMENT ACTIONS

Order No. 6512460 was issued on March 2, 2009, under the provisions of Section 103(k) of the Mine Act:

The mine had a non-fatal (critical) accident after the boom on the Lima 700 TC crane Co. number 15-392 collapsed while removing a crusher that weighed approximately 15 to 17 tons. This order is issued to ensure the safety of any person in the mine until an examination or investigation is made to determine that the Lima 700 TC crane is safe. Only those persons selected from the company officials, state officials, the miner's representative and other persons who are deemed by MSHA to have information relevant to the investigation may enter or remain in the affected area.

The order was terminated on April 20, 2009. After an inspection and investigation of the crane, it was determined that the crane could be removed from the mine for repairs or disposal at the mine operator's discretion and normal mining operations could resume.

Citation No. 7769590 was issued on May 29, 2009, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.14205:

A fatal accident occurred at this operation on February 19, 2009, when a miner was struck by the boom of a crane when the boom collapsed. The victim was hospitalized and died on April 12, 2009, as a result of his injuries. The crane was used beyond the manufacturer's design capacity, in that the weight of the load exceeded the rated lift capacity for the boom angle. The mine operator engaged in aggravated conduct constituting more than ordinary negligence, in by ordering the work to be performed without insuring the safety of the miners by using the crane beyond the manufacturer's design capacity.

The citation was terminated on June 18, 2009. The mine operator removed the crane from the mine and will not use it again. If the crane is used at this operation, this action would warrant aggravated conduct constituting more than ordinary negligence.

Order No. 7769591 was issued on May 29, 2009, under the provisions of Section 104(g)(1) of the Mine Act for a violation of 30 CFR 46.8(a)(1):

A fatal accident occurred at this operation on February 19, 2009, when a miner was struck by the boom of a crane. The victim was hospitalized and died on April 12, 2009, as a result of his injuries. The boom of the crane collapsed and struck the victim while he was working under the boom near the suspended load. The victim was hospitalized and died on April 12, 2009, as a result of his injuries. The crane operator had not received annual refresher training within the last twelve months. The mine operator must withdraw the miner from the mine until he has received the required training. The Federal Mine Safety and Health Act of 1977 states that an untrained miner is a hazard to himself and others.

The order was terminated on June 18, 2009. The mine operator provided the required training to the crane operator.

Order No. 7769592 was issued on May 29, 2009, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 46.7(a):

A fatal accident occurred at this operation on February 19, 2009, when a miner was struck by the boom of a crane. The victim was hospitalized and died on April 12, 2009, as a result of his injuries. The victim had not been trained to perform the task of signal man working in and around suspended loads. The mine operator engaged in aggravated conduct constituting more than ordinary negligence by not providing the victim with the proper Task Training for the job he was performing. The mine operator was aware of the Part 46 training requirements. The Federal Mine Safety and Health Act of 1977 states that an untrained miner is a hazard to himself and to others.

The order was terminated on June 18, 2009. The mine operator will provide task training when assigning persons to new tasks.

Approved by: ________________________ Date: _____________________

Wyatt S. Andrews
Southeastern District Manager

APPENDICES

A. Persons Participating in the Investigation
B. Drawings
C. Victim Data Sheet

APPENDIX A

Persons Participating in the Investigation

<u>Master Aggregates, Toa Baja Corp PTA 3, Cantera Carolina Pta #3</u>

Ricky Alicea	Vice-President of Operations
Andrés Dominicci	Safety Manager
Jaime R. Ruiz	Production Manager
Marco Bonilla	Project Manager
Jose Salgado	Crane Operator
Felix Nieves	Welder
Miguel Hance	Carpenter/Labor
Carlos Manon	Welder

<u>Mine Safety and Health Administration</u>

Jose J. Figueroa	Supervisory Special Investigator
Luis Valentin	Supervisory Mine Safety and Health Inspector
Terence M. Taylor	Senior Civil Engineer, P.E.
Michael C. Superfesky	Civil Engineer, P.E.
Norman J. Zeman Jr.	Mine Safety and Health Specialist
Isaac Villahermosa	Mine Safety and Health Inspector

APPENDIX B

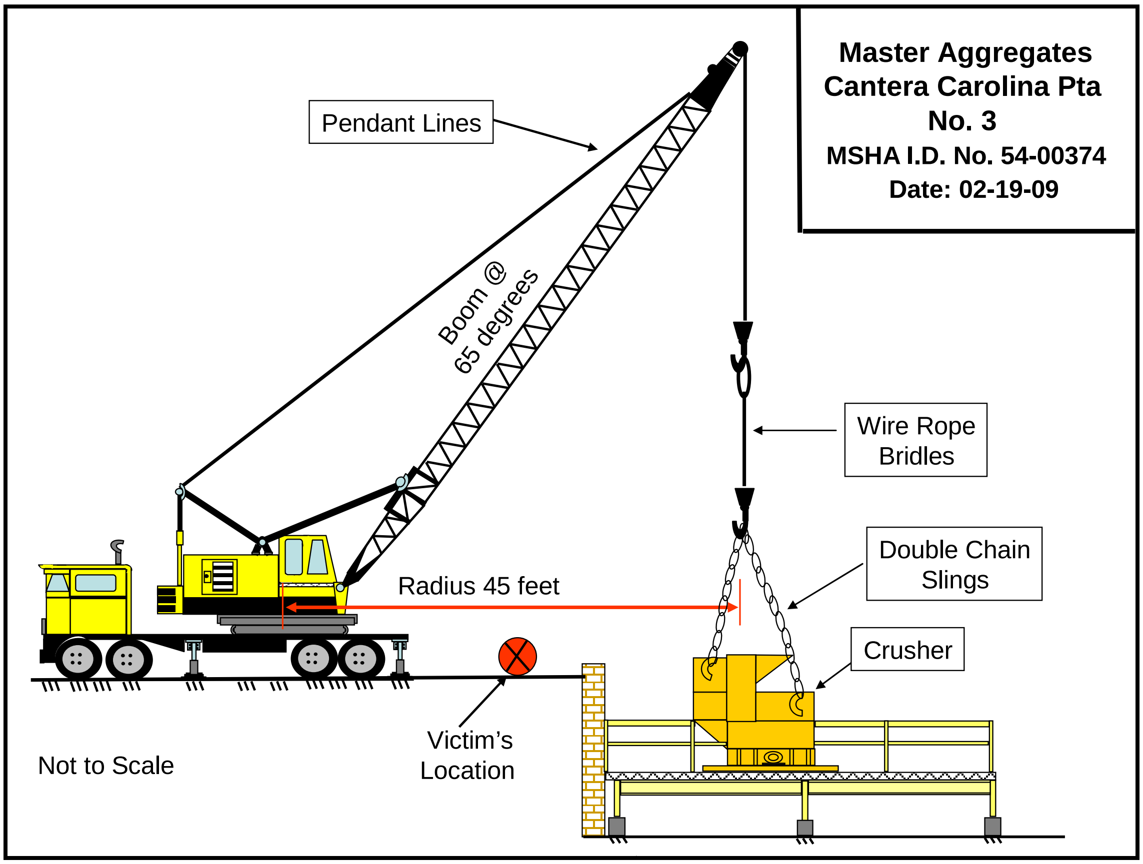

Figure 1 Lift configuration prior to collapse of boom.

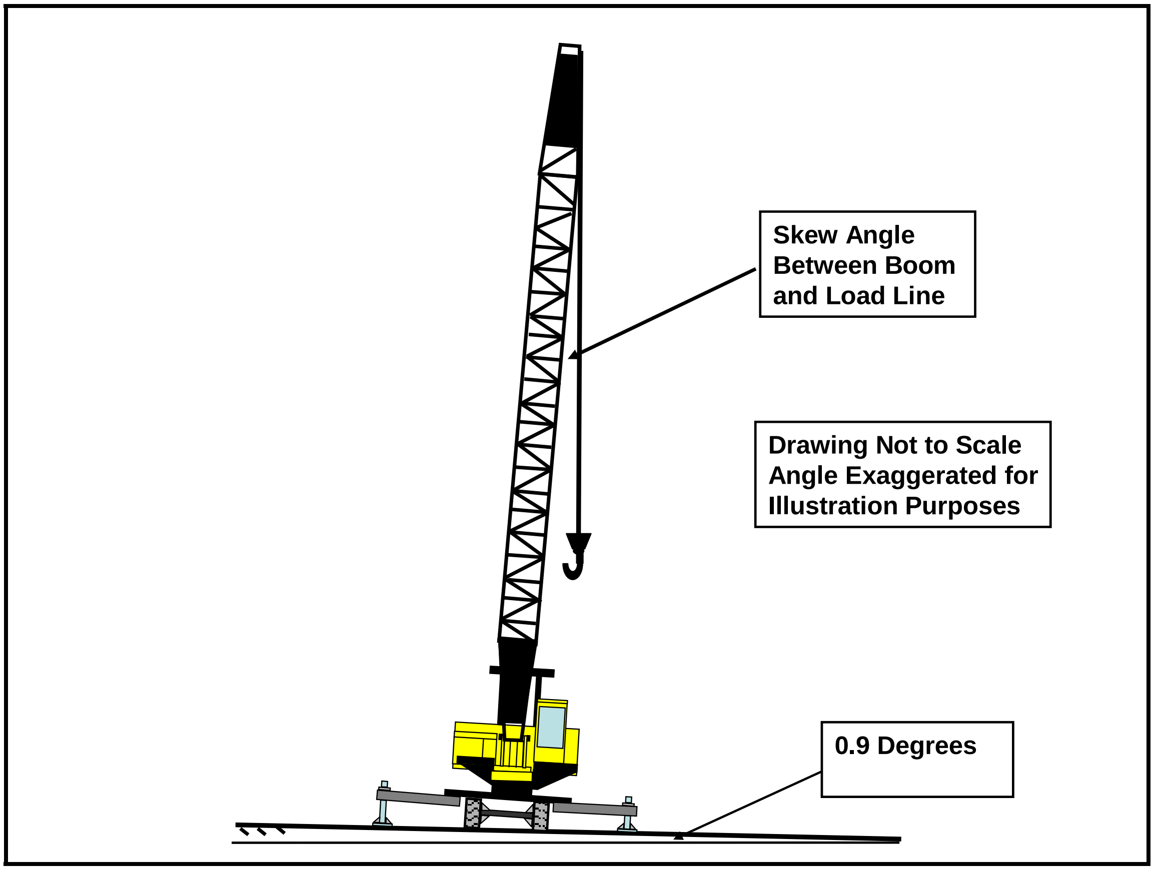

Figure 2 Out-of-level set-up causing side loading.

APPENDIX C

Accident Investigation Data - Victim Information

Event Number: 0 9 5 6 6 2 9

U.S. Department of Labor

Mine Safety and Health Administration

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:
Carlos M. Cruz	*M*	*61*	*01 Fatal*

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	6. Date and Time Started:
a. Date: 04/12/2009 b.Time: 6:30	*a. Date: 02/19/2009 b.Time: 14:50*

7. Regular Job Title:	8. Work Activity when Injured:	9. Was this work activity part of regular job?
116 Crane Flagman	*098 Flagman for the crane*	Yes *X* No

10. Experience	Years	Weeks	Days
a. This Work Activity:	*11*	*33*	*1*
b. Regular Job Title:	*11*	*33*	*1*
c: This Mine:	*0*	*22*	*2*
d. Total Mining:	*11*	*33*	*1*

11. What Directly Inflicted Injury or Illness?	12. Nature of Injury or Illness:
127 Crane Boom	*140 Hit in the head & Body by falling crane*

13. Training Deficiencies:

Hazard: [ ] New/Newly-Employed Experienced Miner: [ ] Annual: *X* Task: *X*

14. Company of Employment: (If different from production operator) *Operator*

Independent Contractor ID: (if applicable)

15. On-site Emergency Medical Treatment:

Not Applicable: [ ] First-Aid: [ ] CPR: [ ] EMT: *X* Medical Professional: [ ] None: [ ]

16. Part 50 Document Control Number: (form 7000-1)

17. Union Affiliation of Victim: