

**UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION**

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Coal Mine

**Fatal Machinery Accident
November 5, 2007**

**San Miguel Lignite Mine
The North American Coal Corporation
Jourdanton, Atascosa County, Texas
ID No. 41-02840**

Accident Investigators

**William E. Vetter
Coal Mine Safety and Health Inspector**

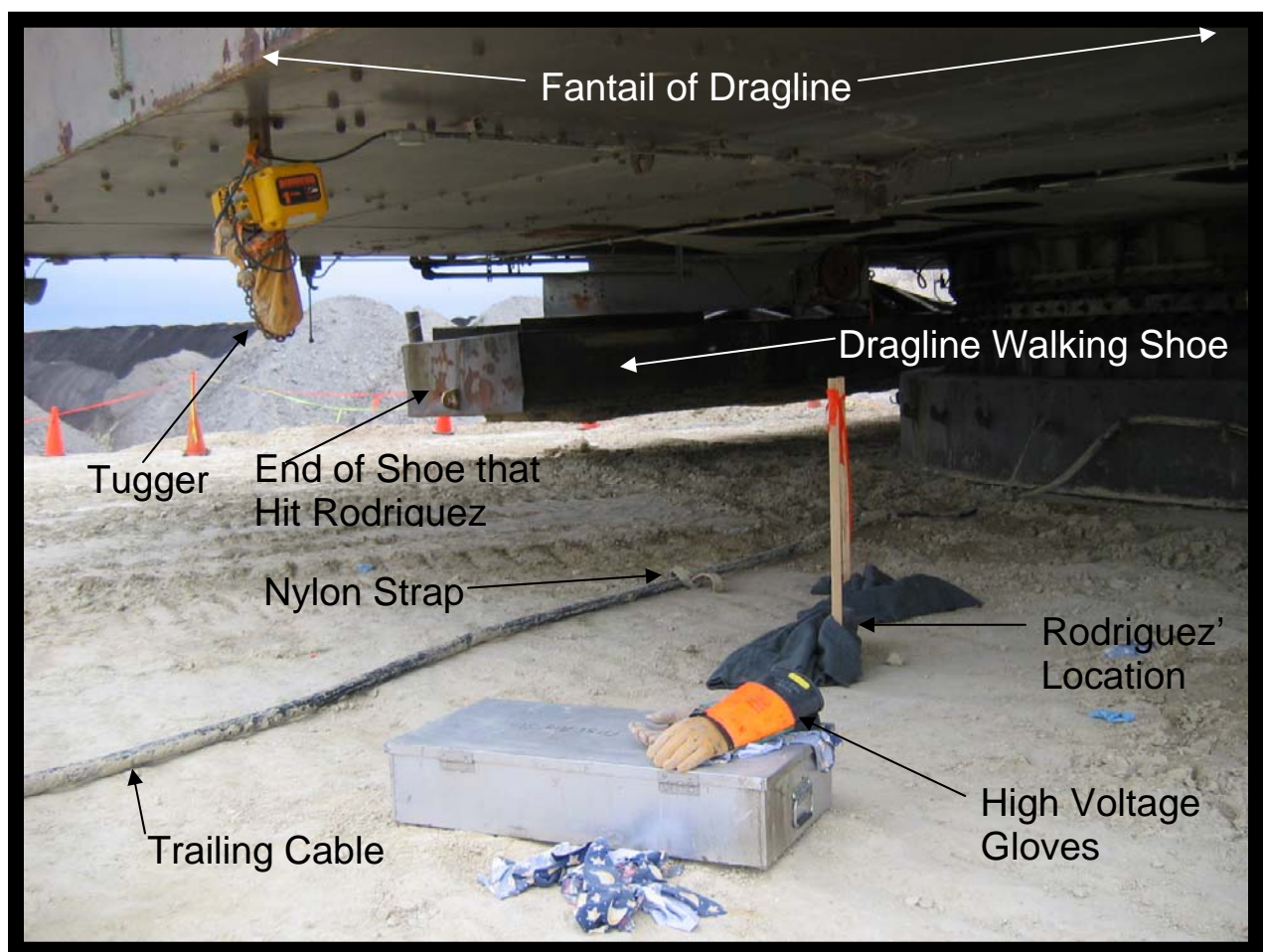
**Jeff D. Scott
Coal Mine Safety and Health Inspector**

**Originating Office
Mine Safety and Health Administration
District 9
P.O. Box 25367, Denver, Colorado 80225
Allyn C. Davis, District Manager**

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**VIEW OF ACCIDENT SCENE WITH WALKING SHOE IN
LOCATION PRIOR TO THE ACCIDENT WHILE DRAGLINE IN
DIGGING POSITION**



OVERVIEW

On Monday, November 5, 2007, at approximately 11:00 a.m., Richard Rodriguez, a 45-year old dragline assistant, received fatal injuries when struck by the walking shoe of a dragline while it was in motion. Rodriguez was positioned on the ground under the fantail of the dragline adjusting a nylon web strap that was wrapped around the trailing cable in preparation of lifting the cable so the dragline could be moved/walked backwards. As Rodriguez was bent over inside the walking shoe swing radius, the dragline rotated. He was struck on the head by the suspended walking shoe and knocked to the ground. Rodriguez died from injuries on November 6, 2007.

The accident was caused by a failure to notify the dragline operator to stop the dragline prior to working within the shoe swing radius of the dragline. The victim was fatally injured during the continued operation of the dragline.

GENERAL INFORMATION

The San Miguel Lignite Mine is a surface coal mine owned by San Miguel Electric Cooperative, Inc. and operated by The North American Coal Corporation. Operations began in 1979. The North American Coal Corporation began operating the mine on July 1, 1997. The mine is located at Jourdanton, Atascosa County, Texas. The principal officers for the mine at the time of the accident were: Myron Mitzel, General Manager; Thomas Kovach, Operations Manager; Mario Resendez, Dragline Supervisor; Jesus Lugo, Production Supervisor; and Michael Collins, Safety Specialist.

The mine extracts lignite coal from the Jackson formation, seams A, B, C and D ranging in thickness from 1.0 to 4.5 feet with a combined average total lignite thickness of approximately 9 feet. The seams are separated by relatively thin partings which vary in thickness from 0.5 to 1.5 feet. The mine operates two draglines to strip overburden from the top coal seam. Explosives are not used in the stripping process. At the time of the accident, the mine produced approximately 10,800 tons of coal per day and employed 204 persons with 198 at the pit and associated areas and 6 in the office. Mine employees are not represented by a labor organization. The mine produced 3,121,114 tons of lignite coal in 2007. The mine operates seven days per week, using two 10.5-hour production shifts and two 12-hour maintenance and dragline operation shifts per day.

Prior to the accident, the last Mine Safety and Health Administration (MSHA) regular inspection was completed on June 22, 2006. The non-fatal days lost (NFDL) incidence rate for the mine for 2007 was 0.68. The national incidence rate for surface coal mines for 2007 was 1.47.

DESCRIPTION OF ACCIDENT

On Monday, November 5, 2007, the day shift crew assigned to the Model 740 Page dragline, consisted of Charles Pacheco, dragline operator; Richard Rodriguez (victim), dragline assistant;

Oscar Saenz, groundman; and Randy Benavides, groundman in training. The shift began at the scheduled starting time of 6:00 a.m. The four employees traveled from a meeting area in the operations building to the Page dragline, located on the bench at ramp 2H area. After arriving at the dragline, the crew was informed that maintenance work was ongoing to repair a broken pair link on the bucket.

While repairs were being made, Saenz used the bulldozer located at the dragline to work in the pit and to level the pad for the dragline. Pacheco, Rodriguez, and Benavides traveled to the dragline cab to enter data on daily report forms. After completing the paper work, Pacheco, Rodriguez, and Benavides began a routine boom inspection, joined by Saenz. Following the boom inspection, the four men assisted in the task of repairing the bucket chain and a damaged tub hook. At approximately 9:00 a.m., Pacheco began operating the dragline to finish “chopping in” the endwall. “Chopping in” involved making the initial cut at the end of the pit and forming the pit endwall. Procedures for the “chopping in” had been started on a previous shift and the day shift crew was to resume that task. Saenz returned to the bulldozer to perform more work leveling the pad behind the dragline, while Rodriguez and Benavides entered the cab of the dragline with Pacheco.

Digging from right to left, Pacheco walked the dragline across the endwall from the key cut to the plug. At approximately 10:05 a.m., the dragline reached the extent of travel near the highwall and continued digging. At that time, the bulldozer was being fueled on the bench behind the dragline. Shortly before or soon after the dragline was relocated near the highwall, Rodriguez dismounted the dragline to prepare the trailing cable for the walk back along the highwall. At approximately 10:20 a.m., Rodriguez used his handheld 2-way radio to call Pacheco. He asked that Benavides be sent down from the dragline cab to join him. Rodriguez wanted to explain the procedures of using the cable tractor when moving the trailing cable. The two men discussed the procedures and the tractor was later parked approximately 100 feet to the rear of the dragline after Rodriguez used it to move the cable.

Pacheco called Rodriguez on the radio at approximately 10:45 a.m. to inform him the dragline needed to be moved back from the endwall about four steps. Pacheco continued to dig while Benavides and Rodriguez walked to the cable tractor to get a pair of “hot gloves” to handle the trailing cable. Benavides stayed near the tractor while Rodriguez returned to the dragline fantail area. By that time, the bulldozer had been fueled and was being operated by Saenz. Benavides watched the bulldozer being operated to his left as Rodriguez worked with the trailing cable under the fantail to Benavides’ right.

At approximately 11:00 a.m., as Pacheco continued to operate the dragline, Rodriguez was located under the fantail of the dragline, bending over and adjusting a nylon web strap previously attached to the trailing cable near the dragline tub. Pacheco had loaded the bucket with material and was swinging the dragline to his left to dump the material on the spoil pile. Benavides turned from watching Saenz on the bulldozer and saw Rodriguez fall backward after being struck by the left walking shoe. As Rodriguez was lying on his back, the walking shoe continued to travel over the lower portion of his body without making additional contact.

Saenz was traveling away from the dragline in the bulldozer. He turned to look out the rear cab window and saw Benavides running toward Rodriguez. Realizing that the dragline was now swinging back to the digging position, Benavides ran to where the dragline cab would stop. In rotating back to the digging position, the walking shoe again passed over Rodriguez. Benavides yelled to Pacheco and waved his arms to get his attention. Saenz also called over the radio and told Pacheco to shut down the dragline. Once Saenz and Benavides were assured Pacheco understood the situation and that Pacheco was shutting down the dragline, they went to aid Rodriguez. Pacheco dismounted the machine and traveled to where Rodriguez had been knocked to the ground.

Saenz called Jesus Lugo, production foreman, on a 2-way radio to notify him of the accident while Pacheco used a cell phone to report the accident to Mario Resendez, dragline foreman. Lugo and Resendez were located on the mine site and responded immediately by alerting others and traveling to the accident scene. Lugo was the first to arrive, at approximately 11:10 a.m., followed soon after by Resendez. Other mine management personnel and Paul Antu, lignite ash foreman of San Miguel Electric Cooperative, also responded. Antu was a certified Emergency Care Attendant and began to check the victim for vital signs and pulse. Rodriguez remained conscious and his pulse appeared normal. Antu attempted to check blood pressure, but due to an undersized cuff he was unable to measure the pressure.

The Atascosa County Emergency Medical Service ambulance responded and a San Antonio AIR LIFE helicopter arrived soon after to transport Rodriguez to University Hospital in San Antonio, Texas. Rodriguez was admitted to University Hospital where he succumbed to his injuries and was pronounced dead at 8:07 a.m., November 6, 2007. Cause of death was determined to be spinal cord ischemia (lack of oxygen to the spinal cord with subsequent degeneration of the cord) due to vertical impact trauma.

INVESTIGATION

Michael Collins, safety specialist, contacted the MSHA Call Center at 11:28 a.m., November 5, 2007, and reported the accident. Kendell Whitman, Coal Mine Safety and Health Inspector assigned to the Longview, Texas Field Duty Station, was dispatched to the mine to initially investigate the incident as a serious injury accident. While Whitman was en route to the mine on November 6, 2007, the victim passed away. Whitman arrived at the mine at 4:35 p.m., on November 6, 2007, and issued a section 103(k) order to ensure the safety of persons until an investigation could be conducted. Whitman also gathered preliminary information and photographed the accident scene. The MSHA accident investigation team arrived at the mine on November 7, 2007. Refer to Appendix A for a list of persons participating in the investigation. Subsequent inspection activities of the accident scene included taking measurements and additional photographs. During the investigation, documents were obtained and witnesses were interviewed. The investigation at the mine site concluded on November 8, 2007.

DISCUSSION

Digging / Dumping Cycle: When chopping in and cutting the endwall, the length of time to load the bucket with material can differ significantly from one bucket load to another. According to

the dragline operator, a normal cycle time (load, swing, dump, and return to load again) is approximately 40 to 48 seconds. Cutting an endwall takes longer due to the erratic lengths of time to break or cut enough material to load the bucket. The dragline operator stated that the last bucket loaded prior to the accident took much less time to load than any of the previous buckets. This was due to finishing the pass across the endwall and having pre-cut material available to be loaded. It was estimated by the dragline operator that it took eight or ten seconds to load the last bucket before beginning the swing to dump. After Pacheco radioed Rodriguez at 10:45 a.m., to inform him the dragline needed to move back four steps, he continued to dig, load, and dump overburden from the endwall.

Training and Mining Experience: Rodriguez had four years and eight months of total mining experience, all at this mine. On August 12, 2004, he completed task training as a dragline assistant on the Model 740 Page dragline and annual refresher training was last received on June 29, 2007. A review of training records showed that Rodriguez had received all required Part 48 training.

Company Policies: The written safety program at San Miguel Lignite Mine did not specifically address the hazards of being positioned in the walking shoe swing radius. However, in the written material provided for miners when receiving task training to become a qualified dragline assistant, Item 16 in the Cable Handling section, states: "If it is necessary to enter the inside active shoe swing radius, the dragline operator must be notified and digging operation ceased." Rodriguez was trained on this procedure on August 12, 2004.

Accident Scene and Conditions: The accident occurred at the Model 740 Page dragline located on the bench in ramp 2H area. The endwall was being "chopped in" and was nearly complete. Preparations were being made to step the dragline back to finish the endwall. The endwall was being cut from right to left after a delayed start in the dragline operation at the beginning of the shift. The delay was due to repairs being made to the dragline bucket pair link and a cable hook on the exterior of the dragline tub. The weather conditions were clear and sunny with a seasonal mild temperature. The bench at the dragline was damp due to a recent application of water.

The dragline walking shoe was 8 feet wide, 34.5 inches thick, and 40 feet long. The bottom of the walking shoe in the raised position was approximately 22 to 24 inches off the ground. Rodriguez was struck by the end panel of the shoe which was 8 feet by 34.5 inches in dimension. The bottom of the fantail/rear housing of the dragline was approximately 7 feet off the ground.

Victim's Positioning: While Rodriguez was moving the trailing cable, Pacheco could see him each time the dragline rotated back after dumping material on the spoil pile. He could see him either in the mirror mounted on the side of the cab or through the open cab door. Pacheco could not see Rodriguez while he was under the fantail of the dragline. While assisting Rodriguez, Benavides observed Rodriguez under the fantail in the walking shoe swing radius while the dragline was operating. At the time of the accident, Rodriguez was positioned in the walking shoe swing radius, bent at the waist with the top of his head toward the end section panel of the left walking shoe. The walking shoe struck the top of Rodriguez' hardhat as the dragline was being rotated on the revolving frame. His hardhat was found to be intact and appeared to have normal wear with no prominent marks indicating a sever impact.

Communications: Channel 5 on the 2-way radio system was the dedicated channel for the Page dragline crew. The dragline radio, the bulldozer radio, and the handheld radio used by the dragline assistant were the only ones that could use channel 5 on a regular basis. Others could use channel 5 when it was necessary to contact the dragline crew. Rodriguez had the dragline assistant's 2-way radio and used it during the shift. A cell phone was also kept in the dragline cab for the crews use.

Less than 15 minutes before the accident, a series of radio communications took place on channels 4 and 5 between the person that fueled the dozer, Saenz, Pacheco, and Rodriguez. The communications centered on a shovel that had been left by the person fueling the bulldozer. These communications indicated that the 2-way radios were operating and the dragline crew members were able to communicate with each other. In addition to the radio system, Rodriguez had access to switches on the fantail that activated the dragline's signal horn. This horn was normally used by the dragline operator to signal various dragline operations. The switches were activated with a pull rope, approximately 12 to 16 inches long, and were located on either side of the fantail. Activating the signal system produced a sound blast from an air horn. The switches were tested during the investigation and both operated properly.

Managing the Trailing Cable: A 1-ton chain hoist, locally referred to as a "tugger", was located near the outer edge and centered on the dragline fantail. The hoist was used to lift the trailing cable to prevent the dragline from walking on the trailing cable during the propel/walking mode. By attaching the chain hook to an approximately 2-inch wide, flat nylon web strap secured around the trailing cable and tensioning the chain, the cable is pulled taut and assumes a semi-elevated position. The chain for the hoist was retracted and the hook was secured in a stored position at the hoist indicating that Rodriguez was not yet preparing to hook the chain to the strap that was tied around the trailing cable. All indications were that Rodriguez was adjusting the strap on the trailing cable when the accident occurred.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted. Root causes were identified that could have mitigated the severity of the accident or prevented loss of life. Listed below are root causes identified during the analysis and their corresponding corrective actions to prevent a recurrence of the accident.


Root Cause: Management did not ensure consistent compliance with the job procedure of notifying the dragline operator and stopping operation before entering the shoe swing radius of the dragline. The victim entered the active shoe swing radius of the dragline while the dragline was in operation without notifying the dragline operator to cease operations.

Corrective Action: Following the accident, management conducted safety meetings to train employees on procedures of not allowing anyone to work under the fantail section while draglines are in motion and to contact the dragline operator to stop the machine prior to entering the fantail swing area.

CONCLUSION

The accident was caused by a failure to notify the dragline operator to stop the dragline prior to working within the shoe swing radius of the dragline. The victim was fatally injured during the continued operation of the dragline.

Approved by:


Allyn C. Davis
District Manager


Date

ENFORCEMENT ACTIONS

1. A 103(k) order, Number 7285121, was issued to The North American Coal Corporation to ensure the safety of persons at the mine until an investigation could be conducted to determine that dragline operations could resume.
2. A 104(a) citation, Number 7289179, was issued to The North American Coal Corporation for a violation of 30 CFR 77.409(a). On November 5, 2007, a dragline assistant was fatally injured when the Model 740 Page dragline was operated in the presence of the dragline assistant who was a person exposed to the hazards of its operation. The dragline assistant was struck in the head by the end of the walking shoe as the dragline rotated on the revolving frame. The dragline was rotating from the digging position to the dumping position when the accident occurred.

Appendix A

List of persons participating in the investigation:

THE NORTH AMERICAN COAL CORPORATION OFFICIALS

Myron Mitzel	Mine Manager
Tom Kovach	Operations Manager
Mario Resendez	Dragline Supervisor
Jesus Lugo	Production Supervisor
Michael Collins	Safety Specialist

OGLETREE, DEAKINS, NASH, SMOAK, & STEWART, P.C.

Margaret S. Lopez	Attorney at Law
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THE NORTH AMERICAN COAL CORPORATION EMPLOYEES

Charles Pacheco	Dragline Operator
Oscar Saenz	Groundman
Randy Benavides	Groundman
Van Vester	Dragline Operator
Jesse Huerta	Dragline Assistant
Donald Dugosh	Groundman
Davin Moore	Electrician
Virgil Culpepper	Miner's Representative

SAN MIGUEL ELECTRIC COOPERATIVE

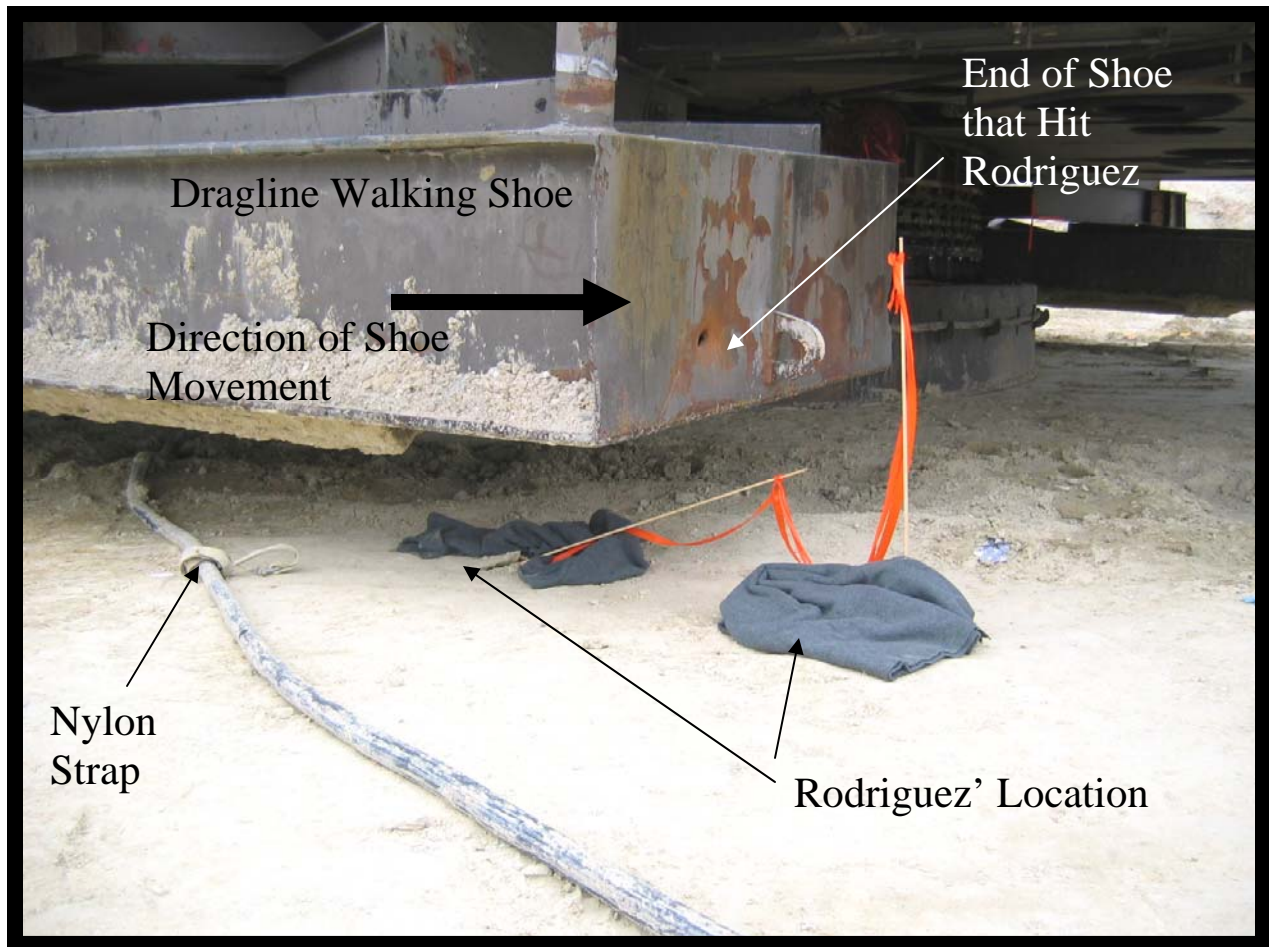
Paul Antu	Lignite Ash Foreman
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MINE SAFETY AND HEALTH ADMINISTRATION

William E Vetter	Coal Mine Safety and Health Inspector
Kendell C. Whitman	Coal Mine Safety and Health Inspector
Jeff D. Scott	Coal Mine Safety and Health Inspector

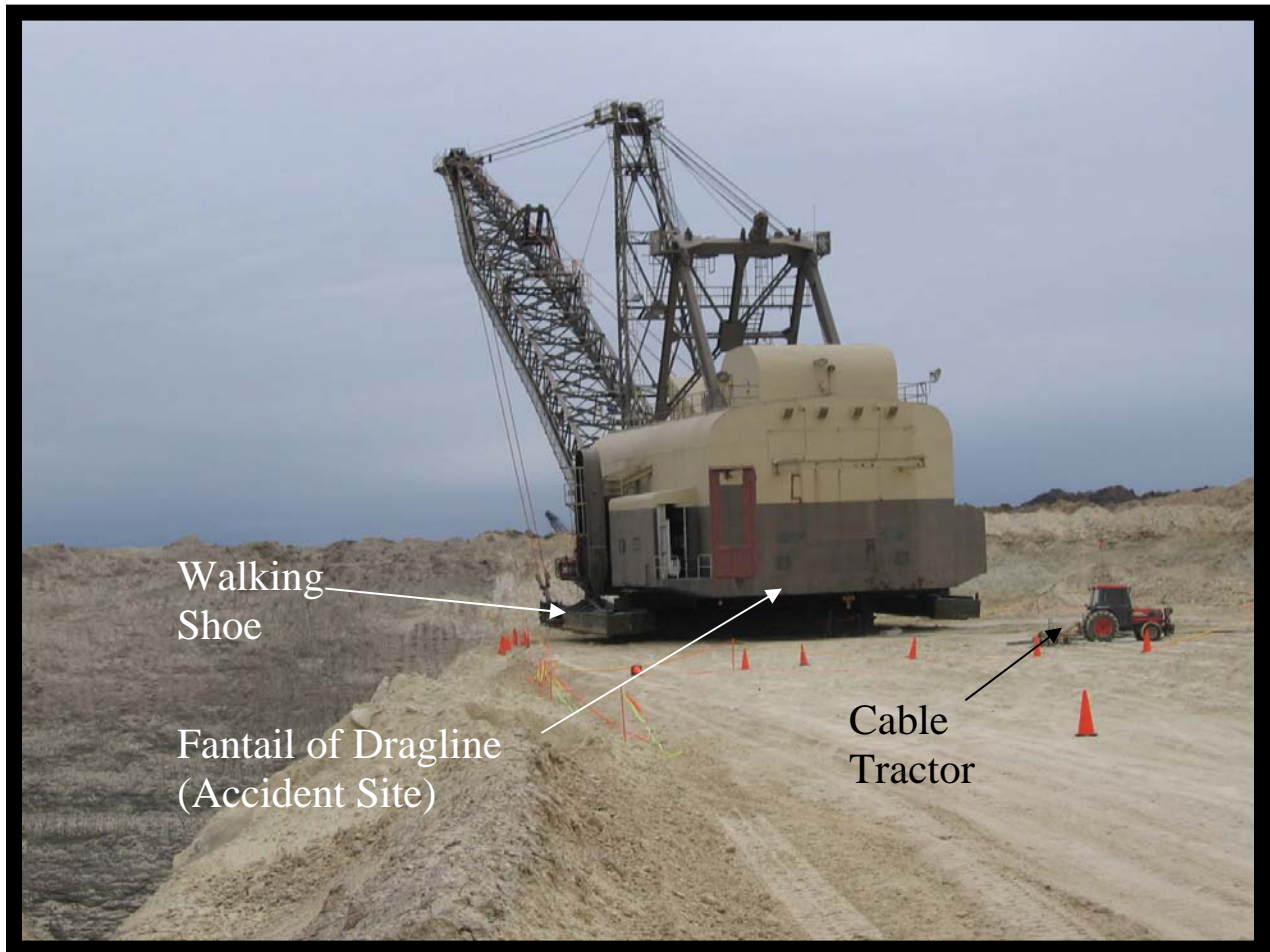
Appendix B

Dragline Walking Shoe in Location where It Rotated and Struck Rodriguez



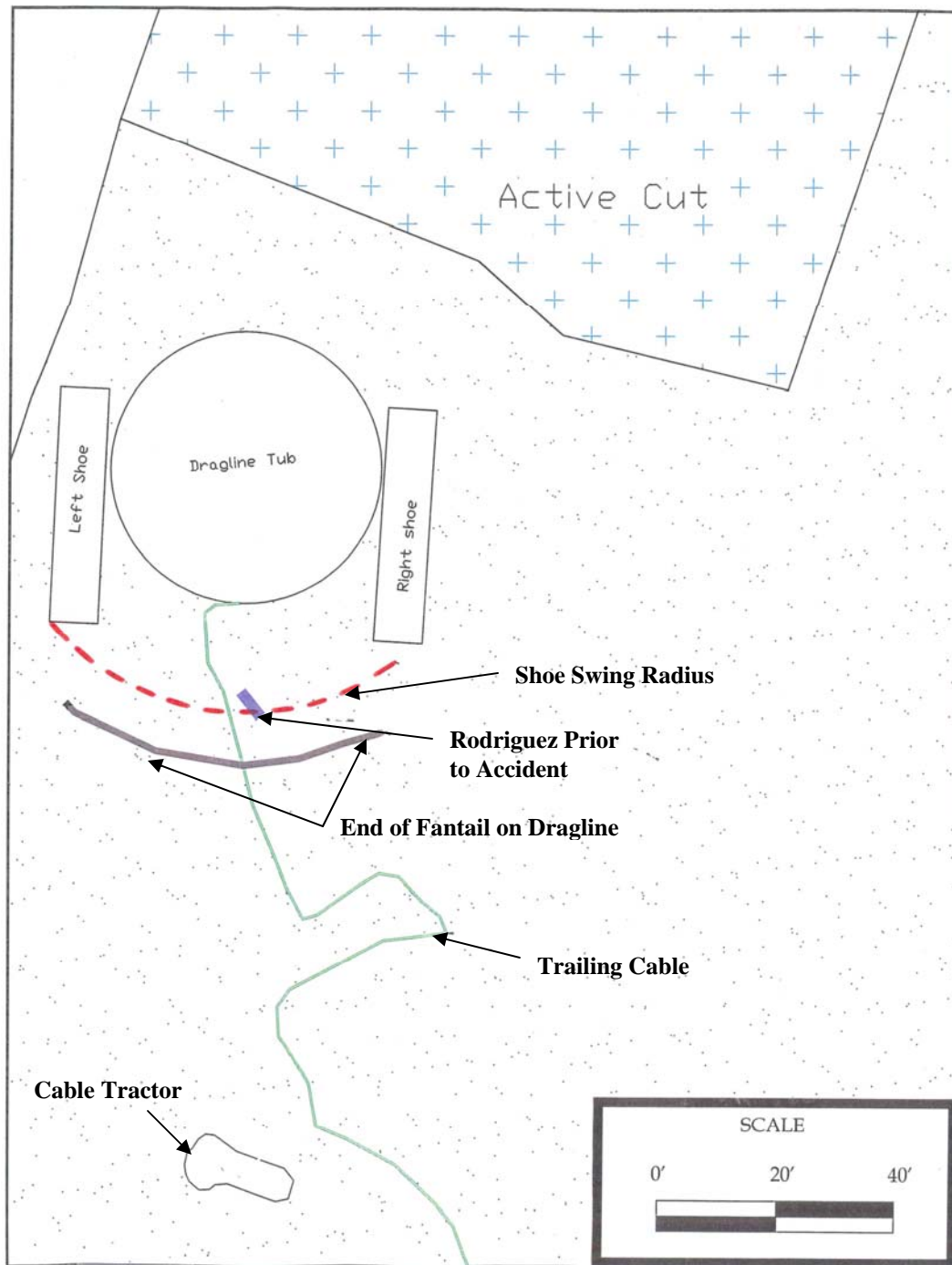
Appendix C

View of Page Model 740 Dragline and Cable Tractor



Appendix D

Plan View of Dragline in Digging Position Prior to Accident



Appendix E

Plan View of Dragline in Dumping Position after Rodriguez Was Hit

