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FATAL NARRATIVE
Joshua Duane Riedel
Nabors Drilling USA LP
307810747

Date & Time of Accident:

July 23, 2004 at approximately 7:30pm.

Notification:

Jeff Burt, Safety Coordinator for Nabors Drilling USA LP, notified Wyoming Workers' Safety (WWS) of the workplace accident on July 23, 2004 at approximately 10:47pm.

The Investigation:

On July 24, 2004, Johnnie Hall, Compliance Supervisor for WWS assigned CSHOs Wayne Dvorak and Lenard Brewer to investigate a fatal accident near Boulder, Wyoming. CSHO Brewer coordinated with Jeff Burt, Safety Coordinator for Nabors Drilling, for employee interviews to be conducted at the Best Western/Outlaw Inn in Rock Springs, Wyoming on July 24, 2004.

After an opening conference was conducted with Jeff Burt, interviews were conducted and arrangements were made with Jeff Burt for an investigation of the accident site to be conducted on July 25, 2004.

Deceased or Injured:

Joshua Duane Riedel

Address:

1819 Cardinal
Worland, Wyoming 82401

Occupation:

Floorhand

Employer:

Nabors Drilling USA LP

Accident Site:

SE¼-NE¼-Section32-T33N-R109W

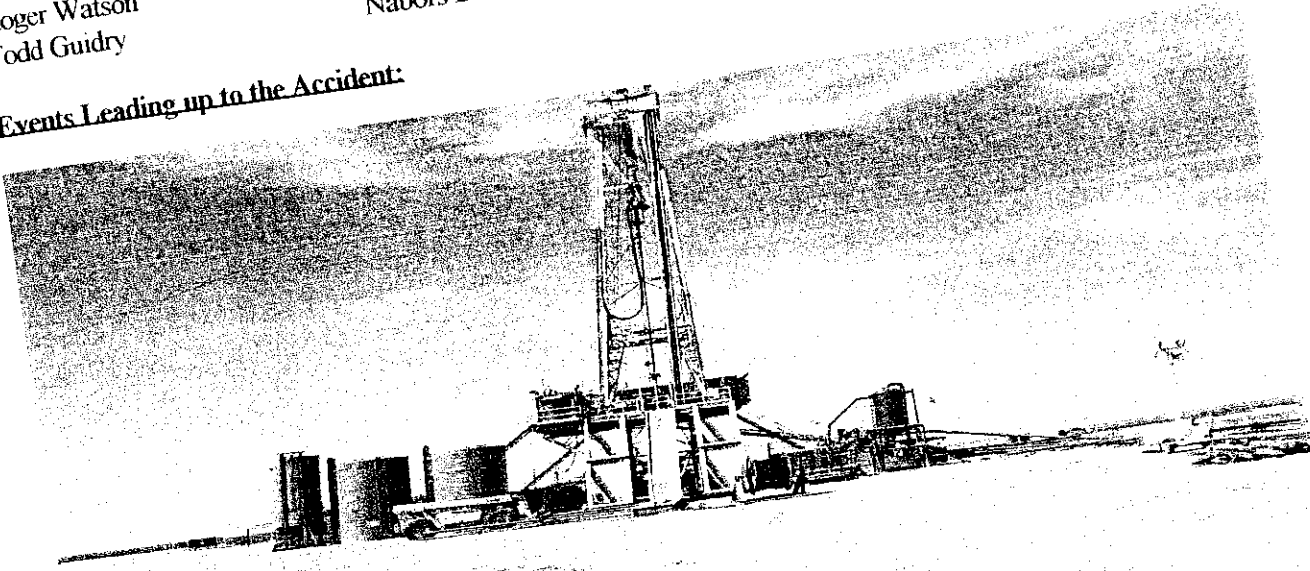
Employees Present at the Time of the Accident:

Name	Firm	Job Title
Joshua Riedel (deceased)	Nabors Drilling	Floorhand
Herb Steinke	Nabors Drilling	Driller
Gabriel Flagg	Nabors Drilling	Floorhand
Guy Cabral	Nabors Drilling	Motorman
Cory Fowler	Nabors Drilling	Derrickman
Philip Fraser	Nabors Drilling	Toolpusher

Employees Interviewed during the Investigation:

Name	Firm	JobTitle
Herb Steinke	Nabors Drilling	Driller
Gabriel Flagg	Nabors Drilling	Floorhand
Guy Cabral	Nabors Drilling	Motorman
Cory Fowler	Nabors Drilling	Derrickman
Philip Fraser	Nabors Drilling	Toolpusher
Roger Stair	Nabors Drilling	Ex-employee
Leonard Sand	Nabors Drilling	Ex-employee
Roger Watson	Nabors Drilling	Ex-employee
Todd Guidry	Nabors Drilling	Motorman

Events Leading up to the Accident:



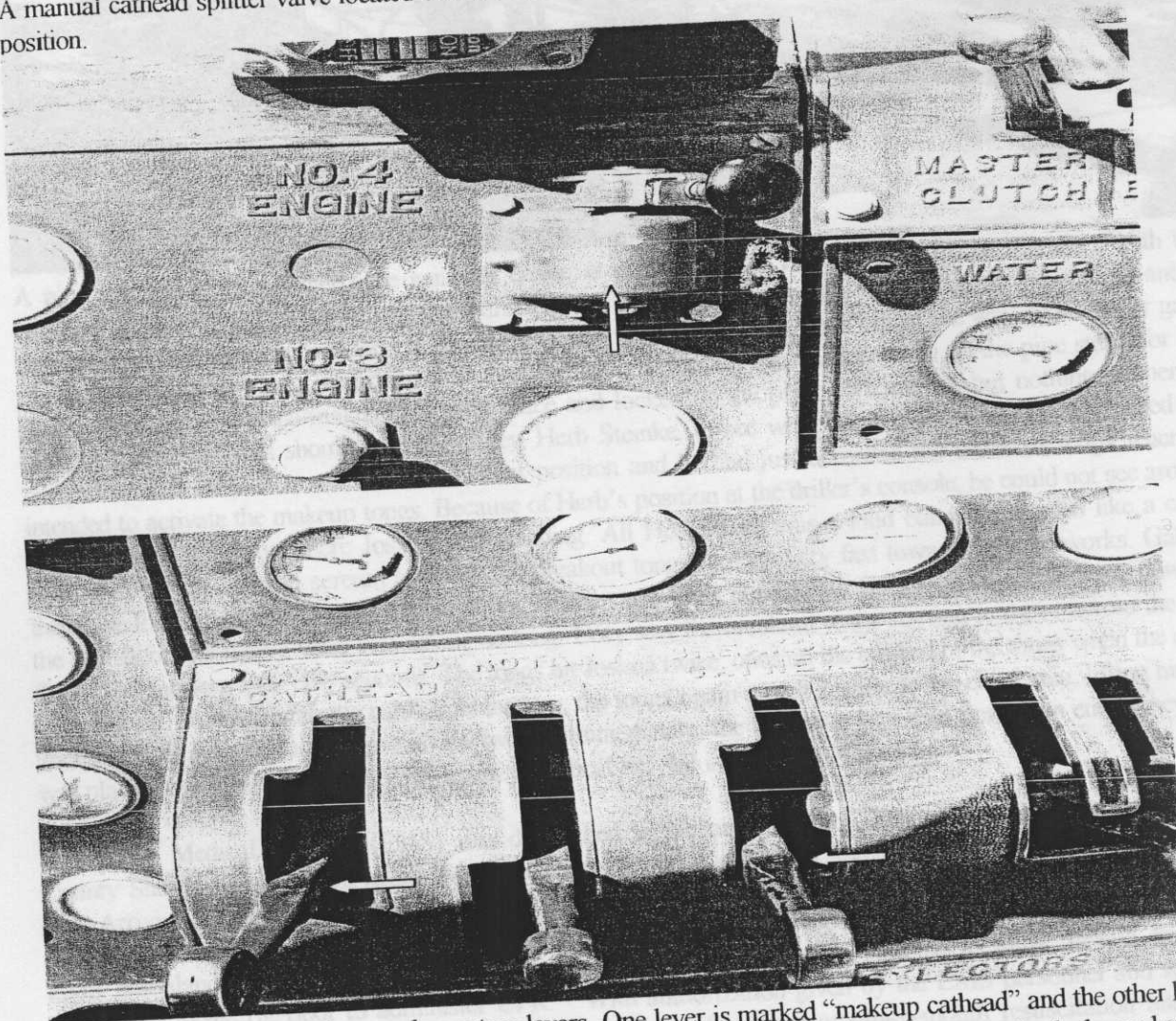
Rig #521 was winterized and a cathode splitter valve was installed on the driller console. The cathode splitter valve was designed by National Drawworks and installed by Tri-Point Energy Services, located in Liberty, Texas. The winterizing process took between 40-50 days to complete. Rig # 521 was transported to Wyoming and was in the process of drilling its first hole when the accident occurred.

On July 23, 2004 after a rig safety meeting, the evening tour crew took over drilling operations on Nabors Rig # 521. The rig crew consisted of driller Herb Steinke, derrickman Cory Fowler, floorhands Gabriel Flagg and Joshua Riedel (decedent), motorman Guy Cabral and crew supervisor (toolpusher) Philip Fraser. The crew was in the process of tripping into the hole to retrieve a mud motor that was lost down hole. Approximately thirty-five stands of pipe were in the derrick. During the makeup process, a set of makeup tongs and a pipe spinner are used to thread the pipe joints together. After tripping in sixteen stands of pipe, a problem was encountered with the mud and floor dry (used to control moisture on the rig floor) had prevented the sections of pipe from threading together correctly. A set of breakout tongs were used to disengage/unthread the sections of pipe. Joshua secured the breakout tongs to the drill pipe, the driller reversed the table and the stand of pipe was unthreaded. After the pipe stand was unthreaded, it was lifted from the collar. The threads were power washed and inspected for possible damage. During the thread inspection, Joshua secured the breakout tongs to the A leg of the derrick so

they would be out of the way. He then positioned himself by the pipe spinner adjacent the breakout tong. Since the pipe threads were not flattened or damaged, the driller gave the okay to use the pipe. The pipe threads were doped and positioned back into the pipe collar.

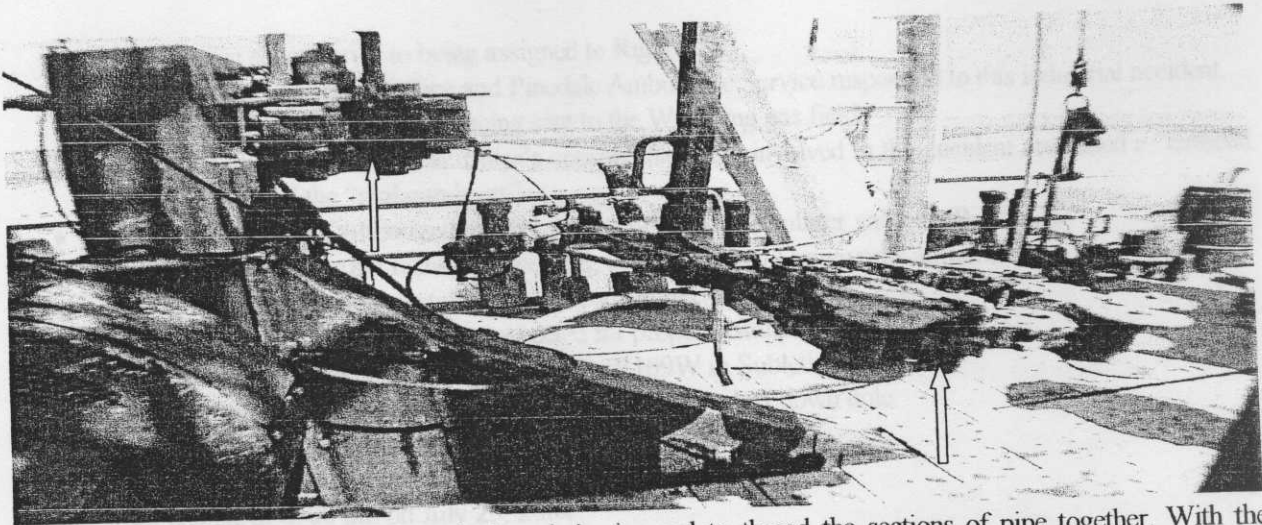
The Accident:

A manual cathead splitter valve located on the driller's console could be placed in either the makeup or breakout position.



Also located on the driller's console are two levers. One lever is marked "makeup cathead" and the other lever is marked "breakout cathead". At the time of the accident, the makeup lever was used for both the makeup and breakout processes. The breakout lever was not operational. The driller would place the cathead splitter valve in the desired position, makeup or breakout, and then use the one lever to complete the process.

- The victim, Joshua Duane Riedel, was a 23-year-old male who was working as a floorhand for Nabors Drilling.
- Joshua Duane Riedel passed away on July 23, 2004.
- The medical examiner listed the cause of death as chest trauma.
- Joshua Riedel did not have prior experience in the oil and gas drilling industry. Joshua attended a two-



A pipe spinner, which replaced the spinning chain, is used to thread the sections of pipe together. With the breakout tongs secured to the A leg, floorhand Joshua Riedel placed the pipe spinner on the pipe stand and it threaded together correctly. He then removed the pipe spinner and held it back out of the way. The driller gave the okay for Gabriel Flagg, with help from Guy Cabral, to position the makeup tongs on the pipe stand for the torque to be set. With the makeup tongs in place and locked on the pipe, both waited, but nothing happened. Gabriel looked over his shoulder at the driller, Herb Steinke, to see what the problem was. Herb realized the cathhead splitter valve was still in the breakout position and he had just activated the breakout tongs when he intended to activate the makeup tongs. Because of Herb's position at the driller's console, he could not see around the console to the floor where Joshua was standing. All Herb heard was a loud bang. It sounded like a cable breaking. Gabriel heard a scream and saw the breakout tongs moving very fast toward the drawworks. Gabriel then saw Joshua positioned on the drawworks. At the same time, derrickman Cory Fowler was looking down to the drill floor wondering what was taking so long. Cory saw the breakout tongs starting to move across the drill floor. This incident took only seconds. The tongs hit Joshua twice, once on the tail end of the tongs when the cable tightened up, and then with the cable tightened up, the tongs again struck Joshua in the chest area, lifting him up about six feet in the air and onto the drawworks. Immediately, the operation was shut down. An emergency call was placed to the Sublette County Emergency Medical Service in Pinedale, Wyoming.

Emergency Medical Services (EMS) was dispatched to the accident site. Deputy Terrell from the Sublette County Sheriff's Department heard the ambulance call on his radio and immediately proceeded to the accident site. Arriving at the site, Deputy Terrell proceeded to the rig floor. He observed Joshua positioned on the drawworks. He checked Joshua's condition and found him to be unresponsive. Deputy Terrell contacted the EMS ambulance, which was already enroute to the accident site, and requested to move Joshua from the drawworks to the rig floor to administer CPR. With authorization given by the EMS personnel and with the assistance of the rig hands, Joshua was moved to the rig floor and mouth-to-mouth resuscitation and chest compressions were then administered. The EMS ambulance arrived and took over emergency care. They attached A.E.D. leads in an attempt to find a heart rhythm. Joshua Riedel expired at the accident site.

Findings:

- The victim, Joshua Duane Riedel, was a 23-year-old male who was working as a floorhand for Nabors Drilling.
- Joshua Duane Riedel passed away on July 23, 2004.
- The medical examiner listed the cause of death as chest trauma.
- Joshua Riedel did not have prior experience in the oil and gas drilling industry. Joshua attended a two-

- week training school prior to being assigned to Rig # 521.
- Sublette County Sheriff's Office and Pinedale Ambulance Service responded to this industrial accident.
- Rig # 521 was winterized before being sent to the Wyoming gas field.
- The pieces of equipment on the driller's console that were involved in this incident are called a "cathead splitter valve" and the "makeup lever".
- National Drawworks authorized the installation of a cathead splitter valve on Rig # 521.
- The splitter valve was not installed according to the National Drawworks authorization.
- Tri-Point Energy Services installed the cathead splitter valve on rig # 521.
- The cathead splitter valve was not inspected for proper installation.
- Accident site was located at Section 32 T33N R109W in Sublette County.
- Nabors was attempting to recover a mud motor that was lost down hole.
- Depth of the drill hole was approximately 10,000 feet.
- The drill rig was pulling triples.
- Tour change at 6:00 pm on July 23, 2004.
- The accident occurred during Philip Fraser's first week as a tool pusher.
- Thirty-five stands of pipe were in the derrick.
- The accident occurred after tripping in sixteen stands of drill pipe.
- Drill floor hazard zones are identified/highlighted in yellow (caution zone) and red (danger zone).
- A floorhand works in the yellow zone about 80% of the time.
- The breakout tongs weighed approximately 500lbs.
- Derrick boards are located approximately 90 feet above the drilling floor.
- High turnover rate for rig hands.
- Herb Steinke was employed with Nabors for about three years as a derrickman.
- Herb Steinke's work schedule was fourteen days on and seven off.
- Herb Steinke had minimal [2.5 months] drilling experience.
- Nabors "Employee training and meeting report" indicates Herb Steinke started working on rig # 521 and attended safety meetings starting on May 06, 2004.
- Nabors "Employee training and meeting report" indicates Herb Steinke worked on, drilled on, and conducted safety meetings on rig # 521 on July 03rd, 08th, 13th and the 23rd, of 2004 and was driller on rig # 44 on July 20th for one tour.
- Phillip Fraser was aware Herb Steinke worked as a driller in Canada and asked Herb if he would consider drilling on rig # 521.
- Phillip Fraser (Nabors toolpusher) and Rod Compton (experienced driller with Nabors) observed Herb drilling and he appeared to be a cautious and safe driller.
- Herb Steinke was proceeding slow and easy being careful not to crown out the blocks.
- According to Phillip Fraser, the driller's controls on rig # 44 were hooked up correctly (normal configuration).
- Herb stated "I know those other drillers that were here, and they've all known about the controls since day one. All they told me was the handle doesn't work so you're going to have to switch from breakout to makeup and only use the one lever [makeup]".
- Nabors ex-employee, Roger Stair stated Herb was a cautious and sensible driller.
- Todd Guidry stated Herb was an honest person and a cautious driller.
- When the accident occurred, it was Herb Steinke's second time operating a triples rig.
- Herb stated, "was not comfortable with rig 521, nervous since day one. Herb had concerns with Rig # 521. Modules had been replaced. Cap rings on the modules have not been replaced [keep moving in and out]. Proper air hoses were not sent to the rig. Were told to just clamp the hoses. Had three or four

mishaps when the air hoses blew off. The breakout side just keeps pulling and pulling. The only thing that held the breakout tongs from pulling back into the draw works was that the jaws held onto the drill pipe. This happened on two occasions. Too large of a gap between the fingers on the board. Pumps blowing out and always replacing the headliners. Green hands, not having a steady crew, trading crewmembers and working short handed (a three man crew).

- The controls on rig # 521 were altered to eliminate using the breakout lever located on the driller's console.
- The makeup lever on rig # 521 controlled the makeup and breakout operations.
- Normal procedures are to use both sets of tongs on the pipe during the makeup process.
- In Canada and with smaller rigs, the procedure of using both sets of tongs during makeup is not practiced.
- Phillip Fraser stated the controls on the driller's console on rig # 521 were hooked up incorrectly, but the rig had a lot of other problems and the panel got overlooked.
- There are a number of differences regarding operating a double verses a triple drilling rig (size of the rig, drawworks, pipe size and length, controls, and derrick height are few of the differences.)
- Safety meetings held addressed communications, work safely and watch out for each other.
- Phillip Fraser stated he was the driller on Rig # 521 before accepting the tool pusher position.
- Jeff Burt stated the rig would not run until the cathead splitter valve was configured correctly.
- The driller's control panel on rig # 521 was removed and transported to the Nabors yard in Casper, Wyoming.
- Jeff Burt stated that he had tagged the airlines and where they were attached on the rig the day he removed the panel.
- There were three tagged airlines: one for each cathead leading to a two-way valve on the control panel and the third one from the two-way valve to the make-up lever on the control panel.
- Before drilling commenced again on rig # 521 after the accident, the driller's console was replaced.

Analysis & Conclusions:

Prior to the accident everything was going well. The driller was noted to be slow and cautious when operating the drilling rig. An indication either he was not an experienced driller, or he was slow and cautious gradually gaining his confidence with the controls on the driller's console on rig # 521. According to statements from his coworkers, Herb Steinke was an honest person, cautious and sensible when on the brake handle. Derrickman Cory Fowler stated Herb was running the blocks slow and smooth, just the way he liked it.

During the course of the investigation three factors were addressed as being directly related to the accident:

1) Herb Steinke's minimal experience as a driller.

Although Mr. Herb Steinke had worked on drilling rigs in Canada, he had minimal [2.5 months] experience as a driller. The rigs Herb operated in Canada were hydraulic and pulled doubles. Herb stated the hydraulic controls move and stop quicker, you can control the speed, and there are only two controls to operate the makeup/breakout tongs. You don't have to go to different locations on the panel to operate the controls. He worked as a derrickman before given the opportunity to break in as a driller. His first assignment as driller was on rig # 44. His second opportunity was on rig # 521, where the fatal accident occurred. Although Mr. Steinke's experience as a driller was limited, his coworkers described him as being cautious and sensible. They didn't have any problems with the way he operated the rig.

2) The configuration of the control levers on the drillers console and the cathead splitter valve.

Before the cathead splitter valve was installed, two levers on the driller's console controlled the make up and break out tongs. With this configuration, air was supplied to each cathead continually. The installation of a cathead splitter valve eliminated a continuous air supply to each cathead.

When installed correctly, there are three positions on the cathead splitter valve: makeup side, neutral and the breakout side. When the splitter valve is placed in the makeup position, the driller would activate/pull the makeup lever on the console to engage the makeup cathead, which would then activate the makeup tongs on the drill floor. With the splitter valve in the breakout position, the driller would activate/pull the breakout lever on the console to engage the breakout cathead, which would then activate the breakout tongs on the drill floor. With the lever on the splitter valve place in the neutral position, air was not supplied to either cathead. During the course of the investigation, it was discovered the cathead splitter valve was incorrectly installed, which eliminated the use of the breakout lever on the driller's console. By placing the splitter valve in either the makeup or breakout position, the makeup lever on the console would activate/control either cathead.

The splitter valve and control lever configuration on the driller's console may have been confusing to both an experienced or inexperienced driller. It is likely the problem with the drill pipe not threading together properly while tripping in the hole disrupted the driller's thought process. This caused him to forget the position of the cathead splitter valve switch. Consequently, he activated the wrong set of tongs. The configuration of the splitter valve made it easy for this type of mistake to be made. If the cathead splitter valve would have been installed following the National Drawworks equipment standards schematic and if the breakout tongs lever was operational and configured properly, this fatal accident may not have occurred.

3) **Fatigue may have been a contributing factor.** The rig was operating on two 12-hour tours - 6:00am to 6:00pm and 6:00pm to 6:00am, which is fairly standard for this industry. The driller was working 14 days on and 7 days off. Shift work of this nature can increase the potential for operator/employee errors.

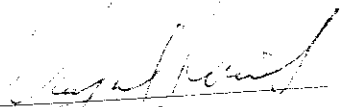
Recommendations:

- Install the cathead splitter valve according to manufacturer's installation procedures.
- Routine on-site safety audits/inspections should be performed.
- Ensure all control levers are functioning as per the rig manufacturer's criteria.
- Before any rig modification(s) take place, all the potential consequences should be discussed not only with the supervisor but with all the affected employees as well.
- All employees should constantly assess the operation for safety hazards. If an employee(s) is positioned in a hazardous location, stop the operation and correct the hazard or the potential hazard immediately.
- Ensure new drillers are adequately supervised, especially when they are operating equipment they are unfamiliar with.
- All company employees should be briefed on the events of this accident.


This report and incorporated findings relate specifically to this particular incident. The employer and employees continue to have the responsibility for inspection and investigation towards compliance with safe operating practices as outlined in the applicable rules and regulations.

The above investigation and findings of the accident occurring to:
Joshua Duane Riedel
1819 Cardinal
Worland, Wyoming 82401

State of Wyoming, is set down and attested to this date:

Signed: 
Wayne Dvorak
Investigator WY OSHA

Date: August 11, 2004

Signed: 
Lenard Brewer
Investigator WY OSHA

Date: 1-14-04