W40

Fatality Narrative

Duncan Dewayne Hughes
Grey Wolf Drilling Company L.P.
307828336 /E6559

Date & Time of the Accident:

The mishap occurred at approximately 8:00 p.m. on Saturday, October 29, 2005.

Notification:

Mr. Chris Jones, Grey Wolf Drilling Company L.P. [Grey Wolf], notified Mr. Johnnie Hall, Wyoming Workers' Safety [WWS] Compliance Supervisor, of the mishap at 9:46 p.m. on 10/29/05. Mr. Jones also reported the fatality via the OSHA national hotline and that notification was passed to Mr. Hall on 10/31/05.

The Investigation:

At approximately 10:00 a.m. on Sunday, 10/30/05, Mr. Hall notified Compliance Safety & Health Officer [CSHO] Kenneth D. Lantta of the mishap. *(Note: Henceforth, CSHO Lantta, as the author of this report, will be referred to in the "first person". All cities and geographical locations referred to in this report are in Wyoming, unless otherwise noted.)* I am based at the WWS Casper Field Office. Mr. Hall advised that I would be the lead investigator for the mishap investigation with assistance from CSHO John Watterson of the WWS Rock Springs Field Office.

At 7:59 a.m. on Monday, 10/31/05, I contacted Mr. Jones, the Grey Wolf safety coordinator based at the Rocky Mountain region office in Casper. Mr. Jones was already in the Boulder area where the rig was located and I reached him via cell phone. I advised Mr. Jones I would be arriving in Rock Springs at approximately noon to rendezvous with CSHO Watterson as previously arranged. I told Mr. Jones I would call him from Rock Springs with an update on the expected time of arrival at the rig location. Mr. Jones advised the rig was sequestered and that no one was permitted in the mishap area pending our arrival and investigation.

At 8:04 a.m., I contacted Mr. Jeff Davis via his cell phone. Mr. Davis is with the Houston, TX office of the law firm Gardere Wynne Sewell LLP representing Grey Wolf. Mr. Davis was also already in the Boulder area, having flown in the day prior. I advised Mr. Davis of the plan to arrive at the rig site in the early afternoon.

At 11:35 a.m., I called Mr. Jones from Rock Springs to let him know CSHO Watterson and I expected to arrive at the rig location at approximately 1:30 p.m. I explained we would first do an opening conference to introduce ourselves and explain the investigation procedures. Mr. Jones said all concerned parties would be present at the rig upon our arrival.

CSHO Watterson and I caravanned to the rig location from Rock Springs, arriving at 1:30 p.m. as planned. Upon arrival, we introduced ourselves and I then led the opening conference. Participants included Grey Wolf employees, Mr. Davis, and representatives from the well operator, Ultra Resources, Inc. [Ultra].

With the opening conference complete, the assembled group began the walk around inspection at the rig location at 2:05 p.m. Mr. Jay Minmier, the Grey Wolf V.P. for HSE from Houston, TX, led the group on the walk around inspection. CSHO Watterson and I took video and still photographs as we walked and discussed the mishap with Mr. Minmier and the other Grey Wolf participants. We viewed the rig substructure and BOP stack from ground level in the cellar and we ascended to the rig floor where we could see a portion of the catwalk surrounding the BOP stack through an open access panel in the rig floor. Since the trauma remediation contractor had not yet cleaned the site, and due fall hazards associated with climbing to the catwalk itself, I made the decision to limit our walk around to the cellar and rig floor. I told Mr. Minmier that I would be requesting photographic evidence gathered by the Sublette County Sheriff's office on the evening of the mishap. I advised that following review of those photos, if there was some aspect of the rig structure or component that warranted further photography on my part, I would make arrangements to return to the rig at a later date.

With the walk around complete, I released the rig to Grey Wolf. CSHO Watterson and I then arranged with Mr. Minmier and Mr. Davis to begin interviewing Grey Wolf employees. They advised that one employee was available at the rig site for immediate interview and another group would be assembled at a motel in Pinedale later in the day. CSHO Watterson and I interviewed the rig site employee, finishing at 4:20 p.m. We then drove to Pinedale where we interviewed two additional Grey Wolf employees. With the interviews concluded at 7:30 p.m., CSHO Watterson and I returned to Rock Springs for the night.

On Tuesday, 11/01/05, CSHO Watterson and I returned to the rig location at approximately 9:30 a.m. We conducted interviews with two additional Grey Wolf employees. Following completion of the interviews at 11:38 a.m., CSHO Watterson and I conducted a preliminary closing conference with Mr. Jones. CSHO Watterson and I departed the rig location approximately 12:30 p.m. enroute to Rock Springs and Casper, respectively.

Over the next two days, Mr. Jones and I spoke on the phone several times to arrange interviews with two additional Grey Wolf employees who had departed the Boulder area prior to our arrival earlier in the week. As an outcome of these conversations, I interviewed one employee in Douglas late in the afternoon on 11/03/05.

On 11/07/05, I faxed a letter to Mr. Jones asking for copies of select documents to include in the casefile as part of the investigation analysis. The documents primarily related to training records, personnel records, and safety program publications & reports.

Following an additional scheduling phone call with Mr. Jones on 11/07/05, I conducted the final interview with a Grey Wolf employee at the Casper Grey Wolf office at 8:00 a.m. on 11/08/05.

On 11/08/05, I spoke to the offices of the Sublette County Sheriff and Coroner. I followed up the telephone conversations with letters to each of the agencies requesting copies of their incident investigation reports and associated photographs. The reports and photos were received over the next two weeks.

I received a packet of documents from Mr. Davis on 12/07/05 in response to my request letter of 11/07/05. After reviewing this packet, I submitted addendum document requests to Mr. Davis on 12/07/05 and 12/08/05. The addendum requests focused on three specific topics. Mr. Davis provided the addendum documents on 12/21/05.

As requested by Mr. Hall, I contacted Mrs. Alana Hughes by telephone on 12/13/05. This was the initial call from our agency to the primary next of kin of the fatally injured employee. I talked with Mrs. Hughes about the methods and progress of the investigation.

I set a tentative final closing conference date with Mr. Jones via a phone call to him on 12/23/05. We agreed to a plan for conducting the closing conference at his office on Friday 01/06/06 with out of town participants connected via conference call. The date was subsequently finalized via e-mail with Mr. Jay Minmier on 12/29/05.

I contacted Mrs. Hughes on 01/04/06 to provide the second phone call with next of kin updates.

On 01/05/06, I forwarded via e-mail a packet of closing conference materials to Messrs. Minmier, Davis, Jones, and J.D. Ricks (Rocky Mountain Division V.P.). The packet included notice of four hazards along with information sheets on the WWS procedures for handling citations. The packet also included several pages of outreach information for use by employers and employees.

The closing conference was conducted at 9:00 a.m. on Friday, 01/06/06 at the Grey Wolf office in Casper. Participants included Messrs. Minmier, Ricks, and Jones at the Casper office. Mr. Davis participated via conference call.

I conducted my final next of kin update phone call with Mrs. Hughes in the morning on 01/30/06. Mrs. Hughes stopped by my office later in the afternoon for a courtesy call.

Victim:

Duncan Dewayne Hughes (fatally injured)

Address:

212 East G Street
Casper, WY 82601-1444
307-473-5787

Occupation:
Floorhand

Employer:

Rocky Mountain Regional Office

Grey Wolf Drilling Company L.P.
2136 Oil Drive
Casper, WY 82604-1511
307-266-9861

Corporate Headquarters

Grey Wolf Drilling Company L.P.
10370 Richmond Ave., Suite 600
Houston, TX 77042-4136
713-435-6100

Accident Location:
Rig #821 located at natural gas well Boulder 15-18 near Boulder, WY

Personnel Present at the Time of the Accident:

Name	Company	Job Title
Kenneth Hasbrouck	Grey Wolf Drilling Company L.P.	Rig Manager
Gerald Barlow	Grey Wolf Drilling Company L.P.	Driller
Randall Dimick	Grey Wolf Drilling Company L.P.	Derrickman
James Wright	Grey Wolf Drilling Company L.P.	Motorman
Robbie Phillips	Grey Wolf Drilling Company L.P.	Floorhand
Duncan Hughes (fatally injured)	Grey Wolf Drilling Company L.P.	Floorhand

Personnel Interviewed during the Investigation:

Name	Company	Job Title
Kenneth Hasbrouck	Grey Wolf Drilling Company L.P.	Rig Manager
Gerald Barlow	Grey Wolf Drilling Company L.P.	Driller
Randall Dimick	Grey Wolf Drilling Company L.P.	Derrickman
James Wright	Grey Wolf Drilling Company L.P.	Motorman
Robbie Phillips	Grey Wolf Drilling Company L.P.	Floorhand
Robert Daffron	Grey Wolf Drilling Company L.P.	Driller
John Spaulding	Grey Wolf Drilling Company L.P.	Floorhand

Events leading up to the Accident:

Grey Wolf is a Houston, TX based provider of contract oil and gas land drilling services in the United States serving both major and independent oil and gas companies with a fleet of 127 rigs. During the second quarter of 2004, Grey Wolf acquired New Patriot Drilling Corporation [Patriot], a Casper based drilling contractor. The acquisition included purchasing the ten drilling rigs owned by Patriot.

Grey Wolf Rig #821 is one of the drilling rigs that were included in the Patriot acquisition. Patriot built the rig in January 2003. The rig is categorized as a diesel electric SCR rig with a rated depth capability of 16,000 feet. Its diesel engines are rated at a combined 1000 horsepower.

Following purchase of Rig #821, Grey Wolf made upgrades and enhancements to the rig. One of these modifications included addition of a catwalk spanning the substructure and surrounding the top of the BOP stack. This catwalk provided ready access to the top of the BOP stack and rotary head. A key component of the rotary head at the top of the BOP stack is a rubber bushing that forms a seal around the drill string. While drilling, the rotary head and bushing rotate with the drill string. The drill string slides vertically through the bushing as the drill string moves up and down within the well bore.

Prior to removing or replacing the drill string during tripping operations, employees utilize the catwalk for access to the rotary head and bushing. They "open" the bushing prior to starting trip out and "close" the bushing after completing trip in.

The catwalk added by Grey Wolf is approximately eight feet wide and twenty feet long. The BOP stack, crowned by the rotary head and bushing, extend upward through the center of the catwalk floor. The catwalk has a guardrail system along the sides and is open at the ends where employees can gain access from other platforms and ramps within the rig substructure. The rotary head at the top of the BOP stack is approximately three feet above the catwalk floor.

In addition to using the catwalk when performing work on the rotary head and bushing, the catwalk was utilized during substructure and BOP cleaning operations. While using a pressure washer spray wand, an employee would use the catwalk as a vantage point for cleaning. Further, the employee engaged in cleaning work would use the catwalk to move from one side of the substructure to the other.

Mr. Hughes learned of a job opening with Grey Wolf from an acquaintance that also worked for the company. He applied for employment on 09/30/05 and began work with the company on 10/12/05 at Rig #821.

Grey Wolf Rig #821 has four crews of employees. An individual crew works 12 hour tours for seven consecutive days (a hitch) and then has seven days off. A crew alternates working days and nights from one seven-day hitch to the next. When Mr. Hughes began working for the company, he was assigned to a day crew for his first hitch. Following his first block of days off, he returned to the rig and began a night hitch. The shifts change at 6:00 a.m. and 6:00 p.m. The

day crew reports for a hitch that begins on Wednesday morning at 6:00 a.m. The night crew reports for a hitch that begins on Tuesday evening at 6:00 p.m.

A crew typically consists of five employees: Driller, Derrickman, Motorman, and two Floorhands. The company also has a Rig Manager who lives on site and oversees the entire drilling operation. Each of the two rig managers alternate being on site for 14 days and then off for 14 days. The rig crew lives in a man camp in Boulder when not on tour.

Initially, Mr. Hughes was hired as a "sixth man" for his crew. He did exterior cleaning and painting work around the rig for most of his first seven-day hitch. He was also provided with orientation concerning the work done by floorhands. Near the end of that hitch, a coworker (one of the floorhands) failed to report for work and was terminated from employment. The departure of the terminated employee created a crew opening and Mr. Hughes was assigned to duties as a floorhand.

In addition to Mr. Hughes, several of his coworkers were relatively new to the Rig #821 crew. His coworker floorhand had completed two hitches and was working on his third at the time of the mishap. The motorman was two days into his first hitch when the mishap occurred. The derrickman had worked for the company approximately three months.

During the first few days of Mr. Hughes' second hitch (now working nights), he was involved in tripping operations. This work was completed when he reported for work on the evening of 10/29/05.

Mr. Hughes and his crewmates arrived at the rig shortly before 6:00 p.m. on 10/29/05. After relieving the off going tour, the crew finished some work described as reaming the hole to get the drill string and bit positioned at the bottom and in place to resume drilling. Once the drilling had started, the driller gathered the crew together for the pre-tour safety meeting and tour task assignments. Since drilling work had resumed, task assignments for the crew included cleaning work in the substructure area to be done by the floorhands. Following the safety meeting, the crewmembers involved in the cleaning operations conducted a Job Safety Analysis [JSA]. This event included a discussion of the tasks, hazards, and safety measures related to the substructure cleaning. The JSA discussion topics were recorded on a company JSA form.

The three crewmembers most involved in the cleaning operation were the two floorhands and the motorman. The plan was for the floorhands to take turns doing the cleaning work and operating the power washer in the substructure. The motorman would oversee the operation and evaluate the progress.

The Accident:

Mr. Hughes was the floorhand to take the first turn at doing the power washing and cleaning work in the substructure. The motorman assisted him with donning the protective equipment used for this work, which included raingear type coat and trousers. A personal fall arrest system body harness was donned over the top of the raingear coat.

Mr. Hughes climbed into the substructure and retrieved the pressure washer wand. The motorman then started the pump that delivered water to the wand. The motorman and Mr. Hughes exchanged hand signals that all was working well – thumbs up. Mr. Hughes began the cleaning work at approximately 7:00 p.m. The motorman then attended to his rig tasks, but checked on Mr. Hughes approximately every 10 to 15 minutes and they would exchange hand signals that all was continuing OK.

The motorman checked on Mr. Hughes about 7:55 p.m., confirmed that the cleaning was progressing well, and then went to the doghouse to retrieve a flashlight needed for his next task. While departing the rig floor, the motorman heard an out of the ordinary noise – a banging sound coming from somewhere in the substructure. He quickly ran down the stairs and entered the substructure area. He observed that Mr. Hughes was tangled in the kelly and rotary head at the top of the BOP stack and was being swung around by the kelly rotation. The motorman quickly ran back to the drill rig floor to alert the driller to shut down the rig. The time from when the motorman had last observed Mr. Hughes conducting washing work until he heard the banging sound was approximately five minutes.

With the rig shut down, rig employees initiated calls to emergency responders and returned to assist Mr. Hughes. Mr. Hughes was fatally injured and not responsive.

Findings:

Mr. Hughes was fatally injured when he became entangled in the rotating kelly and rotary head located at the top of the BOP stack. While working in this area cleaning the substructure, he was utilizing fall protection equipment consisting of a rig mounted retractable lanyard system (commonly referred to by the trade name SALA block). The self-locking snap hook of the SALA block wire rope lanyard was connected to the end of a retractable lanyard system (commonly referred to by the trade name Talon) that was part of the fall arrest system body harness worn by Mr. Hughes. The SALA block lanyard hook was connected to the hook at the end of the Talon nylon web lanyard.

The nylon web lanyard of the Talon system caught on a protrusion sticking upward from the top of the rotary head at the top of the BOP stack. The rotary head and kelly were rotating approximately 45 rpm at the time while the rig was drilling. When Mr. Hughes' nylon lanyard caught on the rotating rotary head, the lanyard began wrapping around the rotating kelly. As the kelly and rotary head continued to turn, the cable lanyard from the SALA block was pulled out of the retracting mechanism against the brake and wrapped tightly around the kelly. Mr. Hughes was pulled tight against the kelly by the Talon nylon lanyard and his body harness. His body then rotated with the assembly until the rig was shut down.

Mr. Hughes was the most recently hired floorhand on his crew. He had worked one seven-day hitch and the mishap occurred early in the fourth tour of his second seven-day hitch. He did not have any prior oil field experience, having previously worked in the construction industry.

When Mr. Hughes reported for work on the first day of his first hitch, he was introduced to the rig manager and crew. The rig manager began the new employee orientation with Mr. Hughes. However, prior to completing the orientation or filling out the company new employee orientation checklist, the rig manager was called to the drilling floor to attend to an unrelated matter. The rig manager and Mr. Hughes did not complete the orientation or company checklist. The rig manager began his days off later that day and the oncoming rig manager was not aware the orientation was incomplete. The oncoming rig manager did not complete the checklist. Further, he did not complete the weekly new employee performance evaluation report at the end of Mr. Hughes' first hitch.

Upon first reporting to the rig, Mr. Hughes was the "sixth man". During much of the first week of work, he was assigned to duties involving cleaning the exterior of the rig. During this first week of work, Mr. Hughes and his crew worked the day tour from 6:00 a.m. to 6:00 p.m. Near the latter part of his first week, Mr. Hughes was promoted to floorhand when the incumbent failed to return to work and was terminated from employment.

Mr. Hughes and his crew rotated to the night shift, working from 6:00 p.m. to 6:00 a.m., when they returned for what was Mr. Hughes' second hitch. The first tours of this hitch involved tripping operations. In support of the tripping work, Mr. Hughes had the opportunity to be in the substructure on the catwalk surrounding the top of the BOP stack while working with the rotary head bushing. The rotary head and kelly were not rotating while conducting this work.

When Mr. Hughes was assigned to perform substructure cleaning work at the start of the mishap tour, it was the first time he had done this task. It was also the first time he was in the vicinity of the rotary head and kelly while they were rotating. Preparatory to this work, a JSA was conducted with the driller, motorman, and two floorhands in attendance. The JSA topics were recorded on a company JSA form. The written topics did not include a discussion of the hazards associated with an employee being in the vicinity of the rotating kelly and rotary head while doing substructure cleaning. The discussion and JSA documentation did include a caution to not let the power washer hose become a trip hazard by becoming tangled up. The JSA discussion and documentation also covered wearing fall protection to alleviate a fall hazard.

A coworker observed Mr. Hughes as he donned his fall protection body harness. At the time of the mishap, Mr. Hughes had the Talon hook connected to the SALA block hook as described above. This hook-to-hook connection was contrary to published manufacturer's guidelines. Though Mr. Hughes received instruction on the importance of utilizing fall protection equipment during the time of his employment, it is not clear that he was provided specific details of when, where, and how to use the individual equipment components.

In September 2003, a company employee was injured on a different drilling rig when the SALA block self-retracting lanyard he was using became entangled on the rotary head while it was rotating. The drilling rig was shut down prior to this employee becoming seriously injured. Company personnel investigated the incident and the results were forwarded to corporate headquarters for review. In turn, the company prepared Safety Alert 2003-0014, which provided an overview of the incident and corrective action recommendations. One of the recommendations was that "Drilling operations should come to a stop, before anyone works around the rotating head."

In May 2005, Grey Wolf issued revision 3.0 of the company Safety Manual. Section 4, page 18 of this manual at Paragraph I(1) provides that "All moving machinery that presents a hazard to employees working in its proximity shall be adequately guarded." The rotary head on the mishap rig did not have a guard installed to prevent personnel from coming in contact with the rotary head. As discussed above, Grey Wolf modified and upgraded Rig #821 following its acquisition from Patriot. When the catwalk was added, a guard was not installed on the rotary head.

While conducting cleaning work from the catwalk, Mr. Hughes may have momentarily lost situational awareness. From an "after the fact" vantage point, it would seem that the rotating machinery was in plain view and that "common sense" would dictate remaining clear. While doing the work, Mr. Hughes had to concentrate on operating the power washer wand and on keeping the hose from becoming tangled. Concurrently, as he was moving about, the fall protection lanyard attached to his back was out of sight and possibly outside his immediate attention. It is not known exactly where he was standing or the exact work he was doing at the time; but for an instant, the nylon web lanyard contacted the moving rotary head. This contact was sufficient for the lanyard to become entangled.

The crewmembers that responded to the mishap did not have current first aid training certification documents as was discovered during the mishap investigation. This shortfall did not affect the outcome of the event.

Analysis & Conclusions:

This mishap was the culmination of a sequence of events, much like links in a chain. Had any one of the individual links been broken or altered, the mishap would not have occurred. The links include:

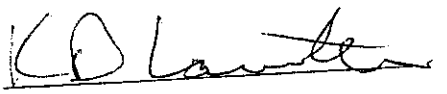
- The September 2003 employee injury resulted in an investigation and a company safety alert. This information was not provided to the Rig #821 crew.
- Rig #821 was purchased in early 2004 from Patriot. The rig manager at the time of the mishap had been with this rig when Patriot owned it. His knowledge and understanding of the rig design and operation could have flagged that employees worked in close proximity to the moving rotating head during rig cleaning operations.
- Following acquisition of Rig #821 by Grey Wolf, modifications were made to the catwalk that provided access to the rotary head. These modifications made access easier and safer from a fall protection standpoint. An unintended consequence was the catwalk became a working platform for conducing cleaning operations while the rotary head was in motion. A rigorous management of change process could have detected this new hazard and resulted in further modification to overcome the hazard.
- Mr. Hughes was beginning his eleventh workday with Grey Wolf at the time of the mishap. He did not have any prior drilling industry experience, having previously worked in the construction industry. His new employee orientation was truncated on the first day of work and was not resumed following arrival of the oncoming rig manager. Further, he was not provided with performance feedback via the company's new employee weekly performance evaluation report.

- At the time of the mishap, Mr. Hughes was performing substructure cleaning work for the first time. It was also the first time he had been on the catwalk in the vicinity of the rotary head while it was rotating.
- The JSA completed by the crew just prior to commencing the substructure cleaning work emphasized fall protection and avoiding slip/trip hazards. It did not emphasize the hazards associated with a person working near the moving rotary head.
- The company safety manual guideline about not working near moving machinery unless guarded was not included in the JSA discussion prior to Mr. Hughes beginning the cleaning work.
- The motorman had worked for the company for two days. He was assigned to oversee Mr. Hughes' effort as he began the cleaning work. The motorman had not been on the catwalk near the rotary head when it was turning.
- Mr. Hughes had been instructed to follow company policy directing use of personal fall arrest equipment when working at heights more than six feet high. However, he was not instructed, or did not retain instruction, to not connect the self-locking snap hook of his Talon lanyard to the self-locking snap hook of the SALA block lanyard. These procedures are detailed in the user instruction manual provided with the Talon system.

Recommendations:

- All company employees should be made aware of this mishap.
- Grey Wolf Rig #821 procedures or physical equipment should be modified such that either employees are not permitted to work in the vicinity of the rotary head while it is in motion or some type of guarding system is added to prevent employees in the vicinity from coming in contact with the rotary head when operating.
- Grey Wolf safety manual guidelines concerning equipment guards should be emphasized with all employees and then followed.
- Grey Wolf safety manual guidelines for providing orientation and weekly performance appraisals to new employees should be followed.
- Grey Wolf procedures for conducting and documenting JSA discussions should be reviewed with all employees. Those job tasks with high hazards should be clearly discussed and well documented to assure all affected employees clearly understand the hazards and methods to prevent exposure.
- Grey Wolf should provide "lessons learned" information to other drilling companies via the International Association of Drilling Contractors Safety Alert system. (Note: This action is complete – refer to IADC Safety Alert 06-02 posted on the IADC Internet website.)
- Grey Wolf employees should be trained on appropriate methods for connecting various components of personal fall arrest equipment and, specifically, that two self-locking snap hooks should not be connected to each other. Beyond focusing on "when", fall protection training should also provide information on the "why" and "how" aspects of personal fall arrest equipment use.
- Orientation should be provided to all new employees with special emphasis for those who have not previously worked in the drilling industry. Those in a leadership role should be cognizant of the ease with which new employees are grasping the technicalities and hazard awareness of their job assignments.

Kenneth D. Lantta, Wyoming Workers' Safety, Casper Field Office, prepared this report of investigation and findings concerning the workplace fatality involving Grey Wolf Drilling Company L.P. at a location near Boulder, WY.

Signed: 

Kenneth D. Lantta
Wyoming Workers' Safety

Date: 1/31/06