PIPELINE ENGINEERING TRANSPORTATION
DRILLING CONSULTING
PRODUCTION EXPLORATION SERVICES

AMERICAN SOCIETY OF SAFETY ENGINEERS
TRANSPORTATION PRACTICE SPECIALTY
OIL & GAS BRANCH

WELL- INFORMED

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BRANCH CHAIR'S MESSAGE – LAMAR HUTCHINSON

As members of the safety community,we have opportunity to improve. ASSE's Oil & Gas Branch helps provide a conduit in communication. This Branch can share best practices and lessons learned. Our Branch's success depends on you, and by becoming an active member, you can have a voice.

Our goal is to have over 500 members so that we may become a full practice specialty.We hope to reach this goal before ASSE's 2008 Professional Development Conference, which will be held in Las Vegas, NV in June. Our membership has shown continued growth and now stands at 394 members.

My thanks goes to all Oil & Gas Branch members. All have helped us reach where we are now, but I would like to pay special thanks to Laura Comstock and Mike Bradshaw, both of whom have shown unwavering support of the newsletter. I ask that each Branch member submit an article to contribute to future newsletter successes.

I am honored to serve you as Branch Chair, and I look forward to what this New Year will bring.

If you would like to participate in a committee or become an active leader of the Oil & Gas Branch, please e-mail me at lhutchinson@bssllc.com.

In This Issue:

Branch Chair's Message 1
Loose Flange Bolts at PSV Cause Fire 2
Oil & Gas-Related Fatalities 2
Timberland Boot Recall 7
International Association of Drilling Contractors ASP Program (Third Quarter) 8
10 Most Expensive Accidents 8
10 Deadliest Accidents 9
Featured Member Article: The Evolution of Offshore Personnel Transfer 10
PHMSA on Transporting Biofuels 12
HazMat Transportation of Lithium Batteries 13
CSB Releases New Reactives Safety Video 13
Mismatched Threads Cause Well Fire 14

Loose Flange Bolts at PSV Cause Fire

A crude unit at Chevron's Pascagoula refinery experienced a large and costly fire in August 2007. The official investigation report has not yet been issued, but the likely scenario of events leading up to this fire has been informally reported as follows:

- A 4" x 6" or 6" x 8" PSV was removed for routine servicing at last TA, but when it was reinstalled, the flange bolts were not properly tightened (maybe only hand-tightened).

- The PSV was not easy to access. The loose PSV inlet flange probably leaked a small amount for quite some time, but the small leak was not detected due to the PSV's location.

- Sometime well after TA, the PSV started "simmering" due to system pressures getting close to the PSV set pressure.

- The simmering of the PSV was just the "right frequency" such that loose stud nuts backed off the studs and some nuts fell off completely.

- With missing and very loose nuts, the flange opened up enough to cause a significant release and fire.

No fire-related injuries occurred, and all employees and contractors were immediately accounted for.

Oil & Gas-Related Fatalities Region 6 (OK, TX, LA, NM, AR) 1/1/06-8/17/07

69 Incidents
- 58 closed inspections (incidents provided)
- 5 active inspections (no data)
- 2 no inspections conducted
- 4 either incident was not found to be job–related or inspection resulted from a multi-employer investigation of same incident

Of the 58 inspections:
- 40 Texas
- 7 Oklahoma
- 6 New Mexico
- 4 Louisiana
- 1 Arkansas

All five active inspections are of sites in Texas.

For the 58 inspections (incident-related hazard):

- Struck-by	22
- Caught –in or between	8
- Electrocution	8
- Crushed- by	7
- Explosion	4
- Fall	4
- Fire	3
- Vehicle rollover	1
- Pinned	1

Struck By Pipe: Forklift operator was loading a piece of 14-in (35.5cm) pipe 40 ft (12m) long onto a flatbed trailer. He got off of his forklift to attempt to strap it down when the pipe rolled over his head, killing him.

Pressurized Vessel's Hatch Exploded & Hit Employee: An employee was in the process of examining the hatch of a pressurized vessel for a suspected leak when the hatch exploded, striking the employee and propelling off the top of the vessel, which measured 10 ft high. The victim suffered head injuries and was transported to the hospital where he died 6 hours later. The pressure of the vessel was not relieved or bled off before the employee attempted to examine the vessel.

Struck By: During operations to excavate drilling mud from a docked barge, Employee 1 (victim/dump truck driver) was struck and

injured by a moving excavator operated by Employee 2 (Excavator Operator). Employee 1 had exited his dump truck and walked toward the rear of the excavator when he was struck and rolled over by the excavator track. Employee 2 was unaware that anyone was behind the excavator and continued to operate the equipment until he heard the victim hollering and screaming and was made aware of the situation by Employee 3 (witness/dump truck driver). Employee 1 was eventually transported to a local hospital where he succumbed to his injuries.

Struck By: Contract employees were attaching a metering run into the line from Well C7 when they heard a pop. Employees 1 (Consultant) and 2 (Superintendent for the contract roustabouts) left the area where the metering run was being installed and went to check out Well C7. Upon their arrival at C7, a larger explosion took place, which was strong enough to sever the flow lines connected to the Christmas Tree. One of the lines struck Employee 2, fatally injuring him. Employee 1 attempted to shut in the well and suffered a broken/dislocated leg and was hospitalized.

Employee Caught in Drill Stem During Drilling: An employee added lubricating oil to the rotary of the water well drilling rig. The employee did not stop the rig while performing this procedure, and his raincoat was caught by the nearby rotating kelly. Although there were no protrusions on the kelly, the self-adhesive properties of the raincoat caused it and the employee to be drawn into the rotating kelly.

Struck By: During a maintenance operation, Employee 1 and a roustabout removed the seat from a valve. A company tried to communicate to them, but the beeper/horn/siren was too loud. The company man went to the control panel and turned the switch controlling the noise. The switch activated (opened) the remotely controlled/pneumatically operated valve, releasing compressed gas located/trapped between the high-pressure well isolation valve and the pneumatically operated valve. The 4,000 psi gas escaped directly to the high-pressure choke valve that had been opened and the seat was removed. The wrench used to remove the valve seat was propelled into the face/head/shoulder of Employee 1.

Employee Struck By Casing Bales: Two 18-ft casing bales were picked up to the rig floor using a driller's side air hoist. The hoist line used a braided cable sling attached to two bales. The two employees were in the process of pushing the bales into position when the bales fell, striking employees. One employee was killed, and the other employee injured his right leg.

Death By Electrocution: An employee was transporting a cement head device suspended from a chain and secured to the forks of the rough-terrain forklift vehicle. While transporting this device, the employee drove the forklift into the overhead power lines, which were operating at a voltage of 12,800 volts and suspended 26 ft, 8 in above the ground.

Electrocution: A 24-year-old man was killed when a pump jack that was being moved with a gin pole truck to a nearby location came into contact or came near an electrical line.

Employees Struck By Pressurized Flow Line: An employee was struck by pressurized mud and gas when he attempted to remove the bolt from the rotating head rubber gasket. The employer had received gas for three days prior to the accident and had lost circulation. Drilling mud flowed into the wellbore, but no drilling mud returned to the drilling mud circulating tank. The employer needed to see where the fluid level was located, therefore, five stands of pipe were tripped out. On the sixth stand, the rotating rubber head gasket needed to be removed when the well "kicked" during the process, fatally injuring the employee.

Caught in Drive Shaft: An employee entered the area of the rig carrier where the drive shaft extends from the rotary gear box to where the shaft connects to the rotary table under the rig floor. The employee was caught by the rotating shaft and fatally injured.

Caught in or Between: A workover crew was servicing an oil well with a truck-mounted drilling rig. After servicing the well, the crew reenergized the pumping unit so that the pump could pick up prime. A short time later, the tool pusher discovered that the well had not started flowing. He informed the crew that the bypass valve at the well head was probably plugged with paraffin and instructed them to loosen the valve. The employee (victim) went to retrieve a wrench next to the pumping unit and was crushed between the counterweight and the pump frame.

Struck By/Crushing Hazard: A drilling company employee was fatally injured when he was struck in the head by a falling A-Frame leg of

a drilling derrick. The employee was in the process of guiding the brace of the A-Frame leg into place when a piece of the leg broke off where it was attached and suspended from the crane, causing the leg to fall.

Caught By and Drawn Around Rotating Shaft: Employee 1 and the helper were preparing the seismic drilling rig and water buggy for drilling the first hole of the day. Apparently, Employee 1 had the rotary on the drilling rig running while preparing it for operation. The rotary protruded out approximately 2 ft horizontally from the rear of the drilling rig and was approximately 5 ft above the ground with no drill bit connected to it. During the preparation process, Employee 1 reached out toward the rotating rotary, and the protruding u-bolt on the rotating rotary caught the right sleeve of Employee 1's jacket. The helper was on top of the water buggy and was not watching Employee 1. When the rotating rotary caught Employee 1's right arm, it caused Employee 1's body to become entangled in and around the rotary. Employee 1 received multiple fractures and blunt trauma injuries, which resulted in Employee 1's death.

Electrocution: A service technician at the rig was assisting the rig manager and motorman in repairing a flexible cable when a third-party truck dislodged pieces of wood emplaced across the wooden service road into the rig area to protect the flexible cords. Two cables ran from the rig Silicone Control Rectifier (SCR) house, across the wooden slat drive to a trailer and transformer. One of the cords supplied 600 volts to a voltage transformer operating five trailers and a portable restroom. The other flexible cord carried 220 volts and supplied the mud engineer's trailer. The motorman plugged in and energized the incorrect circuit. The service technician was holding the damaged portion of the flexible cable was electrocuted when it was energized.

Struck By Oilfield Equipment: Employee 1 (lead operator) of a nipple-up crew and two other crewmembers had completed torquing the bolts on a dry hole tree at the wellhead of a natural gas well at Rig 1 and were preparing to exit from the rig's substructure. Another nipple-up employee had erected a pump beneath the substructure to test the wellhead. Two employees of the drilling crew had begun rig-down activities and had lowered one of two elevator links (bail) to the ground using the air tugger. Control of the second of the two bails was lost during the lowering operation. The leg of the 1/4" chain sling broke and the bail fell, bouncing into the substructure where it struck Employee 1. Employee 1 suffered a laceration to the head, blunt force trauma to the right chest and shoulder, a fractured right leg and internal injuries. Employee 1 was declared dead a few hours after arrival at the hospital.

Crushed By Falling Object: Employee 1, a 24-year-old heavy-haul truck driver, was crushed by the midsection boom of an 80-ton Link-Belt LS 138 II crane. Employee 1 was not assigned the task to disassemble the lattice boom and took it upon himself while underneath the boom to strike the lower-right steel pin first with an 18-lb sledgehammer. Employee 1 disregarded his co-workers' and supervisor's warnings to stop and proceeded to strike the lower-left steel pin. As soon as the pin was knocked out, the midsection collapsed directly on Employee 1, fatally crushing him. The lattice boom was not ready to have the pins removed, and the boom was not supported in any way. The crane operator was in the process of tracking over to Trailer 9908 to lay the boom on top of the trailer (which would have been used as the support) and to remove the steel pins.

Struck By: Employee had finished his shift and was standing and talking on the ground when a rig handrail fell after weld failure (30') and struck him.

Struck By: Employee was with a crew washing out FRAC tanks in a cow pasture. The truck would not pull a vacuum. Employee went onto tank catwalk and attempted to remove the dome held in place by a band to access the float, which appeared to be stuck in the ball seat. The dome and band were under pressure, and when loosened, came off and struck the victim on the head.

Struck By: Employee 1, a drill pipe inspector, was walking across a site to visually inspect drill pipe when he was struck and run over by a truck driven by Employee 2, who was an employee of a drilling company.

Explosion & Fire: Employee 1 was operating a reverse circulation unit when oil and natural gas came up from the well through tubing, hitting the top of the produce water tank and splattering all over the ground, Employee 1 and the swivel diesel engine. Fumes from the natural gas entered the intake of the swivel engine causing

an explosion and severely injuring Employee 1. He was airlifted to a burn center where he succumbed to his injuries.

Electrocution: The operator of a pulling unit was raising a derrick into position when the derrick came in contact with an overhead power line. The employee was fatally injured and transported to a medical center where he was pronounced dead.

Struck By An Aerial Lift: A supervisor was walking alongside a Genie manlift. The front left tire of the manlift caught the supervisor's right leg. The manlift ran over the supervisor. The supervisor died from injuries sustained.

Struck By: A 44-year-old driller was tripping into a hole. He had broken the Kelly down, unhooked from it and latched on to another stand and started down. The hydromatic brake was still disengaged. He ran about 15 ft, stopped and asked a floor hand to adjust the water in the hydromatic brake. He proceeded to let the blocks down and could not stop them with the hand brake. Just before the elevators hit the floor, the victim turned to run away, but the blocks laid over on top of him and pinned him to the floor.

Electrocution: Three employees of a construction company were on a lease operated by an oil company to repair a pipeline that the oil company had ruptured. The pipeline belonged to a gas company. An employee from the gas company was on location and noticed a water leak across the lease at another location. The gas company employee took an employee from the construction company in his vehicle to the water leak's location. The construction employee determined that the leak could be stopped by turning off a valve. When the construction employee touched the valve, he became energized, which resulted in his death.

Struck By Equipment: An employee was working on/near a line heater when the end blew off, fatality striking the employee. Prior to the incident, the employee had been engaged in changing out the o-ring. The employee shut in the line heater by closing a valve upstream at/near the well head and a valve downstream in front of the separator. The valve upstream had been opened, but the valve downstream had not been opened. Average pressure of the gas from the well had been 8,500 psi.

Fall & Struck By: A derrick man failed to tie off on a monkey board, and when he reached out to grab the next pipe, he fell from the derrick, striking the driller, who had been working floors, then striking the tongs. The derrick man was pronounced dead before he got off location. The driller was pronounced dead at the hospital.

Crushed By: An employee was working on a rig floor when the traveling blocks contacted the crown of the rig, causing the drill stem to break. The traveling blocks fell to the rig floor, crushing the employee to death.

Caught Between: The victim was standing on top of an unguarded drum with his back against the drill line. The derrick man and a floor hand were trying to roll the guard up to the victim when the brake handle slipped and hit the throttle, causing the drum to rotate, pulling the victim into the drum. The drum rotated two full revolutions before employees could stop it. The victim was cut into two pieces and was pronounced dead by the justice of the peace.

Caught Between: A casing crew was on location to put casing in a hole. The stabber was working in the derrick. The stabber went under the belly rope and became entangled in the top drive/travel block.

Struck By: When telescoping a derrick up, either the dawgs failed or the bolts on the ram sheared, allowing the derrick to collapse and causing the ram to fold out. This also caused the traveling block to fall, striking and fatally injuring an employee.

Electrocution: An employee was checking an electrical switch box at an oil well site. Lightning had damaged the switch box the night before, which burned the insulation from wiring inside the box and left the conductors in contact with the switch box. When he touched the box, he was electrocuted.

Explosion of Test Valve Assembly: An oil field valve, tested after repair in a shop environment, exploded, hitting three employees with shrapnel and killing one employee.

Flash Fire Erupting on Rig Floor: Employees were adjusting a brake when a flash fire occurred on the rig floor, engulfing the doghouse. Four employees were burned—three were sent to a burn unit, and one was treated and released at the local hospital.

Fall Approximately 65' From Derrick Board: An oil field worker (derrick man), died after falling approximately 65 ft from a 90-ft derrick board. The victim, according to witnesses, grabbed the elevator, which is 90' above the next level. He held on for a few minutes but then let go grasping a 4.5" vertical pipe. The victim slid partially down the pipe joint until he reached the pipe collar from where he freefell approximately 65 ft.

Gas Well Fire During Servicing Operations: While performing gas well servicing, hydrocarbon vapors escaped from the well and were ignited by the engine on the workover rig. Two men were hospitalized and transferred to the hospital where one individual succumbed to burn injuries sustained during the accident.

Crushed By Fallen Work Over Rig: The victim was in the rod basket of a 96-ft double triple telescoping derrick work over rig when a sinkhole developed under the left rear stabilizer jack, causing it to sink approximately eight inches. The rig fell on its left side, and the victim was caught in between the derrick and the ground.

Electrocution: After completion of a well service operation using a pole rig, the rig was moved off the hole and the operator boomed down. The pole came into contact with one of three phase lines, resulting in fatal electrical shock injuries.

Crushed By: An oil and gas well drilling crew was putting the drill string back into the partially drilled well when the traveling block and attached drill string fell to the drilling floor. Victim 1, a driller, was operating the drilling console and draw works brake system. He applied the main brake to control the falling blocks and pipe. There was smoke from the draw works. The drill string went down the well until stopped by the elevator. The blocks hit the floor, leaned over to the driller's side and then fell on Victim 1. Victim 1 had not operated electric brake systems prior to working on the rig.

Struck By: An employee was between the tongs and the draw works when the cat head dual line attached to the tongs engaged, striking the employee in the head and momentarily pinning it between the tong and the draw works housing.

Struck By Ruptured Pressurized Hose: Employee 1 was in the process of hosing out an oilfield tank when a kick occurred in the fluid pressure hose he held. The diesel fluid came out of the hose at an unexpected pressure, possibly lacerating the hose and bouncing up to hit him in the side of the face. This knocked off hardhat and broke it at point of impact.

Employee Burned in Explosion: An employee was fatally injured when lighting ignited fumes from the disposal tanks.

Crushed By Hydraulic Ram of Bobcat: Deceased employee jumped onto the back end of a traveling bobcat. The bobcat had an auger bit on the front end. The auger bit got stuck into the ground. The bobcat operator stopped, backed up the bobcat and raised the auger bit up. When doing this, the operator heard two bangs or slaps on the top of the cab or on the cab's back window. The operator stopped and saw something fall out of the corner of his eye. The operator got out and saw that it was the other employee. The hydraulic arms of the bobcat crushed his face and neck.

Fall from Elevation: The derrick man went up to the approximately 85-ft derrick board and fell while holding onto the elevator after attempting to latch a drill pipe from the board fingers. He attempted to correct the grabbing of the pipe with the elevator that did not latch. He had his harness on but did not tie off while on the derrick board. The rig manager, driller and two floor hands were at the site. The crew had been tripping the drill pipe out of the hole and preparing to drill.

Struck By: Employees were moving a drilling rig, and a link belt crawler type LS-138H5 crane was used to move equipment into place. The crane operator was preparing for another lift (draw works) and told the rigger to get some slings. The crane operator began to back up. He thought he had a clear path and proceeded to back up and track forward from the substructure. He heard some yelling, stopped the crane and noticed an employee on the ground. He stopped the crane and got out to help. The employee had multiple fractures to the right leg and fractures to the pelvis. He was taken to the hospital via helicopter where he died from complications.

Vehicle Rollover / Struck By: An employee working as a data collector for a seismic survey company was driving a Land Pride 4X4 ATV when while traversing a steep incline on a rocky, dirt road, the vehicle turned over, striking the employee. The road was covered with rocks 3" to 12" in diameter. It appears that the driver was

backing down the hill and turned the steering wheel clockwise. When the back of the vehicle came around, the passenger-side back wheel rolled up on a rock. This may have caused the vehicle to go into a slow rollover because the vehicle landed on its side. The position of the body indicates that the employee attempted to exit the vehicle. The employee was found with the safety belt not engaged and the vehicle on top of him with the mirror on his neck.

Electrocution: An oil field service was to drop off a compressor at a gas company. A gin pole truck was backing up, and as the compressor was lowered, the top of the derrick or wire rope line came into contact or in close proximity to an overhead power line. Two employees were on each side of the skid as it was lowered, and they received an electrical shock. The overhead line distributed 7,200 volts. No scorch marks were observed on the wire rope or derrick. Induced voltage may have caused the compressor skid to become energized.

Struck By Pipe: An employee was bleeding pressure off the discharge line of a compressor when the pipe sheared off at the threads and struck the employee. The pressure was about 900 psig at the Balon ball valve. The Balon ball valve had 3,000 psig of working pressure capacity. Apparently, the pipe came off when the employee opened the valve.

Fall From Height: An employee working off a scaffold during nippling down procedures for a stack lift (blowout preventer) tied off to the support on the back of the fork tines. When the forklift operator brought the tines down to readjust the tines, the employee was pulled down. According to other workers, no one saw the employee tie off to the fork truck.

Crushed By Pumping Unit: An owner and his employee were called to service a well where the owner was struck by counter weights.

Struck By A Separator: A separator struck an employee.

Flash Fire: Employees attempted to open a trailer door (doghouse) that had frozen shut overnight by using a weed-burning torch to melt ice that kept the door from opening. As they began to heat around the doorframe, a fireball blew open the door, injuring the employees. The torch had apparently ignited propane trapped inside the trailer from a portable stove.

Caught Between Engine Compartment & Boom: It is speculated that the victim stood up in the operator's cabin of an all-terrain forklift and lifted the engine compartment cover to look inside the engine compartment. The weight of the compartment cover may have caused the victim to lose his balance and fall forward into the engine compartment. As he fell forward, his left knee hit the joystick that operates the boom, pushing it forward and causing the boom to lower. This trapped the victim between the boom and the engine compartment, injuring him fatally.

Caught Between Pipe Baskets: An employee was killed while directing a vehicle when he was pinned between a pipe basket on the ground and the rear of the pipe basket on the vehicle.

Struck By: While in the process of rigging up a well-servicing rig, a well service employee attempted to release a lever-type load binder with a cheater bar. But while doing this, the lever unexpectedly came loose, causing the cheater bar to fatally strike the employee in the chin.

Struck By: A service company employee was killed when he was thrown into the air approximately 25 ft when equipment failed on the well. The victim suffered head trauma from the incident, was transported to a local hospital and subsequently died.

Employee Working on Well Head Pinned Against the Cellar: The victim was in the process of cutting off a well head with a torch when the well head came off the casing. The well head, weighing approximately 1,500 lbs, fell on top of the victim, pinning him to the ground and killing him.

Timberland Boot Recall

This recall involves the Timberland PRO Direct Attach steel-toed boots. The boots could fail to provide the intended protection against compression and impact, posing the risk of foot injury to consumers.

For more information visit:

http://www.cpsc.gov/cpscpub/prerel/prhtml08/08500.html

International Association of Drilling Contractors
ASP Program
2007 Summary Report By Category
3rd Quarter Numbers

Category	Total Manhours	Total MTOs	Total RWCs	Total LTIs	Total FTLs	Total RCRD	LTI Incd. Rate	LTI Freq. Rate	DART Incd. Rate	DART Freq. Rate	RCRD Incd. Rate	RCRD Freq. Rate
US - Land	70,879,465.04	907	494	451	9	1861	1.30	6.49	2.69	13.46	5.25	26.26
US - Water	27,217,013.00	93	63	41	0	197	0.30	1.51	0.76	3.82	1.45	7.24
Canada - Land	2,047,162.00	16	6	10	0	32	0.98	4.88	1.56	7.82	3.13	15.63
Canada - Water	922,236.00	1	2	0	0	3	0.00	0.00	0.43	2.17	0.65	3.25
Central / South America - Land	38,945,221.00	83	67	66	0	216	0.34	1.69	0.68	3.42	1.11	5.55
Central / South America - Water	13,906,395.00	41	22	31	3	97	0.49	2.44	0.81	4.03	1.40	6.98
European - Land	4,478,614.00	22	5	13	0	40	0.58	2.90	0.80	4.02	1.79	8.93
European - Water	22,519,259.00	48	29	52	0	129	0.46	2.31	0.72	3.60	1.15	5.73
Africa - Land	13,805,984.00	77	16	46	1	140	0.68	3.40	0.91	4.56	2.03	10.14
Africa - Water	19,095,506.00	40	24	28	0	92	0.29	1.47	0.54	2.72	0.96	4.82
Middle East - Land	45,692,392.00	108	65	62	2	237	0.28	1.40	0.56	2.82	1.04	5.19
Middle East - Water	20,510,597.00	47	22	15	0	84	0.15	0.73	0.36	1.80	0.82	4.10
Asia Pacific (Asia & Australia) - Land	11,524,882.00	42	14	22	1	79	0.40	2.00	0.64	3.21	1.37	6.85
Asia Pacific (Asia & Australia) - Water	18,006,315.00	48	31	13	0	92	0.14	0.72	0.49	2.44	1.02	5.11
US Combined	**98,096,478.04**	**1000**	**557**	**492**	**9**	**2058**	**1.02**	**5.11**	**2.16**	**10.79**	**4.20**	**20.98**
Canada Combined	**2,969,398.00**	**17**	**8**	**10**	**0**	**35**	**0.67**	**3.37**	**1.21**	**6.06**	**2.36**	**11.79**
Central/South America Combined	**52,851,616.00**	**124**	**89**	**97**	**3**	**313**	**0.38**	**1.89**	**0.72**	**3.58**	**1.18**	**5.92**
European Combined	**26,997,873.00**	**70**	**34**	**65**	**0**	**169**	**0.48**	**2.41**	**0.73**	**3.67**	**1.25**	**6.26**
Africa Combined	**32,901,490.00**	**117**	**40**	**74**	**1**	**232**	**0.46**	**2.28**	**0.70**	**3.50**	**1.41**	**7.05**
Middle East Combined	**66,202,989.00**	**155**	**87**	**77**	**2**	**321**	**0.24**	**1.19**	**0.50**	**2.51**	**0.97**	**4.85**
Asia Pacific Combined	**29,531,197.00**	**90**	**45**	**35**	**1**	**171**	**0.24**	**1.22**	**0.55**	**2.74**	**1.16**	**5.79**
INDUSTRY TOTAL	309,551,041.04	1573	860	850	16	3,299	0.56	2.80	1.12	5.5758	2.13	10.66

MTO = Medical Treatment Only	INCD = Incident Rate (200,000 manhours) :	*LTI INCD Rate = (LTIs + FTLs) * 200000 / Total Manhours* *DART INCD Rate = (RWCs + LTIs + FTLs) * 200000 / Total Manhours* *RCRD INCD Rate = (MTOs + RWCs + LTIs + FTLs) * 200000 / Total Manhours*
RWC = Restricted Work Case		
LTI = Lost Time Incident	FREQ = Frequency Rate (1,000,000 manhours) :	*LTI FREQ Rate = (LTIs + FTLs) * 1,000,000 / Total Manhours* *DART FREQ Rate = (RWCs + LTIs + FTLs) * 1,000,000 / Total Manhours* *RCRD FREQ Rate = (MTOs + RWCs + LTIs + FTLs) * 1,000,000 / Total Manhours*
FTL = Fatality		
RCRD = Total Recordables		

10 Most Expensive Accidents

Incident **Cost (2002 US$)**

1. Piper Alpha
Occidental's Piper Alpha platform was destroyed by explosion and fire in 1988. 167 workers were killed in the blaze. $1,270,000,000

2. Petrobras P36
In 2001, an explosion destabilized the P36 production rig in the Campos Basin, Brazil, eventually causing it to sink. $515,000,000

3. Enchova Central
Petrobras' Enchova PCE-1 Platform suffered blowouts and fire in 1984 and 1988, ending with the loss of the platform in 1988. $461,000,000

4. Sleipner A Platform
In 1991, a design error resulted in structural failure of the gravity base unit of the original Sleipner A platform. $365,000,000

5. Mississippi Canyon 311A Platform
In 1987, the Mississippi Canyon 311A Platform in the Gulf of Mexico was tilted to one side by an extensive underground blowout. $274,000,000

6. Mighty Servant 2
In 1999, the Mighty Servant 2 struck a rock and sank off Indonesia while carrying platform modules. $220,000,000

7. Mumbai (Bombay) High North
In 2005, a support vessel collided with Mumbai High North, rupturing a riser and causing a major fire, which destroyed the platform. $195,000,000

8. Steelhead Platform
In 1987, a blowout led to six months of trouble for the Steelhead Platform, resulting in fire and extensive platform damage. $171,000,000

9. Name not known
In 1993, an explosion and fire destroyed a platform control room and damaged adjacent platforms on Lake Maracaibo, Venezuela, with eleven fatalities. $122,000,000

10. Petronius A Platform
In 1998, a crane load line lifting the south topside module of the Petronius platform broke, dropping the module into the Gulf of Mexico. $116,000,000

10 Deadliest Accidents

Incident	Fatalities
1. Piper Alpha In 1988, Occidental's Piper Alpha platform was destroyed by explosion and fire. 167 workers were killed in the blaze.	167
2. Alexander L. Kielland In 1980, the accommodation rig Alexander L. Kielland capsized during a storm after a leg support brace failed.	123
3. Seacrest Drillship In 1989, the Seacrest drillship capsized during Typhoon Gay, with the loss of 91 crewmembers.	91
4. Ocean Ranger In 1982, a ballast control malfunction caused the Ocean Ranger to capsize during a ferocious storm in the North Atlantic, with the loss of all hands.	84
5. Glomar Java Sea Drillship In 1983, the Glomar Java Sea capsized and sank during Typhoon Lex with the loss of all on board.	81
6. Bohai 2 In 1979, the jack-up Bohai 2 capsized and sank in a storm while on tow off the coast of China.	72
7. Brent Field Chinook Helicopter In 1986, a Chinook helicopter shuttle between Brent Field and Sumburgh crashed into the North Sea. Only two survived.	45
8. Enchova Central While evacuating the Enchova Central after a blowout, 37 workers lost their lives when their lifeboat slipped from the platform and fell to the sea.	37

9. Mumbai (Bombay) High North
In 2005, a support vessel collided with Mumbai High North, rupturing a riser and causing a major fire which destroyed the platform. 22

10. C.P. Baker Drilling Barge
Built in 1962 using an uncommon catamaran design, the C.P. Baker drilling barge burned and sank after a shallow gas blowout. 22

- Featured Member Article -

The Evolution of Offshore Personnel Transfer

By Paul W. Liberato

The offshore oil industry has moved personnel back and forth on workboats to offshore installations for over 50 years. For the first 40 years, this operation was accomplished with the use of a “personnel net” and a crane. In the last ten years, the offshore industry has taken a hard look at ways to improve this “time-tested” procedure. The first personnel net ride for a new hand was a “rite of passage.” That may become a thing of the past in the next few years.

Before we review the changes, it is important to see where we have come from and how and why we have evolved to these recent and unprecedented operational innovations offshore.

In 1954, operators were in the infancy of trying to drill oil wells in marine environments. One of the first attempts to apply this new technology was the drilling rig “Mr. Gus,” a 16-leg drilling platform operating off the shallow coastal waters of Texas. One of the many challenges of drilling in the marine environment was trying to get personnel up from the support vessels to the drilling platform. Using equipment available onboard, one method employed for this task was to take a cargo net and (using the crane) and to have transferees grab the outer ropes of the netting until the crane operator could set them down on the boat or rig. On one of the first days of trying this new method, one of the deckhands on the support vessel sought out the rig manger and commented that this seemed to be a very dangerous practice and that he thought he had a better idea. This was before the STOP program (i.e., anyone can stop a job that they judge too hazardous), and the deckhand was told to go back to work and to keep his mouth shut.

A few days later, a fatal accident occurred while performing one of these “cargo net” transfers. During the investigation, the Mr. Gus rig manager tracked down the deck hand and asked him for ideas. The deckhand’s name was Billy Pugh, and he had been thinking of a device (since he had seen the first cargo net transfer) that would allow riders to use a new and safer method.

Pugh wanted to keep the transfer process simple. It would allow riders to step “half in and half out” on the solid perimeter of a new “cone-shaped” device. The riders would stand on an outer steel ring that would allow them to get on and off quickly. A large rubber band called a “stabilizer” would keep the ropes taut while the basket was on the pitching deck of the boat. The stabilizer was designed to work up and down (with the sea swells), allowing passengers to have a semi-taut rope to grab upon embarkation. The rider would keep one foot on the deck and one on the outer ring of the device until the crane operator began the lift (whereas they raised their other foot to the outer ring) and commenced the ride. Upon landing, the transferee would simply keep their knees bent to ease any shock on landing and walk directly to a safe area. The idea of having riders “half in and half out” was to allow for quick egress but give them the calming impression that they were safely inside the device.

Pugh called his new idea a “personnel net” or “personnel basket,” and he eventually quit his workboat job and started the Billy Pugh Company. That was in 1957, and from then until the mid-1990s, things pretty much stayed the same. The Billy Pugh Company was sold in 1989, and Pugh was no longer involved in its operation.

New management and ownership took a fresh view and approach to the operation of the company and encouraged new products and ideas. This was the foundation for the new X-904 personnel transfer device.

In the mid-to-late 1990s, drilling rigs and workboats became bigger and worked in much deeper water, but the most common method of getting personnel on and off marine installations was still the personnel net. Even though the technology was 40 years old, personnel nets had many advantages. They were relatively inexpensive, simple, collapsible for easy storage and widely accepted by offshore personnel, and they could transfer up to 12 passengers at a time.

Some areas of the world (such as the North Sea) discouraged crane transfers and preferred to use helicopters almost exclusively. This is due to the harsh weather conditions in their area of operation. Any comparison between crane transfers and helicopter transfers will indicate that a fatality is far more likely on a helicopter than on a crane-assisted personnel transfer. The perception is that the personnel transfer using boats and cranes is more dangerous than riding helicopters. Statistically, it is much different.

A reasonable question would be, “Why didn’t the industry demand a newer/safer method of crane assisted personnel transfer?” The answer is, “If it ain’t broke, don’t fix it.” Many companies and individuals had attempted to improve the system, but none of them could gain any foothold.

Personnel nets worked, and if the crane operator, boat captain and riders were all competent and well-trained, then personnel could be transferred safely in many sea states with an extremely low risk of injury or mishap.

During the mid-1990s, the United Kingdom introduced a new device to the market called the FROG. The concept was to take some of the “human factor” out of the personnel transfer equation. This was accomplished by having riders sit on a spring-supported seat that incorporated a four-point harness to secure the passengers. The capsule also helped prevent side impacts in the event that the crane operator allowed the load to strike the railing (or any other hard object on the rig or workboat). The management group at Reflex Marine (the makers of the FROG) also maintained that personnel transfer should be considered a critical and serious operation (much like helicopter transfers), and the additional equipment cost and training were worth the effort.

At about this time, Diamond Offshore and BP approached Billy Pugh Company to design a new transfer device that would incorporate some of the FROG’s advantages without losing the features that had been successful for so many years using personnel nets.

Billy Pugh Company management began to have discussions with rig hands, SH&E professionals, operations personnel and senior management. These meetings were normally in focus groups. The discussions included various drilling contractors (and operators) in an attempt to ascertain what features they liked about the old system and what additional safety features they would like to see incorporated into the new Billy Pugh prototype.

With much new information in hand, the first prototype was built. The new design had a steel frame and high-technology ropes (with strength similar to wire rope) for the outer rigging. The X-901 was brought to Houston, TX from Corpus Christi, TX, and many experts from the focus groups were brought back in to evaluate and provide feedback on the new device. Additional industry professions were continually invited to add their own ideas about what should and should not be a part of the final device.

This process of building and evaluating continued with two more prototypes (the X-902 and X-903). These units were evaluated and critiqued, and the new ideas were incorporated into the next design. The X-904 was brought out for analysis and was ready to be sent offshore to Diamond’s Ocean Confidence for “sea trials.” This allowed the rig hands to offer their input on the X-904’s operational characteristics. Each rider, crane operator and rigger received a survey, and the response was excellent. The X-904 was ready to go to market.

The new X-904 was now much lighter, and the outer rigging ropes had been changed from fiber rope to stainless-steel wire rope sheathed in “weather-dipped” Dacron fiber rope. The unit had many advantages over the old personnel net and incorporated new, unique features requested in industry focus groups.

Features of the X-904 included:

- **Outer protection:** The outer rigging could now be tightened with the use of a center coupling that provided riders with protection from outer strikes such as handrails or other obstructions.

- **Man-positioning attachment:** It was determined in the evaluation process that a "man-positioning" system would be best for this application. Almost everyone surveyed emphasized that full fall protection was too constraining for offshore transfer. This new system was developed to allow the rider to incorporate a quick-release lanyard that provided protection from falling out but still allowed passengers (by pulling the quick release) to move rapidly away from the unit when necessary.

- **Stokes Stretcher accessibility:** The X-904 would be suitable for the North Sea. In that market, personnel transfer devices are used primarily for stretcher transfers.

- **Personnel need "sea legs" under them:** It was determined that it was important for riders to keep equilibrium by continuing to stand throughout the transfer. This would also minimize trip and fall potential when exiting the device.

- **Overhead Protection:** An expanded metal roof was incorporated into the design to protect riders in the event of a falling object landing on the unit during transfer.

- **Designated areas for hand luggage:** Personnel nets were not designed for baggage, but baggage areas were designed into the X-904. Since the X-904 does not collapse on deck, personnel have enough time to safety remove hand luggage and disembark to a safe area.

- **Collapsible for storage:** In many applications, personnel transfer devices (such as deep water and North Sea) are only used occasionally. It was important to minimize the footprint and storability of the X-904 by making it collapsible and easy to store.

- **Can be rebuilt and recertified:** Since the X-904 was more costly than a regular personnel net, the unit was designed to be sent to the beach after two years to be rebuilt and recertified.

- **Models for up to 12 passengers:** Models for four, six, eight and ten persons were also designed and made available.

When it comes to transferring personnel offshore, the industry has really changed direction in the last few years. Most of the U.S.-based offshore drilling companies have changed from regular personnel nets to the X-904, and many oil companies are following suit. This can only mean good things because of the growth of the industry and the new, inexperienced personnel. Recently, BP used the X-904 in a 12-man version to transfer over 280,000 personnel on the Thunderhorse project without incident.

Incorporating new, safer systems and products is a positive step in the continuing desire to have zero incidents in the offshore community.

PHMSA on Transporting Biofuels

The U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA) has issued a notice describing and inviting comments on its ongoing efforts to identify and address the short-, medium- and long-term opportunities and challenges associated with transporting biofuels.

PHMSA seeks comments on technical issues, adequacy of standards and research and development needs associated with the transportation of biofuels by pipeline as well as on the agency's ongoing efforts to prepare communities and emergency responders to

mitigate hazards associated with transportation involving new fuels. PHMSA, in coordination with the U.S. Department of Energy, U.S. Department of Agriculture and others, is considering current and future transportation challenges posed by growing demand for ethanol and other biofuels and biofuel blends.

Now, most biofuels used in the U.S. today are transported exclusively by marine vessel, rail and/or highway. In support of the President's energy agenda, PHMSA is prepared to facilitate pipeline options by sponsoring research and development, resolving technical issues, and if necessary, clarifying safety standards.

For more information, visit:

http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/E7-15615.htm

HazMat Transportation of Lithium Batteries

PHMSA is amending the Hazardous Materials Regulations (HMR) to tighten the safety standards for transportation of lithium batteries, including both primary (non-rechargeable) and secondary (rechargeable) lithium batteries.

PHMSA is adopting with minor changes the HMR amendments published in an interim final rule in December 2004, imposing a limited prohibition on the transportation of primary lithium batteries and cells as cargo aboard passenger-carrying aircraft. In addition, PHMSA is adopting many of the proposed changes to the HMR published under the April 2002 NPRM: 1) eliminating a hazard communication and packaging exception for medium-size lithium cells and batteries of all types transported by aircraft or vessel, 2) revising an exception for small lithium batteries and cells of all types to require testing in accordance with the *UN Manual of Tests and Criteria* and 3) revising an exception for consumer electronic devices and spare lithium batteries of all types carried by airline passengers and crew. These amendments will enhance transportation safety by reducing fire hazards associated with lithium batteries and harmonizing U.S. and international standards. The effective date is January 1, 2008, and the voluntary compliance date is October 1, 2007.

For more information, visit:

http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/E7-15213.htm

CSB Releases New Reactives Safety Video

The U.S. Chemical Safety Board (CSB) released a new safety video concerning the dangers of uncontrolled chemical reactions. The video features computerized simulations and descriptions of four major reactive chemistry accidents investigated by CSB as well as commentary by two prominent chemical process safety experts.

Titled "Reactive Hazards: Dangers of Uncontrolled Chemical Reactions," the video will be released simultaneously with CSB's final report on the Synthron accident, which killed one worker and injured 14 others in Morganton, NC on January 31, 2007. The video features a computer animation of that tragedy narrated by lead investigator Jim Lay.

Other accidents discussed in the video are MFG (Dalton, GA), BP Amoco (Augusta, GA) and First Chemical Company (Pascagoula, MS).

Reactive hazards include those involving uncontrolled chemical reactions, with significant increases in temperature or pressure. CSB released a study of reactive hazards in 2002 and made many safety recommendations. The agency has investigated several such accidents since that time. The video was made to create a heightened awareness of the dangers of these types of uncontrolled chemical reactions.

The video begins with news footage of the Bhopal reactive chemical accident tragedy of 1984, which killed thousands.

CSB investigators narrate animations of the accidents. Also featured in this video is commentary on the recognition and prevention of reactive hazards by Dennis Hendershot, a chemical industry process safety consultant, and Dr. Daniel A. Crowl, a professor of chemical engineering at Michigan Technological University.

The production of “Reactive Hazards” marks the thirteenth safety video produced by CSB. The videos may be viewed online in the video room of CSB’s website. Free DVD copies may also be obtained by filling out a request form on the website.

Mismatched Threads Cause Well Fire

On July 29, 2007, a coiled tubing unit was in the process of placing a packer downhole to isolate production zones. The bottomhole assembly (shear sub w/packer, 9 m (29.4 ft) of 1.75-in coil tubing and knock out plug) was about 10 m into the wellbore when an intermittent gas leak was detected from the top of the lubricator assembly.

The tool hand, tool helper and well site consultant approached the well to investigate the leak. The tool hand climbed on the well to feel where the gas was leaking. As the tool hand reached up, the lubricator failed, and the bottomhole assembly (BHA) was launched out of the well through the lubricator.

Gas was ignited from a collision of metal involving the BHA, 10 m of coiled tubing, injector and picker. The tool hand sustained serious burns to his face and legs.

The area was evacuated, the Emergency Response Plan (ERP) was activated, and the fire was extinguished without further incident.

Incident Cause

- Investigation focused on the lubricator and injector assemblies as the likely location of the failure.
- The investigation revealed that there were mismatched threads connecting the collar of the hammer union joint (eight round threads) and the nipple (eight “v” threads).
- This joint was able to hold pressure under static conditions but failed shortly after it was in service.

Recommendations

- Ensure that threads are matched when joining parts (round threads with round threads, National Pipe Thread (NPT) with NPT, etc.).
- Use a color code or other system to help identify thread types.

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