



Drill Press Incident Review OCEAN EPOCH



July 2007

G·E·M·S
GLOBAL EXCELLENCE
MANAGEMENT SYSTEM



Syllabus

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ACCIDENT DESCRIPTION:

The IP was in the process of fabricating some mounting plates from 3/4 inch thick steel plate. He had the steel plate secured on the drill press table where he had just completed drilling two pilot holes. In preparation to insert a larger drill bit, the IP was attempting to loosen the chuck with the chuck key to remove the pilot bit, when his foot inadvertently made contact with the foot operated pedal which started the machine. Due to the key being in the chuck and the IP holding it with a gloved hand, the key caught the glove as it rotated and pulled the IP's wrist and forearm around the spindle (chuck), resulting in an open compound fracture to the IP's forearm.



CHRONOLOGY:

- ~ 09:57 AM Saturday July 21st: Bristows helicopter (BHH) departs Ocean Epoch (OE) w/ 13 pax.
- ~10:05 AM: Accident occurs and witnesses assist injured party (IP) / Call SDR.
- ~10:07 AM: The Paramedic, SDR and Trauma Team arrived at the scene with in with stretcher and complete medical emergency kit.
- ~10:07 to 10:15 AM: IP is stabilized for transport to the rig clinic where further stabilization was conducted awaiting evac.
- ~10:17 AM: Radio Operator attempts to contact BHH chopper via rig's VHF and HF radios with no success. Radio Operator continues to try to contact chopper until 10:25 AM.
- ~10:26 AM: Radio Op contacts BHH Base to ask them to contact chopper via Brisbane Flight Watch (BFW). Rig is continuously trying to contact chopper and maxes signal boost with no luck.
- ~10:29 AM: BHH shore base makes contact with BFW.
- ~10:40 AM: Radio Operator contacts BFW directly to relay urgency of contact with chopper to find BHH had not contacted them yet.
- ~10:43 AM: Chopper contacts rig and confirms it is turning around for return to OE. Fuel limitations requires refuel in Cape Levique.
- ~13:07 hrs: BHH chopper arrives at OE .
- ~13:59 hrs: BHH chopper departs OE with IP on board, Destination Derby.



INVESTIGATION PHOTOS



















INVESTIGATION FINDINGS:

- **The IP is an experienced tradesman of 20+ years with offshore experience. He was 12 days in to his second hitch on the Ocean Epoch when the incident occurred.**
- **The IP's personnel file revealed that he had completed all the requirements of the induction process. He was still in the process of completing his job skills competency but was well on track to have it completed in the required time frame set by GEMS of 6 months.**





- **The IP had operated the drill press on numerous other occasions without incident and was familiar with its operation.**
- **The IP was fabricating mounting plates for the relocation of the fog horn.**
- **The IP had completed drilling the first two of three plates and was in the process of completing the third one. (the first two were completed with out incident).**
- **He had completed drilling the pilot holes in the last plate and proceeded to change out the drill bit to a larger size without engaging the Emergency Stop (ES) button.**
- **The IP was not under any pressure to complete the job, it was not urgent.**
- **At this time the IP was wearing leather tig welding gloves on both hands.**
- **As the IP was applying pressure to the chuck key to loosen it, he was distracted by a co-worker whom had entered the workshop to get a tool from his toolbox. They had brief communication in passing but it is unsure what was said between them.**
- **On re-enactment of the incident it was found that when applying pressure to the chuck key to loosen the chuck, the natural reaction of the body is to step forward with the left foot to gain better purchase. It is believed that the IP had been distracted by his co-worker and simultaneously stepped forward while trying to loosen the chuck.**
- **As he stepped forward, his foot made momentary contact with the foot switch and, because the ES button was not engaged, the machine started.**
- **Due to the IP holding the chuck Key (with a gloved hand) in the chuck when the machine inadvertently started, the key pierced his glove, not allowing him to pull his hand away, which resulted in the IP's hand and forearm rotating around the chuck.**
- **Due to the drill press being gear driven, just a glancing touch of the pedal will initiate 3-1/4 revolutions of the chuck with no resistance on the bit.**

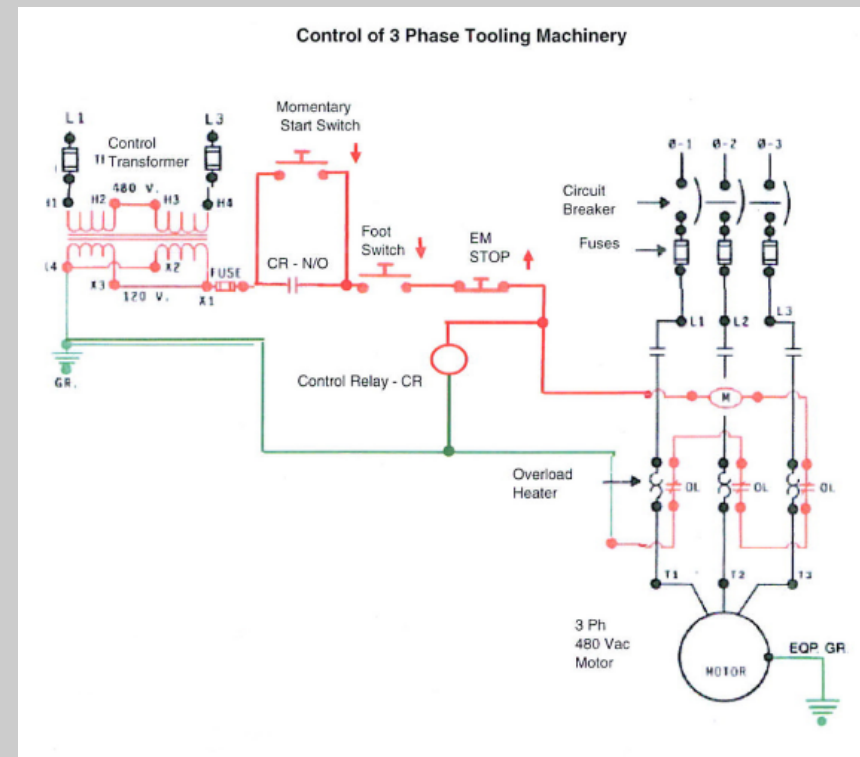
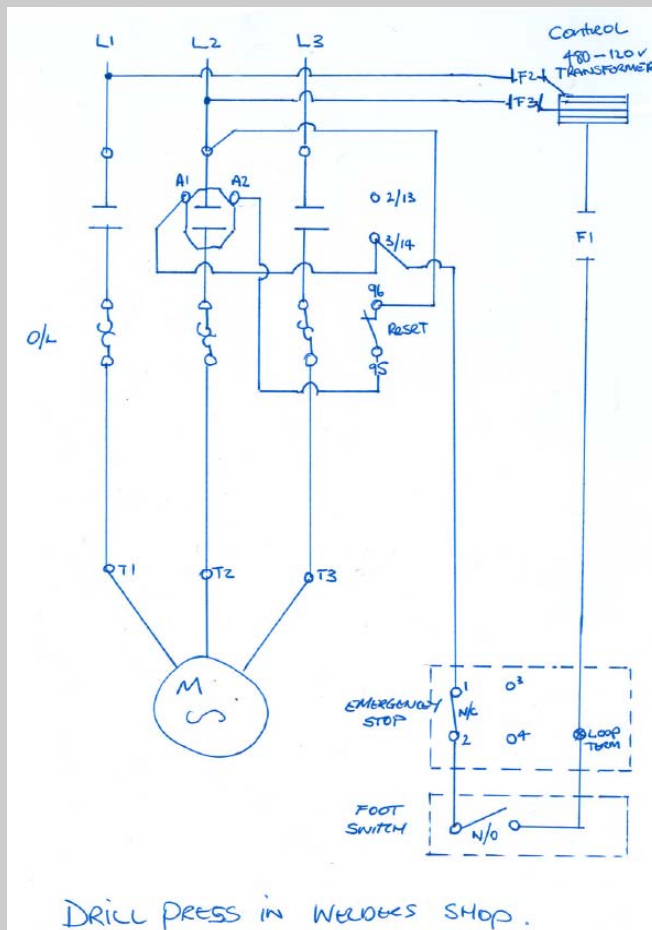


EQUIPMENT SPECIFICS:

- **The drill press does not have any directions for operation or warning signs posted on it.**
- **There is not a specific JSA for operating the drill press and it is not mentioned in the "General Welding and Cutting" JSA**
- **The drill press has been in service on the rig for approximately 2-1/2 years in which time there has been no reported incidents related to it. The machine was inspected by the Electrician post incident to ensure it was working correctly with no faults found.**
- **The Annual Electrical Audit was conducted in May 07 with no discrepancies noted against any of the machinery in the Welding Shop.**
- **The drill press is fitted with an Emergency Stop (ES) button and a foot activated switch. To start the machine the ES button is disengaged which then allows the foot activated switch to act as a stop/start switch. As long as the ES button is disengaged the pedal is the only form of starting and stopping the machine (press pedal to start, release pedal to stop).**
- **The foot switch had been replaced approximately 24hrs before the incident at the request of the relief welder which was on days off at the time of the incident. The original pedal functioned in such a way that the operator would press the pedal and release it for the machine to start, the machine would then run until the operator pressed and released the pedal again (to start - press and release, to stop - press and release). This pedal did not have a guard over the top of it to prevent it being functioned if something dropped on it or if it was stood on accidentally with the ES button disengaged. It also was not uniform with the pedals on the other equipment in the workshop (pedestal grinder, cutting saw). These issues were brought to the attention of the electrician whom in turn went and ordered a new pedal in an effort to improve safety and obtain uniformity with the other pedals in the workshop. Through the ordering process it was realized there was a new pedal in stock which was then installed.**



Recommendations



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- Re-configure wiring to incorporate an interlock system, where as the activation of the machine requires a two step sequential method to start the machine (1, depress the foot switch. 2, press the start button) see attached procedures. This will be applied to all machinery with a foot switch.



- **Communicate incident and learning's to area rigs through a Flash Alert and recommend corporate HSE notify the fleet through a Technical Alert.**

Flash Alert

Date: 21-Jul-07

From: Ocean Epoch

This Flash Alert is a statement of fact intended for information purposes.

The underlying and root causes of the incident will follow

pending a formal incident investigation.

Please pass on the following information to crewmembers at pre-tour/safety meetings.

BROKEN ARM WHILE USING DRILL PRESS– A drill press was being used to drill holes in a steel plate in the welders workshop. Following drilling a pilot hole, the drill bit needed to be changed to a larger diameter. The drill is operated by a foot pedal, which has a protective domed cover. The drill has an emergency stop button, which if depressed needs to be reset to enable the foot on/off throttle to be used.

The Injured Person was wearing TIG welding gloves and had hold of the chuck key, which was engaged into the chuck. While unlocking the chuck, he inadvertently engaged the foot throttle and the drill started momentarily. His glove was “snagged” by the chuck key and his left arm was twisted around the rotating drill shaft resulting in a compound fracture to the left forearm. A work colleague in the vicinity immediately came to his aid and hit the emergency stop button. The injured person was treated at the rig hospital

Immediate learning points:

- Clear, specific operating instructions should be posted on the drill
- Ensure power is switched off and fully isolated before making any maintenance or adjustment to powered tools.
- Install an interlock system that requires two separate actions to start rotating (see attached procedures)
- Assess risks of using gloves (which protect from sharp shavings however present a risk with rotating equipment)
- Never have loose clothing or jewelry when working with any rotating tool.

If further clarification is required, contact the local HSE department.



- **Replace existing chuck with a keyless chuck.**
- **Cover incident with all crews highlighting the importance of concentration, interruption and correct PPE.**
- **Adopt the use of annular cutting drill bits to minimize drilling pilot holes and changing out drill bits.**
- **Include safe operation of workshop machinery in the "General Welding and Cutting" JSA.**
- **Suggest to corporate HSE that the use of workshop machinery should be included to the Welder's WWC competency.**
- **Replace existing chuck with a keyless chuck.**
- **Post operational instructions and warnings signs on machine.**
- **Ensure all operating functions are clearly labeled (buttons, levers, etc)**

