

Class B Accident Report

Amaltal Columbia Injury

Port Nelson, on 18 December 2004

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Maritime Safety

MARITIME SAFETY AUTHORITY OF NEW ZEALAND
Kia Maanu Kia Ora



REPORT No: 96 346

***AMALTAL COLUMBIA – INJURY TO SHORE
CONTRACTOR***

On 18 December 2004 at 0800 hours, the day shift water-blasting contractors took over from the night shift on board the fishing vessel, *Amaltal Columbia*, berthed in Port Nelson. The three-team members of the day shift continued blasting paint from the steel decks of the vessel. At about 1300 hours, one team member took over from another and continued blasting on board the vessel. Shortly after he was seen to move backwards and fall down. The rest of the team ran to assist him and found a deep laceration to his upper right calf and a lesser laceration to his upper left calf.

Emergency services were called he was stabilised and removed to Nelson Hospital for surgery.



Name of Vessel: *Amaltal Columbia*

Vessel Type: Deep Sea Factory Trawler

Date of Injury: 18 December 2004

Time of Injury: 1340 hours

Employer: Onyx Group limited

Weather: Fine

EMPLOYEE DETAILS

The injured party has been in the water blasting industry for 15 years. He is very experienced with all types of water blasting activity including the operation of the 12 500 and 36 000 PSI units. He is well known within the industry and is thought of as a very competent operator.

He was employed by Onyx Group as a supervisor and was overseeing the operation of the day shift operation of the B 250 12 500 PSI water-blasting unit

EMPLOYER DETAILS

The company is Onyx Group Limited New Zealand.

The Supervisor worked out of the Christchurch branch, Onyx Environmental and Industrial Services.

NARRATIVE

Plant and Machinery Services of Nelson were the contractors for the removal of paint from about 70% of the decks on board the *Amaltal Columbia* in Port Nelson. They sub-contracted Onyx Group Ltd to provide high and ultra high water blasting.

The job started on 15 December 2004, and 24 hour water blasting operations were commenced using 2 shifts. The night shift, consisting of three Onyx Group team members, used a 36 000PSI (B300) water blasting unit, and the day shift of three members used a 12 000 PSI (B250) water blasting unit.

Between shifts on the morning of 17 December, the Onyx Group South Island Manager held a toolbox meeting with all employees involved in the job. Among other things discussed, he reinforced the need to wear all personnel protection equipment (PPE) at all times when operating a water blasting gun.

At about 0600 hours, 18 December 2004, the night shift had finished their task for the night. At 0700 hours, the night shift and day shift supervisors and the Plant and Machinery site supervisor had a walk through of what was left of the last day required on the job. It was agreed that the day shift would not use the B250 unit, but would instead finish the job using the B300 unit.

At 0800 hours, the day shift started work using the B300 unit. Work continued through the day with two of the three blasters alternating operating the gun at various times. The Supervisor operated the pump truck situated on the wharf beside the berthed vessel.

At about 1300 hours, the Supervisor took over the gun to finish off a small amount of work left between some pipe-work on the deck. He had to blast the deck underneath and between the pipes. He was initially wearing a raincoat, safety boots, earplugs, safety helmet, calf protection gators and jeans. After more closely assessing where he had to stand he removed the gators because to do the job effectively he had to place his feet between the pipes and shuffle along while blasting. He states that with the gators on, he would have had to stand on top of the pipes in a far more dangerous position.

At about 1335 hours, he either slipped or lost control of the gun, it reared up under pressure and in defending himself the nozzles brushed past his right leg and onto his left leg causing severe lacerations to the right leg and lesser lacerations to his left leg. There were various people in the immediate area but none witnessed the actual accident and instead observed him falling down backwards onto the pipes. The site supervisor was on scene within about 45 seconds as were two of the vessel's crew. He was given first aid while an ambulance was called. He was stabilised and removed to hospital for treatment.

EQUIPMENT DETAILS

The gun used was a Vulcan stripper rotary gun and air operated multi mode flow control valve (tumble box) (*See Photograph 1*).

The blasting truck is equipped with a Butterworth B300 36 000 PSI water blast unit. This truck is used to provide ultra high water pressure and compressed air to the gun. The compressed air is used to rotate a head containing water nozzles at the end of the gun.

The gun is equipped with two triggers, a primary and a secondary. Both triggers have to be depressed to activate the water pressure; the compressed air rotating head will operate when the secondary trigger is depressed.

Onyx was also using a Butterworth B 250 12 500 PSI unit. This was primarily being used by the day shift and the B300 used by the night shift.

TESTING DETAILS

On 21 December 2004, the gun and tumble box were set up and tested by the Onyx Group Ltd Engineer at the Onyx premises in Onehunga.

The gun and tumble box were connected to the 36 000 PSI blasting truck (B300). The truck was run up to its operating pressure of 36 000 PSI. Both the primary and secondary triggers were depressed and released at different times to see what problems there were with the operation.

With both triggers depressed and only the primary let go, the gun stopped rotating and the water pressure from the tumble box to the gun was stopped. With both triggers depressed and the secondary trigger let go, the gun continued to rotate but the water pressure from the tumble box to the gun stopped.

Tests were made to determine the time taken for the water pressure from the tumble box to the gun to dissipate out through the nozzles. This took approximately one second.

The gun and tumble box were then removed from the truck and bench tested in the workshop. The gun was set up to an air supply to see if either the primary or secondary trigger could be made to fail. Both triggers operated normally.

The tumble box air actuator and return spring and shuttle cartridge were removed and checked. No problem could be found in any of these components.

Air was then sent to the supply side of the tumble box unit and the air pilot valve tested for correct operation, no fault found.

The Onyx engineer concluded that he could not get the gun or tumble box assemblies to fail.



PHOTOGRAPH 1 - THE GUN USED AT THE TIME OF THE ACCIDENT

INJURY

The injured person suffered a deep laceration into the muscle of his anterolateral proximal right leg (upper calf) approximately 50 millimetres below the knee. This wound has a bridge of tissue between two horizontal lacerations. He sustained superficial lacerations to his left leg at approximately the same height as the right.

The right leg lacerations were heavily contaminated with small particles of the jeans he was wearing at the time.

When he was interviewed almost a month after the accident he was still unable to walk and had some nerve damage and little movement of the right foot.

The wounds were consistent with the discharge of the gun with the rotating compressed air nozzle stopped, and the water pressure decreasing as the gun passed over his right leg at full pressure and onto his left leg at almost no pressure.

Had he been wearing the protective gators they would have offered minimal reduction of the injury due to the height of the lacerations being just on or above the top of the gators.

HAZARD IDENTIFICATION & TRAINING

On 19 August 2004 the Supervisor completed an Onyx Group *Intermediate Waterblast Competency Questionnaire*. The Supervisor and the Onyx Group National Manager of Industrial Services signed this off.

On 17 December 2004, the morning before the accident, the Onyx Group South Island Manager held a toolbox meeting involving both shifts and Plant and Machinery services the primary contractors to Amaltal Fishing Company. During this meeting amongst other things discussed, was the need to always wear all PPE available at all times.

All parties discharged their responsibilities under section 6 through to 15 of the HSE Act. The employees and employers involved in this accident took all practicable steps to minimise the risk of injury to themselves, employees and fellow workers.

HEALTH AND SAFETY POLICY

Onyx Group had developed a comprehensive Health and Safety Management System, as well as an *Introduction Water blast-training* manual for all employees. These included employee and employee sign offs and written competency questionnaires.

All Onyx Group employees have read or carry a small double sided laminated card. On one side it is entitled “*Stop- Take 5 Before, During and After Tasks*” it has the following major bullet points: -

• *Step back and look*, • *Think about the job and consider the steps to be taken and tools used*, • *Look for the hazards-Lookup, down, behind and inside*, • *What else is happening in the area*, • *Do the job safely*.

The other side is entitled “*Think about others. Are you fit to do the job*” this contains the following bullet points: -

• *Drugs and alcohol* • *The bigger picture* • *Spills and leaks* • *Slips, trips and falls* • *Working at heights* • *Manual Handling* • *Moving Parts* • *Product or Chemical burns* • *Stored energy* • *Fire* • *Tools* • *Competency*.

FINDINGS

It has not been possible to positively identify the proximate cause of this accident. Various issues contributed to the accident which include; -

- Not wearing the Kevlar gators.
- Slipping due to wet greasy surface underfoot.
- Loss of control of the gun due to operator error.
- Loss of control of the gun due to an intermittent fault from external debris momentarily stopping the rotation of the head, therefore initiating a sudden increase in pressure.
- Operator complacency at the end of a contract with only 15 to 20 minutes of work remaining.

The Supervisor failed to comply with Onyx Group PPE safety policy by not wearing the gators. He stated he had to remove them to fit his legs between the pipes he was water blasting. He felt safer doing this rather than keeping them on and standing up on the pipes.

ACTION TAKEN

The National Manager of Industrial Services, Onyx Group has issued an internal memo advising each industrial division to prepare a statement that reads “ I understand I am required to wear gator foot protectors when using a high pressure water blast gun at pressures over 5 000 PSI” He asked that all operators sign this and return a copy to him.