

## FALLS FROM A HEIGHT

### SUMMARY

The Health and Safety Commission has identified falls from a height as a priority programme. This is an area where improvements are believed to be essential if the Revitalising Health and Safety targets are to be met. Falls from a height result in a significant proportion of the major injuries occurring in ship and boat yards.

### BACKGROUND

1. The targets set by Revitalising Health and Safety include reducing the incidence rate of fatal and major injuries by 10% by 2010. Each year falls from a height account for the largest proportion of fatal accidents (27% of fatalities in 2001/02) and as a result was selected as a HSC priority programme. Details of the priority programme (and others) can be found on the HSE website at:

<http://www.hse.gov.uk/action/content/plan0104-05.htm#2>

2. Falls from a height data received from reported accidents is classified by HSE according to 3 categories:

- High falls (above 2 meters);
- Low falls (below 2 meters); and
- Falls (height not specified)

3. The split between a high fall and a low fall is however, relatively arbitrary as often it is a matter of chance that a person fell less than 2 meters rather than over 2 meters. While high falls give rise to a greater proportion of fatal and major injuries, the absolute number of fatal and major injuries arising from low falls is relatively high compared to other accident kinds. As the number of low falls exceeds high falls by more than 2:1 focusing on low falls as well as high falls may help to reduce the number of high falls.

4. The tables below provide data relating to each of the above classifications for ship/boat building/repair for the years 95/96 to 00/01.

#### HIGH FALLS

\* Fatal and major injuries

	95/96	96/97	97/98	98/99	99/00	00/01	Total
F&M*	11	20	16	10	9	10	76
>3 day	15	13	11	12	12	10	73
Total	26	33	27	22	21	20	149

#### LOW FALLS

	95/96	96/97	97/98	98/99	99/00	00/01	Total
F & M	9	18	20	28	20	14	109
>3 day	61	40	45	56	41	44	287
Total	70	58	65	84	61	58	396

FALLS (height not specified)

	95/96	96/97	97/98	98/99	99/00	00/01	Total
F & M	2	7	4	3	2	3	21
>3 day	12	6	9	11	9	7	54
Total	14	13	13	14	11	10	75

TOTAL FALLS FROM A HEIGHT

	95/96	96/97	97/98	98/99	99/00	00/01	Total
F & M	22 (1)	45 (2)	40 (2)	41 (1)	31 (1)	27	206
>3 day	88	59	65	77	62	61	412
Total	110	104	105	118	93	88	618

Figures in brackets indicate the number of fatalities, all of which were high falls.

FALLS FROM A HEIGHT TOTALS AS A PERCENTAGE OF ALL ACCIDENT CATEGORIES

	95/96	96/97	97/98	98/99	99/00	00/01	Average
F & M	24%	30%	28%	35%	29%	24%	28%
>3 day	13%	12%	12%	11%	10%	13%	12%
Total	14%	16%	15%	15%	13%	15%	15%

i.e. in 00/01 24% of fatal and major injuries were falls from a height.

5. As falls from a height account for a relatively high proportion of fatal and major injuries arising in ship/boat yards efforts need to be made by the industry to reduce this type of accident if the Revitalising Target is to be met.

6. Appendix 1 attached to this paper provides a summary of the accidents that have been investigated in ship/boat yards during the last 4 years involving falls from a height. The accidents have been subdivided according to the main causal factors.

**ACTION**

7. Members are asked to note the contents of the above tables and appendix 1 and to consider what action they can take either individually or collectively via the SSHSCC to reduce the frequency of falls from a height.

## APPENDIX 1

### FALLS FROM A HEIGHT INVESTIGATED IN SHIP/BOAT YARDS 1998 -2002

#### Unsafe scaffolding/staging

1. Vessel in dry dock was staged using a combination of kwikform and conventional tube and fitting scaffold. Near the bow of vessel the 2 types of scaffold were tied together with tube and fitting pieces. A weld plate to be welded to the bow was partly secured to a protruding upright of a section of Kwikform. As there was not a tie holding the Kwikform staging together the plate appears to have pulled the upright open enough to allow a board on the lift below to fall away. Two men descending to the lift below at the time narrowly managed to escape a fall of more than 2 meters by clinging onto the vessel and the remaining section of staging. The lack of a tie to hold the staging together was either due to it having been removed by an unknown person before the incident or it may have been missed off when the staging was originally erected. The staging was subject to weekly inspections but the missing tie may have been missed due to the volume of scaffolding in use. Recommendation made that a 'tagging' system for sections of staging or distinct units of staging, be introduced to improve the examination regime on site.

2. Scaffold towers erected in previous weeks to allow painters access to sides of 18m long vessel. The scaffold had been fitted with handrails and toe boards although these were apparently removed by the painters and not replaced when their work was completed. The IP (the company foreman) accessed the scaffold to check the specification of the bolts fitted to the anchor roller. He walked around the hull when a scaffold board dislodged causing him to fall 3.5m to ground below. IP agreed scaffold was unsafe, but as he required only short-term access he thought it was acceptable.

3. IP sitting on staging (under 2 metres above deck level) surveying weld when the staging slipped apart causing the IP to fall about 3 metres between decks. In future staging below 2 metres to be erected only by nominated persons and where staging is adjacent to between deck access, the extra height is to be taken into consideration.

4. IP working on scaffold platform less than 2 metres above deck. However, platform positioned at edge of stairway such that IP fell approximately 5 metres sustaining multiple injuries. Adequate edge protection not provided.

5. Injured person was walking on staging erected to allow access to rudder/stern area for rudder work this was at around 5-6ft according to IP. This was on the slip owned by Harbour Authority. Area is floodlight but area IP was in was in shadow. Boards on staging moved as he was on staging, he fell part through gap created then backwards to ground injuring shoulder.

6. Injured person sustained knee injuries when he fell from scaffold staging in boatyard. IP fell from Youngman board on tower scaffold base, board overhung scaffold support, toppled when he stood on end.

7. IP was rearranging a cavern to allow the storage of stillages against the back wall. To enable access by forklift truck he intended to saw off the overhanging lengths of wooden planks on a raised platform. As he stepped off a ladder onto the wooden planks they gave way causing the IP to fall 3.5m. The boards were suffering from dry rot but due to the absence of lighting their poor condition was not apparent. Spotlights had been installed ready for connection in January although this had not taken place. The staging has since been destroyed.

#### Open voids

8. IP had been sent to work inside hull of steel 65ft yacht under construction. Finishers had been sanding and the deck was covered in dust. Large opening in deck had been covered with plastic film to prevent dust entering hull. No edge protection or strong covers provided. IP stepped onto plastic not realising what it was as it was covered in dust and looked like the rest of the deck. He fell 2m+ causing serious injuries to head and back. Fire and rescue service had to cut parts of steel work to release him.

9. IP fell through hole whilst searching attic storage area in the dark. Access to area had been changed. New stairway erected and hole where old stairway had been protected by sheet of plywood and marker tape. Temporary edge protection not secured. IP fell through gap where old stairway had been.

10. Worker fell through opening whilst laying lighting necklace through fuel tanks preparatory to later work. He had not been with provided lighting for himself. All such workers are now to be provided with torches.

11. IP, a section leader, fell through a hole in the engine room floor. A floor plate had been removed by another person to enable work access. No precautions taken to prevent a person falling through the resulting hole. Underlying causes of accident unsafe system of work, and poor supervision and monitoring of work practices.

12. IP fell into open trap 46 x 61cm, 50cm deep. Cover removed by fellow employee and hole enlarged to allow air conditioning unit to be fitted. Hole left unattended whilst looking for a replacement trap cover. IP did not see the hole, stepped into it and suffered a cut to shin requiring 6 stitches. Company policy is to replace hatches after access and to fix in place with minimum of 2 screws. Toolbox talks held reminding of need for trap covers to be replaced. Supervisors are now monitoring implementation of company procedure.

13. IP stepped into tank opening, which he thought, was covered, but was not, resulting in laceration to leg. Opening covered by rubbish, subsequently properly covered. Matter to be covered by planned inspection programme.

14. IP was walking along deck of ship under construction when his foot went down a small hole that had been cut in deck ready for cable work resulting in abrasions and strains to his leg. Company has since instructed supervisors to use blanking panels to cover similar holes in deck.

#### Use of ladders

15. A vessel berthed on the outside cradle of a recently commissioned ship lift. A safe means of accessing the cradle had yet to be established. To access the vessel a FLT basket was raised to approximately 3m. A ladder was then used to access the basket in which a second ladder was positioned and extended to the upper hand rail of the vessel (approximately 9 m higher). All ladders were tied on using rope. There was nothing in place to protect people climbing the upper section of the ladder from the effects of high winds.

16. IP gained access to a platform 3 metres above floor level using a wooden ladder. The ladder was not tied or footed despite help being available. The ladder slipped on the floor causing the IP to fall fracturing a cheekbone.

17. IP climbed a ladder to access a lifting shackle on top of a container. The ladder slipped on the ship's deck, which was wet. IP fell to the deck fracturing ribs. While the circumstances are such that the ladder cannot be lashed, the company's instructions are that it should always be footed. Further guidance issued to staff.

18. IP used ladder to reach deck of yacht under construction. Ladder was footed by another employee on first occasion but when IP wanted to go up again there was no one around so he chose to use the ladder alone. As he climbed the ladder it slipped and he fell 3.5m to ground breaking his ankle.

19. Process for working off-site involved the IP, the engineering supervisor in-charge of the job, attending the site and surveying the work to identify the system of work and equipment that will be required. It was identified that the job was to

be done using a tower scaffold and ladder. When the work began the IP decided to make use of a ladder as opposed to using the additional available tower scaffold. Nobody available to 'foot' the ladder and nor was it tied. Gearbox oil etc. spilled from a prop shaft under repair, onto the dry dock bottom. The ladder slipped away causing the IP to fall to the ground.

20. IP was putting up wooden members of a suspended ceiling using standard industrial step ladders (about 2m height), in reasonable condition, placed on flat stable level solid floor. The IP was standing 2-3 rungs up about 600 mm above ground reaching above head when for some reason which he can't remember; he fell hitting his head briefly losing consciousness. Not known if stepladder was erected properly, or why he fell.

### Slip/trip

21. IP working inside hull mould of 68' glass fibre boat. Whilst walking along the spray rail he slipped down smooth surface of the mould to bottom of boat, spraining the tendons in a wrist. Internal investigation concluded safety harness arrangement should be provided. Company also to explore option of conducting the work from a scaffold suspended from an overhead crane gantry.

22. IP left the boat by the side where there were no steps and stepped down c800mm onto the staging below. He was using both arms to carry his toolbox and did not see that the person who was fitting teak planking to that side of the boat had left some of the planks on the staging. IP stumbled on the planks and with his arms full was not able to keep his balance. He fell, landing on top of his toolbox. He cracked ribs on his right side. Since accident staff have been reminded about the need for good housekeeping on the staging; also about the need to access/egress the boat by the steps rather than taking short cuts.

23. IP was working on a slipway. Vessels were placed on carriages and transported to above the water line on rails mounted on concrete bases approx. 1m high. Narrow walkways exist between concrete bases, however the means of access/egress at this location is difficult. Would seem the IP was walking on top of the concrete base when he slipped, as he fell his knee struck the base.

24. IP was painting a berthed vessel on which several other contractors were working at the same time resulting in various items being moved around. IP stepped back and stumbled on a pallet, he reached out to break his fall and sustained a fractured wrist. The pace of work on board the vessel was fast due to berthing costs and hence why several contractors were on board at the same time. Company have issued bulletin re slips, trips and falls.

25. IP leaving deck of ship under repair, slipped and fell 3m from inset vertical dockside ladders. Rungs wet due to rain. Company looking at ways to put back hoops in place but this would restrict ship access to dock. A temporary hoop system may be employed when ships are tied up. For the present, vessels are moored at marina pontoons.

#### General poor control of physical standards

26. IP was stepping off the end of a boat via the unfixed bathing platform. The platform overbalanced and tipped, sending the IP through a gap between the boat and adjacent staging. The bathing platform had been rested in position and was about to be fixed onto a moveable cover. However, the employee who was doing this had to leave the platform unattended for a few seconds to get the right spanner. The IP says he did not realise the bathing platform was not fixed in position. Simple fixed supports cantilevered off the staging have now been provided to prevent a reoccurrence. Bathing platforms are also now being brought in from above to reduce the awkwardness of the associated manual handling task. Hinged flaps have also been fitted to the staging to fill in the gaps between the staging and the boat. The existing risk assessments have been generic rather than recording exact details of how risks of falls may arise. IP sustained fractured ribs and was off work for over 7 weeks.

27. The IP was one of a number involved in the construction of a boat. He was walking down stairs into the saloon but did not notice that the floor had been taken up and the bottom step was missing. The IP fell onto the floor joists badly bruising his ribs and was off work for 8 days. The company had a system of work requiring that when floorboards were removed a notice should be posted at the top of the stairs leading to the missing floorboards. The person who removed the floorboards had not posted the notice in an easily seen place. The cabin was well lit with overhead neon strip lighting.

28. IP suffered low fall when purpose designed steps provided for access from rear deck to boat hull for purpose of fitting out, slipped away. Steps not secured. Would have been task of the IP to have secured a lath. IP claims no such training or instruction. Put hand out to prevent fall and suffered a suspected broken wrist.

#### No fall arrest or guardrails

29. IP fell 11m from open altar edge step while disconnecting a sea water hose. Access to sea water hydrant was via a 610mm wide altar step with no edge protection, running line or other safety harness anchor point provision. Usual method was to walk out onto the unprotected altar step and release the hose using the quick release knob. The hose then allowed to free fall into dry dock. While disconnecting the hose DP fell from the altar step edge. No fall protection measures have ever been taken with respect to altar steps in the dry docks.

30. Member of Ferry deck crew fell 14m to his death from a lifeboat. Part of the work involved putting lifeboats ashore for maintenance. Access to the lifeboats was poor; the ladders, which should have been used, were locked away below decks for security. As a result the crew were climbing up the davit arms to get into the boats. The lifeboat was one of a pair where the crew used steel work from after bridge deck to access the davit arm despite a possible fall of 2.5m. The deceased person (DP) fell onto the sponson deck on the outside of the hull, had he missed this he would have fallen to the dock bottom. Where he fell from & why unclear as no one saw exactly what occurred, no medical reasons initiating the fall. No one asked DP to assist and up till then he had not worked on the lifeboats at all. Soles of his shoes were well worn; it is assumed he slipped whilst on a high point in the bow area of the boat. Harness not worn nor expected to be worn whilst working in lifeboats as they were considered a safe place of work. Boats 1m deep but high points (thwarts) were only 300 mm deep. The company has since made the use of ladders and harness compulsory. Tests on other vessel have shown the use of harness to be practicable.

#### Fragile roofing materials

31. Investigation of accident to painter; who sustained multiple injuries in 7.2 m fall through fragile roof skylight. Roof in 3 sections, steel sheeting with corrugated skylight 2 m wide running 75 m length of building. IP fell off catladder positioned over skylight, only 1 hr into job.

#### Miscellaneous

32. IP a scaffolder fell 8 feet over the edge of the ship's accommodation block onto the deck below. No work being done at the time, IP was simply taking a look at work going on on the ship's funnel. Fall possibly caused by a certain degree of over familiarity.