
No. Guidelines for Working at Height

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(June
2014)

A. Preamble

A1. This Recommendation has been developed to provide guidance to Classification Societies (hereinafter referred to as CS) when developing their own internal safety procedures and / or instructions relating to the hazards faced by survey personnel when working at height in the field (hereinafter referred to as WAH). Detailed calculations / testing of the equipment to be used when carrying out WAH activities are not required or intended under this Recommendation.

A2. The objective is to promote the safety of classification society personnel when required to work at height. Individual CS are encouraged to develop and / or modify their own internal procedures based on these and other similar references. All personnel, when WAH, should be familiar with, and conscientiously apply the applicable procedures / instructions, in the interest of their own safety.

A3. This Recommendation has been developed by drawing extensively on the latest versions of the references listed in Section B of this document, in addition to the existing procedures and practical experience of the member societies.

A4. The word 'shall' where used in any of the quoted references has been replaced in these Recommendations by the word 'should' reflecting the intended recommendatory guidance of this document. Specific wording taken from any of the quoted references may also have been amended, as necessary, to maintain consistency of presentation.

B. References

B1. UK Work At Height Regulations.

B2. UK HSE Information Sheets and Guidance on WAH.

B3. UK – MCA Marine Guidance Note MGN410 (M+F) on The Work at Height Regulations.

B4. Republic of Ireland - Guide to Safety, Health & Welfare at work (General Application) Regulations – Pt. 4.

B5. British Columbia OHS Regulations relating to WAH.

B6. US Department of Labour – OSHA Regulations (Standards – 29 CFR).

B7. British Petroleum's HSE Directive 3 – Working at Heights.

B8. UK Construction workers union guideline on WAH.

B9. Singapore Government – Workplace Health & Safety Act.

B10. Singapore Government, Ministry of Manpower – Technical Advisories on WAH.

B11. IACS Recommendation 91.

B12. IACS Recommendation 78.

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B13. IACS Recommendation 72.

B14. European Commission – The Work at Height Directive – Directive 2001/45/EC on the protection of workers from the risks associated with WAH.

B15. European Commission – Non-binding guide to good practice for implementing Directive 2001/45/EC (Work at a height).

C. Scope

C1. This Recommendation relates to CS personnel when WAH, in the field.

C2. CS should have documented procedures and / or instructions addressing the requirements for their personnel when WAH, as necessary, depending upon the nature and extent of their services.

D. Introduction to Work at Height

D1. WAH is inherently hazardous and may expose personnel to injury and possible death. Research carried out by various agencies shows that falls from height usually occur as a result of poor management control and/or risky behaviours rather than because of equipment failure.

D2. Common factors include:

- a. Failure to recognise the hazards and to assess the associated risk;
- b. Failure to provide safe systems of work;
- c. Failure to confirm that safe systems of work are followed;
- d. Inadequate information, instruction, training or supervision;
- e. Failure to use appropriate safety equipment, including Personal Protective Equipment (PPE), for example safety harnesses;
- f. Failure to provide safe plant/equipment;
- g. Failure to follow applicable procedures or instructions.

D3. In general, referenced regulations do not specify the height above which those requirements apply. Their focus is on the duty to prevent injuries, since a fall from a relatively low height may also cause serious injury. The WAH regulations require that the risk of a fall be mitigated wherever a fall is liable to cause personal injury. This means that measures should be taken for working at any height where there is a risk of a fall causing personal injury. This encompasses working:

- a. from a ladder or on scaffolding, and other means of access;
- b. alongside an open hatch or other opening in a ship's structure;
- c. in close proximity to, or supported from, a ship's side;
- d. in or entering or exiting spaces, such as ballast tanks, cargo holds, deep tanks, etc.;

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- e. on or from a permanent stairway, gangway, accommodation ladder or companionway in or on a ship;
- f. in or on structures under fabrication, such as subassemblies, hull sections or hull blocks.

D4. In ship surveys and other marine inspections, WAH is often unavoidable. Therefore, adequate awareness, training and preparation on the part of all stake holders are essential to promote the safety of all involved personnel.

D5. Responsibility for the provision of the means of access, working platforms and related equipment lies with the shipyard / ship owner / crew / repairer / industrial unit or other party as applicable. Therefore, it is recommended that the CS include, in their procedures, means to make their specific procedural requirements known to the responsible party well in advance of the work to be carried out (e.g. in work planning meetings). The requirements provided should be considered by the surveyor during survey planning meetings and reviewed as changes occur.

D6. Various regulations, such as Quality Management System (QMS) standards, Safety Management System (SMS) standards and the IMO International Safety Management System (ISM) Code, may require employers to carry out a risk assessment and / or take appropriate measures to remove or mitigate the risks in work situations. Considering that most shipyards and industrial units have a certified QMS/SMS, and ships and ship owners and managers have certified safety management systems in accordance with the ISM Code in place, it is reasonable for CS's personnel to require and receive adequate support from them for WAH.

D7. National and international regulations usually also place an onus on personnel to protect their own safety. This is the main focus of this Recommendation. All CS's personnel should apply their own organisation's requirements and follow the relevant procedures when WAH. See also the relevant parts of IACS UR Z10 requirements for Access to Structures.

E. Definitions**E1. Work at Height**

- a. Work at height means work in any place where, if precautions are not taken, a person could fall and be injured. This includes working at or below ground level if a fall is still possible such as a fall from an edge or through an opening.

E2. Surveyor

- a. For the purpose of this Recommendation, a surveyor is any person, employed or contracted by a CS, performing any survey-related services in the field on behalf of the CS.

E3. Competent person

- a. A Competent Person means a person appointed by the facility's (ship / shipyard / workshop / factory) management, who has the required knowledge and experience to assess the risks associated with WAH and is responsible for approving the access arrangements for WAH.

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(cont)**E4. Responsible person**

- a. A Responsible Person means an authorized representative of the ship owner/manager or facility's management who is authorized to permit WAH.

E5. Work Restraint Equipment

- a. Work restraint is a system that prevents persons from reaching a point where they can fall. Examples are: Guard rails, scaffolding, tower scaffolds, cherry pickers, scissor lifts.

E6. Work Positioning Equipment

- a. Work positioning is a system that allows a person who has reached a point of work at height to secure themselves to allow work to take place without the risk of a fall.
- b. A work positioning system is a personal fall protection system that enables a surveyor to work while supported in tension or suspension in such a way that a fall is prevented or restricted. An example would be a boatswain's chair.

E7. Fall Arrest Equipment

- a. Fall arrest equipment is used in situations where a potential to fall cannot be avoided. Equipment used will both arrest the fall and absorb some energy of the fall. Examples would be the traditional harness plus lanyard incorporating energy absorbance, safety nets, air bags.

E8. Working Over Sea

- a. Work over sea means work taking place outside permanent railings where there is a risk of a surveyor falling into the sea.

F. Training

F1. All surveyors who are expected to work at height should be trained in safety requirements for such activities according to CS's internal procedures.

F2. This training should include:

- a. Recognising a WAH situation, including access to and exit from such locations.
- b. Recognising, evaluating and managing the hazards and the risks associated with WAH.
- c. Role of the Competent Person and Responsible Person.
- d. Use of personal protective equipment for fall protection.
- e. Emergency arrangements awareness.

F3. Competency in the areas covered by the training identified in F2 should be periodically assessed, either as a part of activity monitoring or some other suitable means. The maximum period between these assessments of competency should be 3 years. Assessment records should be maintained.

F4. CS should document in their internal procedures situations when these competency assessments are not held as required by this Recommendation and when surveyors do not pass these competency assessments.

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G. General Guidelines for WAH

G1. WAH should only be undertaken when weather conditions are such that the health and safety of surveyors is not put at risk. The weather may not only affect surveyors WAH on an open deck, but may also adversely affect surveyors when WAH inside a vessel which is moving as a result of wind or wave action.

G2. When deciding which type of equipment is most suitable for a particular task, the following should be considered:

- a. slopes or poor ground conditions;
- b. obstructions, for example, steelwork or overhangs;
- c. fragile surfaces;
- d. floor loading;
- e. job duration;
- f. weather conditions.

G3. It is essential that a sensible and pragmatic approach is taken when addressing low falls. Precautions may only be needed when the scope and duration of the work presents a risk of injury. If the risk is minor and it is not reasonably practical to take other precautions, then no action may be needed provided proper training has been carried out.

G4. Personal protection equipment protects only the user/wearer and requires action by the individual, such as properly wearing and adjusting it, for it to work. Examples include work restraint equipment which prevents a fall and fall arrest equipment which minimises the consequences of a fall.

G5. Procedures for WAH are in place, are current and are being followed.

G6. Safety measures, including the following, should be taken by a responsible person prior to survey / inspection to the satisfaction of the attending surveyor:

- a. The equipment's range of use should be agreed with the operator before using the equipment;
- b. Permissible load and reach limitations should not be exceeded.

G7. The operation and training in the use of applicable equipment should be addressed by the Ship's Safety Management System / Shipyard's Occupational Health Management System and other facility's management systems (e.g. Vendors).

G8. Barriers, or other equivalent arrangements, should be in place to prevent objects falling from the work area which may harm any personnel in the vicinity below.

G9. Rescue facilities and procedures and support personnel should be readily available to permit evacuation in the event of imminent danger and / or to meet an emergency.

G10. When surveyors are working in the vicinity of flush manholes and other small openings of comparable size in the deck and other working surfaces, such openings should be suitably

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covered or guarded, except where the use of such guards is made impracticable by the work actually in progress. In such situations use of appropriate signage should be considered.

G11. When surveyors are working around open hatches not protected by coamings or around other large openings, the edge of the opening should be guarded in the working area, except where the use of such guards is made impracticable by the work actually in progress. In such situations use of appropriate signage should be considered.

G12. When surveyors are exposed to unguarded edges of decks, platforms, flats, and similar flat surfaces more than 1.5 m above a solid surface, the edges should be guarded by adequate guardrails, unless the nature of the work in progress or the physical conditions prohibit the use or installation of such guardrails. In such situations, use of appropriate signage should be considered.

G13. When surveyors are working near the unguarded edges of decks of vessels afloat, or in situations where there is a danger of falling into water, they should be protected by personal flotation devices, in lieu of personal fall protection equipment.

G14. Sections of bilges from which floor plates or gratings have been removed should be guarded by guardrails except where they would interfere with work in progress. If these open sections are in a walkway, suitable planks should be put in place, side by side, or equivalent, should be laid across the opening to provide a safe walking surface.

G15. Gratings, walkways, and catwalks, from which sections or ladders have been removed, should be barricaded with adequate guardrails.

G16. Surveyors should be familiar with the procedures, preconditions, risks and safety precautions relating to the work.

G17. Equipment related to WAH is in compliance with relevant and applicable standards.

G18. Class rules normally require that Owners' / site managers' 'Responsible Person(s)' are responsible for providing means of access which are suitable and safe for the work to be carried out. The equipment, where applicable, should be operated/erected by qualified personnel. Evidence should be provided that the equipment has been properly maintained and inspected before each use; that formal inspections have been held annually, as a minimum; that re-inspections have been completed if any modifications from the original configuration have been carried out.

G19. It should be demonstrated by the Responsible Person that the equipment provided has been inspected, maintained and operated by trained and qualified persons. These should be demonstrated to the surveyors by the production of applicable documents, prior to the equipment being used.

G20. The records of training, inspections and maintenance should be established in accordance with the requirements of the ships Safety Management System or the facility's QMS/SMS, as applicable.

G21. Suitable and sufficient steps should be taken to ensure, so far as is practicable, that in the event of a fall by any person the fall arrest equipment does not itself cause injury to that person.

G22. The access and exit arrangements should be safe and clear of obstacles.

G23. Communication arrangements should be adequate.

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G24. Lighting should be adequate to allow safe working. Lighting in a work area may be a temporary arrangement cabled into the area requiring additional protection against possible trip induced falls. Whenever possible, natural lighting should be provided in the work area during inspection.

G25. The tools and equipment used for WAH should be secured against falling.

G26. Effects of extreme temperature should be adequately considered. See guidelines in IACS Recommendation 72, Guidelines for Safe Entry of Confined Spaces, Section 6.1

G27. Surveyors should verify that the necessary arrangements for WAH are suitable for the intended activity.

G28. No surveyor should carry out a survey from a 'one-man' lifting basket.

G29. No surveyor should perform survey using rope access, unless specifically trained, qualified and authorized.

H. Topic Specific Guidelines**H1. Emergency response arrangements**

H1.a. For shipboard work, this aspect should be addressed in the Safety Management System manual of the ship as part of the risk assessment of 'shipboard operations', which is a requirement of the ISM Code.

H1.b. For work in shipyards and factories, this should be a part of their 'emergency preparedness planning' particularly when the shipyard / factory is certified for Occupational Health and Safety as per the international standard OHSAS18001.

H1.c. In the event that this is not addressed as stated above, then a situation specific plan should be prepared to the satisfaction of the surveyor.

H1.d. No surveyor should be part of a rescue team.

- i. A rescue operation can only be performed by personnel trained for the task and having knowledge of emergency procedures and arrangements in place, agreed communication arrangements, escape routes, status of availability and readiness of the support team, etc. A surveyor does not meet this standard and should not be a formal part of any rescue team.

H2. Working over sea

H2.a. Work over sea may be permitted provided the ship is not being navigated and weather and sea conditions are satisfactory. As a guidance the following may be applied:

- i. The weather and sea condition does not exceed Beaufort Sea State Scale 3 which corresponds to wind speed of 17 to 21 knots, moderate waves of height of about 2 m, many white caps and possible spray;
- ii. Man over board (MOB) preparedness is in place;
- iii. A rescue boat is operative and can be launched/retrieved in case a person falls into the sea;

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iv. the visibility is good enough to perform the work and rescue any person that may fall into the sea.

H2.b. When working over sea, a safety guard should be present and monitor the surveyor's location over sea at all times. The safety guard should be familiar with and carry out tasks stated in the safety guard's duties in connection with work over sea.

H2.c. A life buoy with line and light should be readily available.

H2.d. Everyone working over open sea should wear a life vest and/or flotation device.

H2.e. Overboard discharges etc. should be secured, for example from fire water line.

H3. Fall arrest systems

H3.a. A fall arrest system should be fitted such that there is adequate clearance for it to deploy, and to prevent the surveyor from hitting an obstruction or the ground before the fall is stopped.

H3.b. Many recognized practices specify either a guardrail system, safety net system, or personal fall arrest system to protect the surveyor when exposed to a fall of 1.8 m or more from an unprotected side or edge. See also D3.

H3.c. Fall arrest procedures should provide for a rescue to be carried out if the surveyor is left suspended from the working place.

H3.d. Safety nets or airbags should be located as close as possible to the working level to enhance their effectiveness.

H3.e. Safety nets should be installed as close as practicable under the walking/working surface on which surveyors are working. As acceptable practice:

- i. They should not be more than 9.1 m below such levels;
- ii. The maximum size of each safety net mesh opening should not exceed 230 cm² nor be longer than 0.15 m on any side;
- iii. The openings, measured centre-to-centre, of mesh ropes or webbing, should not exceed 0.15 m;
- iv. All mesh crossings should be secured to prevent enlargement of the mesh opening;
- v. Each safety net or section should have a border rope for webbing. Safety nets should be installed with sufficient clearance underneath to prevent contact with the surface or structure below.

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H3.f. Safety nets should, as a good practice, extend outward from the outermost projection of the work surface as follows:

Vertical distance from working level to horizontal plane of net	Minimum required horizontal distance of outer edge of net from the edge of the working surface
Up to 1.5 m	2.4 m
More than 1.5 m up to 3 m	3 m
More than 3 m	3.9 m

H3.g. A fall arrest system should incorporate an integral shock absorbing device for limiting the forces applied to the surveyor's body.

H3.h. A fall arrest system should not be used in a manner:

- i. which involves the risk of a line being cut;
- ii. where its safe use requires a clear zone (allowing for any pendulum effect);
- iii. which otherwise inhibits its performance or renders its use unsafe.

H3.i. Life-lines and anchorages should not be shared. As a good practice, harnesses with double lanyards should be used.

H3.j. Independent securing should be used for fixing all fall arrest equipment, man-riding belts or nets. They should not be attached to the scaffolding.

H3.k. When using fall arrest equipment, at least one person should be present in the area nearby at all times in order to alert and start basic rescue work in case of a fall.

H3.l. Prior to commencement of work, a realistic and safe rescue plan should be in place. The plan should take into consideration the time for a safe rescue in order to be able to rescue a person as quickly as possible to prevent consequential injuries (e.g. blood circulation injuries).

H3.m. There should be a site specific instruction on how required competent personnel are organized (for instance a rescue team).

H3.n. Surveyors should only use any work equipment or safety device provided to them for work at height by an employer, or by a person under whose control they work, in accordance with training or instructions received by them in the use of such equipment or device.

H3.o. Surveyors should always visually check their fall arrest system and anchor point. If there is any doubt regarding anchor points, defects in harnesses or harnesses that lack the inspection tag for approval, that harness should not be used.

H4. Personal fall protection system (PFPS)

H4.a. PFPS should be provided where applicable and appropriate.

H4.b. These consist of an anchorage, connectors, and a body belt or body harness and may include a deceleration device, lifeline, or suitable combinations.

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H4.c. A personal fall protection system should be:

- i. suitable and of sufficient strength for the purposes for which it is being used having regard to the work being carried out and any foreseeable loading;
- ii. designed to minimise injury to the surveyor and, where necessary, be adjusted to prevent the surveyor falling or slipping from it, should a fall occur;
- iii. so designed, installed and used as to prevent unplanned or uncontrolled movement of the surveyor;
- iv. of correct size for the surveyor;
- v. correctly worn;
- vi. rigged so that the surveyor can neither free fall more than 1.8 m nor contact any lower level;
- vii. fitted with a snap hook on a lanyard or lifeline which is self-locking. When in use, a carabineer or similar connecting hardware is to be secured to prevent inadvertent opening;
- viii. able to effectively protect a vertical lifeline, lanyard, or safety strap at points of attachment and elsewhere, as necessary, to prevent chafing or abrasion caused by contact with sharp or rough edges.

H4.d. Safety harnesses should be used, as necessary, as a PFPS, for fall arrest.

H4.e. Body belts with lanyards should not be used as body support in a fall arrest system due to the possibility of death or injury from the following causes:

- i. slipping out of a belt;
- ii. abdominal injuries;
- iii. back injuries; or,
- iv. effects on the body of extended static suspension in a belt.

H4.f. PFPS should be inspected prior to each use for wear, damage, and other deterioration. Defective components should be removed from service.

H4.g. PFPS designed for use with an anchor should be securely attached to at least one anchor, and each anchor and the means of attachment thereto should be suitable and of sufficient strength and stability for the purpose of supporting any foreseeable loading.

H4.h. An anchor is “a secure point of attachment for a lifeline or lanyard.”

H4.i. Types of anchors under this definition include:

- i. a device that has been purposefully manufactured and installed as an anchor to support a personal fall protection system;

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- ii. a substantial structure, such as a beam, column or similar substantial portion of the structure, selected as a point of anchorage where no dedicated anchor device is available.

H4.j. These points of anchorage generally require some supplemental rigging, such as a sling, to allow the anchorage connector of a personal fall protection system to connect to the anchorage.

H4.k. An anchor should be located so a lifeline attached to it is not deflected over a guardrail or other part of the structure which has insufficient strength to support the maximum potential load from a fall arrest.

H4.l. Equipment for PFPS should have appropriate marking. Normally, this is in accordance with the applicable PPE standards and regulations.

- i. There are three categories of personal protective equipment (PPE) – most fall protection equipment is classed as PPE category III, “equipment for mortal danger”, for example harnesses.

H4.m. Marking does not necessarily mean that a piece of equipment is safe for the task.

H4.n. The manufacturer’s instructions should be checked, for example, to consider whether the particular piece of equipment is compatible with others being used. Some equipment may have a lifespan date given by the manufacturer and generally should be disposed of after this date.

H4.o. The surveyor should check for information related to:

- a. use limitations and protection classes suitable for different levels of risk;
- b. expiry date of PPE and of other related components.

H4.p. Any accessories or other equipment should also be checked to verify that they meet the above requirements.

H4.q. It is important to inspect personal fall protection equipment on an on-going basis to verify its suitability for continued use.

H4.r. As a minimum, this involves inspection before use on each work shift, and after each use to arrest a fall. It is also recommended to inspect equipment just before each use if not already covered by one of the other inspection scenarios. Such inspections are only one aspect of the overall review and monitoring of conditions and procedures.

H4.s. Inspections should be done in accordance with manufacturer instructions, if available, and in conformity with any standards which apply to the equipment.

H4.t. Inspections should cover at least the following items:

- i. With harnesses, the following aspects should be checked:
 - a. integrity of stitching throughout the harness, on both outer and inner surfaces;
 - b. signs of deformation, bunching, or deterioration of pick points on the harness;
 - c. signs of contact with chemicals;

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- d. signs of any part of the harness being cut, stretched, frayed, or otherwise damaged;
 - e. integrity of shackles and straps on the harness;
 - f. signs of exposure to high temperatures.
- ii. With other equipment such as shackles, carabineers, lines, and deceleration control devices, the examination of equipment should include the following:
- a. all metal and other materials for any sign of deformation, wear, stretching, cracks, or kinking;
 - b. all metal and other materials for any signs of corrosion or other chemical deterioration;
 - c. all lines for wear on surfaces, and any potential or actual fraying, kinking, bird caging, heat fusion, or other damage;
 - d. moveable parts to verify proper action, and the capability of all locking and other immobilizing devices to perform their function.

H5. Scaffoldings

H5.a. Scaffolding should be suitably designed, constructed, inspected and maintained by competent personnel.

H5.b. Scaffolds should be built according to recognized standards or as a minimum:

- i. be designed for the job/load;
- ii. have scaffold poles made of metal and scaffold tubes linked by rigid angle couplers;
- iii. be placed on a firm foundation;
- iv. have good stability with a stable structure and be anchored with diagonal bracing at regular intervals;
- v. have an adequate platform fully boarded with toe boards and guard rails fitted at all open ends;
- vi. walkways with strong, continuous, clean, non-slippery platform boards;
- vii. be free from loose materials objects/tools;
- viii. be suspended scaffolds/staging to have minimum of 6 evenly spaced suspension points made of steel wire ropes or chains as near vertical as possible;
- ix. have suspension points made of steel wire ropes or chains evenly spaced and as near vertical as possible;
- x. be provided with safe access arrangement.

H5.c. The scaffolding should be approved by the Competent Person.

H5.d. A scaffold tagging system or equivalent method should be in place to record that the scaffolding or staging is fit for use.

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H5.e. Barrels, boxes, cans, loose bricks, or other unstable objects should not be used as working platforms or for the support of planking intended as scaffolds or working platforms.

H5.f. Scaffoldings should have sufficient dimensions to allow safe passage, and wide enough to allow a person at shoulder width to pass along them easily. This width would normally be considered to be at least 0.6 m. Where this is impracticable, the situation should be specifically addressed by the surveyor prior to his or her use.

H5.g. Staging platforms should be fitted with fall prevention arrangements such as guardrails:

- i. fixed or rigidly connected; top rail at least 0.95 m above the walking or working surface;
- ii. have an intermediate rail not higher than 0.47 m above the surface;
- iii. guardrail systems should be surfaced to protect surveyors from punctures or lacerations and to prevent clothing from snagging;
- iv. the height of the toe board should be at least 0.15 m.

H5.h. Platforms should be arranged:

- i. without gaps through which a person could fall or trip;
- ii. to be non-slippery or non-tripping;
- iii. so as to prevent any person getting caught between the system and the adjacent structure;
- iv. so as to prevent inadvertent movement during work.

H6. Portable ladders and vertical/access ladders

H6.a. Portable ladders may be used for access to any structural members as a supplement to and/or additional to permanent means of access.

H6.b. Portable ladders should be designed based on a recognised International or National Standard. The rungs and steps of portable ladders should be designed to minimise slipping (e.g. corrugated, knurled, dimpled or coated with skid resistant material).

H6.c. The minimum clear distance between side rails for all portable ladders should be according to a recognized standard. (*For example ANSI A14.2 – Portable Metal Ladders; BS EN 131 Ladders (Specification for terms, types, functional sizes; Specification for requirements, testing, marking; User instructions; Single or multiple hinge-joint ladders)*).

H6.d. Portable ladders should be:

- i. designed for the intended activity;
- ii. not more than 5 m in length;
- iii. rest on a stable, strong, suitably sized immobile footing;
- iv. set at a suitable angle (approximately 75 degrees);

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- v. well maintained and free of oil, grease and slipping hazards;
- vi. of sufficient length to extend above the exit platform to permit ease of exit/entry;
- vii. equipped with feet prevented from slipping during use by securing the stiles at or near their upper and lower ends by any anti-slip device or by other arrangements of equivalent effectiveness;
- viii. slip resistant feet should not be used as a substitute for the care in placing, lashing or holding a ladder upon a slippery surface;
- ix. having another worker "foot" the ladder is not an effective means of securing the ladder and would only be suitable when other means are impracticable;
- x. portable ladders should be used on top of bottom or deep stringer platforms so that the free falling height does not exceed 6 m; if it is necessary to exceed this height, there should be at least 3 m of water above the highest structural element in the bottom to provide a "cushion" or a safety harness is to be used; the free falling height above the water surface should not exceed 6 m.

H6.e. Surveyors should use fall protection equipment when accessing a height more than 4 m using a vertical ladder.

H6.f. Vertical ladders should be fixed both at top and bottom.

H6.g. Suspended ladders should be secured to prevent displacement or swinging.

H6.h. Portable ladders should have rubber caps at both ends and have no visual deformation.

H6.i. Hanging ladders and ladders more than 5 m long may only be utilized if fitted with a mechanical device to secure the upper end of the ladder.

H6.j. No interlocking or extension ladder should be used unless its sections are prevented from moving relative to each other while in use.

H6.k. When climbing ladders in tanks containing water, the surveying personnel should wear "flotation" aids. A flotation aid is a simple form of lifejacket which does not impede climbing or a self-inflatable lifejacket.

H6.l. Aluminium ladders may be used in cargo tanks, but cannot be stored in the cargo area or other gas dangerous spaces.

H6.m. As a guide, a ladder or stepladder should only be used:

- i. where the work is of short duration – ladders are not suitable for work where they are in one position for 30 minutes or more; longer duration or regular jobs generally justify a better standard means of access (e.g. a tower scaffold, podium step or cherry picker) rather than a ladder or stepladder;
- ii. where the risk is low, i.e. because the nature of the work makes a fall unlikely or, in the event of a fall, the nature of the fall would be unlikely to cause injury;
- iii. for "light work" – ladders are not suitable for strenuous or heavy work;
- iv. for work that does not involve carrying heavy or awkward tools or equipment;

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- v. where a handhold is available both for climbing the ladder and in the working position;
- vi. where three points of contact (hands and feet) at the working position can be maintained. On a ladder where the surveyor cannot maintain a handhold, other than for a brief period of time, other measures will be needed to prevent a fall or reduce the consequences of the fall.

H6.n. New ladders should be marked in accordance with their conditions and class of use.

H6.o. Before using a ladder or stepladder, surveyors, should check for satisfactory condition of the ladder and confirm that it is marked in accordance with recognized standards. *(For example ANSI A14.2 – Portable Metal Ladders; BS EN 131 Ladders (Specification for terms, types, functional sizes; Specification for requirements, testing, marking; User instructions; Single or multiple hinge-joint ladders)).*

H6.p. Over reaching is a significant risk when working from a ladder. It may appear tempting to try to complete all the work without having to go down the ladder and move it. Over-reaching while working from a ladder is a major cause of falls, even for experienced surveyors.

H7. Mobile Elevating Work Platforms (MEWP)

H7.a. MEWP should be:

- i. certified for use and applicable load;
- ii. fitted with controls at the bottom able to override controls in the basket;
- iii. provided with safety functions and limit switches as applicable;
- iv. free of loose parts and have tools secured;
- v. inspected and have controls and safety functions tested before each use;
- vi. maintained in good condition, as per manufacturer's recommendation.

H7.b. The MEWP should be subjected to a thorough examination at least every six months.

H7.c. Vehicle-mounted elevating work platform or a self-propelled boom-supported elevating work platform should be subjected to annual inspection and certification.

H7.d. MEWP should be operated from within the basket, by a trained person.

- i. MEWP operators should have attended a recognised operator training course and received a certificate, card or 'licence', listing the categories of MEWP the bearer is trained to operate;
- ii. the training licence or card should be currently valid;
- iii. in addition to formal training for the type of MEWP, operators should have familiarisation training on the controls and operation of the specific make and model of MEWP they are using.

H7.e. During operation, MEWP should be:

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- i. placed on a firm and level surface with spreaders used if applicable;
- ii. moved for relocation only in the lowered position.

H7.f. Surveyors should wear fall arrest and restraint arrangements, secured to the basket.

H7.g. When working over water a personal floatation device should be worn instead of a harness.

H7.h. Hydraulic arm vehicles or aerial lifts (“Cherry Picker”) may be used to enable the examination of the cargo hold structure on bulk carriers not accessible by permanent ladders.

- i. ‘cherry pickers’ may be accepted, for use up to 17 m above the tank top;
- ii. the standing platform should be clean and fitted with anchor points for attaching fall arrest systems;
- iii. the work platform should be fitted with effective guard rails and toe boards.

H7.i. For equipment provided with a self-levelling platform, care should be taken that the locking device is engaged after completion of manoeuvring to ensure that the platform is fixed.

H7.j. Lift controls, including safety devices should be serviceable and should be operated throughout the range prior to use.

H7.k. Potential crushing hazards (for example booming into the overhead, pinch point) should be considered.

H8. Crane-hoisted baskets

H8.a. Basket platform and lifting gear should be certified for applicable safe workload and certified for transportation of personnel.

H8.b. Crane-hook should have a safety latch and an extra safety wire between the hook and the basket.

H8.c. Crane hoisted appliances should not be used during adverse weather conditions.

H8.d. Crane operator should be trained and competent.

H8.e. The basket should be connected to a crane hoist line that is fully braked. No free fall rigs should be used. Hydraulic cranes should have “power-up” and “power-down”.

H8.f. Surveyors should be briefed about proper use of the basket prior to boarding a crane hoisted basket.

H8.g. Cranes, winches and other devices used for hoisting and lowering movable work platforms should:

- i. be operated as slowly as practicable while supporting the work platform;
- ii. be lowered under power, if the device is powered; and,
- iii. not be equipped with a free running boom or hoisting winch controlled only by brakes.

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H8.h. If a moveable work platform is suspended from a crane, winch or other device over a structure that cannot safely support its weight or if other hazards exist below the platform (e.g. water deep enough to present the hazard of drowning), lower limit travel devices compatible with the hoist system should be used to ensure the platform cannot be lowered beyond the safe lower limit of travel.

H8.i. If the lower limit travel devices required above are not practicable, the Responsible Person should ensure that work procedures that will minimize the risk of the platform going beyond the safe lower limit of travel are used.

H8.j. A trial lift for a work platform suspended from or attached to a crane or hoist or mounted on lift trucks should be performed at all work locations before the platform is occupied.

H8.k. High lift trucks should not be moved from location to location while a surveyor is on the work platform. Minor adjustments in horizontal positioning should only be carried out at the request of the surveyor on the work platform.

H8.l. Work platforms that can be elevated to a height of greater than 1.2 m should have a means of fall protection such as guardrails or a means for securing surveyors such as a body belt or lanyard.

- i. the guardrail may be hinged, removable or consist of chains;
- ii. fall protection should be selected and used in circumstances where a fall can occur;
- iii. personal fall arrest equipment should be used.

I. Surveyors' Equipment for WAH

I.a. The following minimum set of Personal Protective Equipment should be made available to surveyors when WAH:

- i. protective clothing;
- ii. safety shoes/boots;
- iii. safety helmet;
- iv. work gloves;
- v. protective glasses and/or goggles, if necessary;
- vi. ear defenders and/or ear plugs, if necessary;
- vii. strap provided flashlight, as necessary and optional head torch where appropriate;
- viii. PFPS, as necessary.

I.b. The surveyor should use the necessary personal safety equipment according to the specific conditions and the survey being carried out.

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