
No. 141 Guidelines for the Assessment of Safety Aspects at Workplace

(July 2015)

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 health and safety assessments of workplaces.

A2. The objective is to promote the health and safety culture in the maritime industry for the benefit of the same maritime industry and of the classification society personnel when required to work in the shipyards. Individual CSs are encouraged to develop and/or modify their own internal procedures based on these and other similar references.

A3. All CSs personnel, when working in shipyards, should be in compliance with, and conscientiously apply the applicable procedures / instructions, in the interest of their own health and safety and that of others.

A4. CS's personnel when working in shipyards, in addition to complying with their respective class society's health and safety policies, procedures and requirements, should be in compliance with local requirements and the subject shipyard's health and safety policies, procedures and instructions, as they may apply to them.
As a general rule, on similar matters, the more stringent requirements should prevail.

A5. 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.

B. References

- B1. US Department of Labor - OSHA Regulations, 29 CFR – 1915, 1917 and 1918
- B2. US Department of Labor - OSHA Regulations, 29 CFR – OSH Act of 1970; General Duty Clause
- B3. US Department of Labor - OSHA Regulations, 29 CFR – 1926 Subpart C; Safety and Health Program Management Guidelines; Issuance of Voluntary Guidelines (Summary)
- B4. British Standards Institute (BSI) – OHSAS 18001
- B5. IACS Procedural Requirement, PR-37, for Confined Space Safe Entry
- B6. IACS Recommendation 39 on Safe use of rafts or boats for survey
- B7. IACS Recommendation 72 for Confined Space Safe Practice
- B8. IACS Recommendation 78 on Safe Use of Portable Ladders for Close-up Surveys
- B9. IACS Recommendation 90 on Ship structure access manual

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- B10. IACS Recommendation 91 on Guidelines for Approval / Acceptance of Alternative Means of Access
- B11. IACS Recommendation 136 on Working At Heights
- B12. IACS Recommendation 134 on Boat Transfers
- B13. IACS Recommendation 140 on Pressure Testing and Working with Pressure Systems
- B14. IACS Unified Requirement Z.7 on Hull Classification Surveys
- B15. IACS Unified Requirements Z.10.1 to 10.5 on Hull Survey of Oil Tankers / Bulk Carriers / Chemical Carriers / Double Hull Oil Tankers / Double Skin Bulk Carriers
- B16. IACS Unified Requirement Z.23 Hull Survey for New Construction

C. Scope

- C1. This Recommendation relates to CS interaction with shipyards and relates to CS employees while attending projects at these shipyards.
- C2. CS should have documented procedures and / or instructions addressing the requirements for their personnel when dealing with the shipyards and when working at the premises of these shipyards, depending upon the type of projects being worked out by the shipyard and the nature and extent of the CS services.
- C3. This Recommendation refers specifically to health and safety aspects during all surveys carried out at the shipyards / repair yards and at the premises of their sub-contractors, where similar work conditions may exist, while building, repairing, or converting ships and/or other marine units or parts thereof.

D. Introduction

- D1. There are inherently hazardous conditions at the shipyards (see definition, in the next section) and they may expose CS's personnel to injury and possible death. From experience it has been learnt that hazards may occur at the shipyards as a result of many factors, including poor health and safety management implementation, poor hazard-control and risky behaviours of other personnel working in shipyards as reported in section G2.
- D2. Surveys for new construction, repair and conversion of ships and other marine structures are by their nature, inherently hazardous. Therefore, CSs should implement training programs for their personnel covering hazard awareness, identification and mitigation to promote a sound health and safety culture.
- D3. At the time a CS initiates a project in a shipyard, an assessment of the subject shipyard's facilities and health and safety management system should be carried out, to verify the degree of the system implementation and to confirm how the health and safety culture has been instilled in the shipyard's personnel, managers, supervisors, workers and subcontractors, as applicable.
- D4. Other programs that may supplement the health and safety management system of a shipyard should be taken into account, while assessing the shipyard. Good examples of these programs are "Hazards Identification, Risk Assessment and Job Safety Analysis" (JSA or similar); "Safety Steering Committees"; "Behaviour-Based Safety" (BBS).

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E. Definitions**E1. Shipyard**

- For the purpose of this recommendation, a shipyard is a facility, including the premises of its sub-contractors, or any other premises, where production works are carried out for building or repairing or converting ships and/or other maritime units.
- Shipyard: the definition should include workshops, not as subcontractors' premise, where repair and test are carried out, i.e. ship in service.

E2. Surveyor

- For the purpose of this Recommendation, a Surveyor is any person, employed or contracted by a CS, performing any survey/inspection/testing/audit-related services in the shipyard on behalf of the CS.

E3. Competent person

- A Competent Person means a person nominated by the shipyard's management, who has the required knowledge and experience to assess the risks associated with the applicable hazards and is responsible for approving the arrangements for controlling the subject hazards.

E4. Responsible person

- A Responsible Person means an authorized representative of the shipyard's management who is authorized to issue work permits, and to organise and co-ordinate surveys, as applicable.

E5. Hazard

- A hazard is a situation or condition that has the potential to cause harm to an individual or property.

E6. Severe health and safety incident

- For the use of this Recommendation, an incident may be categorized as severe when harm or damage affects CS's persons or properties. Where an incident has occurred but no harm or damage has been caused then, the incident should not be categorised as severe.

Incidents may be defined as follows:

- Accident – event resulting in injury to people
- Near Miss – event which under slightly different circumstances would have resulted in an accident
- Safety Observation – an unsafe situation / object / practice with the potential to cause harm to people
- Occupational Health Issue – an unsafe situation / object / practice, prolonged exposure which can result in illness to people.(if we say “to which results” means if did and therefore is an accident)

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F1. All surveyors who are expected to work at shipyards should be trained in health and safety requirements, according to the CS's internal procedures.

F2. This training should include:

- a. Recognising hazards, including those typical hazards that are faced in shipyards.
- b. Recognising, evaluating and managing the hazards and the risks associated with them.
- c. Specifically but not limited to, Confined Space Awareness (IACS PR 37, IACS Rec. 72) and Working at Heights (Rec. 136).
- d. Role of the Competent Person and Responsible Person.
- e. Use of personal protective equipment, including standard PPE and specific PPE.
- f. Emergency arrangements awareness and degree of participation and enrolment.
- g. Application of Stop Work Authority (SWA) when facing a situation in which the risk to health and safety is considered to be unacceptably high. Reference is made to the "IACS Joint Statement on Safety for Surveyors".

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 with records maintained of the most recent assessment.

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. In either of these cases, CS should take immediate corrective and preventive actions prior to CS personnel continuing in those duties which are affected by the situation.

G. General Health and Safety Related Guidelines for Working at Shipyards

G1. The following are many of the typical hazardous situations that may be faced in shipyards:

- a. Physical Agents
 - i. Noise Heat stress/High temperature
 - ii. Low temperature
 - iii. Burn by heat
 - iv. Electrocution
 - v. Electrical disruption
- b. Confined spaces and chemical agents

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- i. Oxygen deficiency
- ii. Oxygen enrichment Toxic chemicals
 - 1. Carbon monoxide/CO
 - 2. Hydrogen sulphide/H₂S
 - 3. Others (e.g. Asbestos, Benzene, Hexavalent Chromium Compounds, Ozone, Nitrogen dioxide, etc.)
- iii. Explosive atmospheres and fire substances
 - 1. Hydrocarbon gases
 - 2. Paint fumes
 - 3. Solid combustibles
- c. Ergonomic Conditions
 - i. Slip/Trip/Fall
 - ii. Access and egress
 - iii. Working at height
 - iv. Working over water
 - v. Movement of normal and heavy lift vehicles
 - vi. Heavy equipment, structures and their supporting systems
 - vii. Geographical spread of survey locations (long walks and climbs)
 - viii. Hygiene (Biological hazard)
- d. Specific Shipyard's production works
 - i. Welding (Eye discomfort, Heat)
 - ii. Cutting and fairing (Oxygen enrichment; Heat; Explosive atmospheres)
 - iii. Hull pressure testing
 - iv. Non-destructive testing (radiation)
 - v. Dry-dock work
 - vi. Sea trials
- e. Airborne matters
 - i. Sandblasting

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- ii. Dust
- iii. Pressurised water washing
- iv. Paints and solvents
- v. Fibers (Asbestos, mineral wool, ceramic)
- vi. Lead
- f. Surrounding conditions
 - i. Poor housekeeping
 - ii. Lifting appliances / Lifted items
 - iii. Falling objects
 - iv. Others working aloft
- g. Machinery, equipment and tools use
 - i. Aerial lifts
 - ii. Pressure systems and tests
 - iii. Machinery and systems running test, and dock and sea trials
 - iv. NDT(i.e. X-Ray)
- G2. Common factors leading to an incident include:
 - a. Failure to recognise the hazards, to assess the associated risk and to control it
 - b. Failure to provide safe processes of work
 - c. Failure to confirm that safe processes of work are followed
 - d. Failure to provide safe machinery, equipment and tools
 - e. Failure to provide safe guards and protection
 - f. Inadequate information, instructions, training or supervision
 - g. Failure to follow applicable procedures or instructions, particularly those of manufacturers/suppliers of equipment
 - h. Failure to avoid situations where attention or reaction is inhibited (e.g. cell phone usage, lack of attention due to exhaustion, medication or personnel distractions)
 - i. Failure to use appropriate safety equipment, including Personal Protective Equipment (PPE), as applicable
 - j. Failure to ensure good communications

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G3. In addition to the foregoing G1 and G2 listed hazards and common factors, the following aspects should be addressed by the Shipyard's Occupational, Health and Safety Management System:

- a. Operation and training in the use of applicable machinery, equipment and tools
- b. Barriers, or other equivalent arrangements, in place to prevent objects falling/flying from the work/test area, as well as machinery and equipment in service which may harm any personnel in the vicinity or below
- c. Appropriate signage methods for working in the vicinity of dangerous or hazardous locations (i.e. Lifted/carried weights, temporary unprotected openings, radiation, during NDE)
- d. Lock-out/Tag-out procedures
- e. Segregation and marking of Pedestrian routes and movable equipment and machinery roads duly marked with applicable restrictions (EG: Speed limit, high limit, established preferences or right to cross the roads, construction works in progress, etc.)
- f. Routes and roads permanently free from material, machinery, equipment, debris and tools
- g. Rescue facilities, equipment, procedures and trained support personnel readily available to permit evacuation in the event of imminent danger and / or to meet an emergency
- h. Effects of extreme ambient temperatures (high and low)
- i. Protection of openings to prevent inadvertent fall – e.g. open manholes, sections of bilges from which floor plates or gratings have been removed. Provision of guards, anti-sliding boards and signage
- j. Measures to avoid objects falling to lower levels or down on vessels
- k. The on board access and exit arrangements – safe and clear of obstacles
- l. Adequate lighting and ventilation and management of disruptions to allow safe access, visiting and working, as applicable
- m. Adequate cleaning to allow safe access, visiting and exit of the full space being inspected
- n. Procedures for handling of welding, cutting/fairing tools, equipment and hoses with particular attention when used in confined spaces
- o. Procedures for management of fluid hoses, with particular attention to handling of them when they break
- p. Procedure for testing the atmosphere of confined spaces, including:
 - i. Provision of adequate ventilation
 - ii. Safe entry permit process

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iii. Hot work permit process

G4. Class rules require that Owners / Shipyard Management are responsible for providing means of access which are suitable and safe for the work to be carried out by the CS's personnel. The equipment, where applicable, should be operated by qualified personnel. Evidence should be provided that:

- a. The equipment has been properly maintained and inspected before each use, and equipment operates properly and calibration is up to date
- b. Formal inspections have been held periodically, as required
- c. Re-inspections have been completed, after repair / overhaul
- d. If any modifications from the original configuration have been carried out, they have been done as per manufacturer's acceptable specifications

G5. The records of training, inspections, calibration and maintenance should be established in accordance with the requirements of the shipyard's safety management system.

H. Topic Specific Guidelines

H1. Emergency response arrangements

H1.a. Emergency response arrangements should be a part of the shipyard's 'emergency preparedness planning'.

H1.b. Emergency preparedness planning should address situation specific plans covering as many hazards as possible. In particular, this should cover works in confined spaces, at heights, over water, with pressurized systems.

H1.c. Emergency preparedness planning should include periodical emergency drills, control of people and escape routes.

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

I. Shipyard Safety Assessment

I1. CSs should develop procedures to carry out assessments of shipyards' safety arrangements as a part of their regular contracts.

I2. CSs should review shipyards' safety systems periodically and, particularly, when a major health and safety related incident occurs in the shipyard. The periodicity of these reviews should be determined by the individual CS having considered the regularity of contact and contracts with the shipyards concerned. Where no contract or involvement with the shipyard has taken place within a twelve month period such reviews should be performed prior to commencing any new surveys within the shipyard. Where the CS is continually present in the shipyard the periodicity of these reviews should not exceed three years.

I3. IACS members should promote these shipyard safety assessments for the benefit of the maritime industry health and safety conditions. CS's procedures should include, for these assessments, a system to control follow up actions which will facilitate regular revisits and reassessments of the findings and identified improvements. Records of such reviews should be maintained for a period of not less than five years.

I4. CSs should be proactive and co-operate among themselves for the improvement of health and safety conditions in either a shipyard or group of shipyards in an area or shipyards in a country or a common cultural area.

J. Surveyors' Protective Equipment for Working at Shipyards

J1. The choice of the required PPE relies on risk assessments, local legal requirements and the requirements from 3rd parties. PPE selected should not add to existing risks. Different types and combinations of PPE should be compatible and not undermine each other's effectiveness.

J2. The following Personal Protective Equipment and tools, as a minimum, should be made available by the respective CS to their surveyors when working at shipyards:

- i. protective clothing
- ii. safety shoes/boots
- iii. hard hat
- iv. work gloves
- v. protective glasses and/or goggles, if necessary
- vi. ear defenders and/or ear plugs, if necessary
- vii. flashlight with strap, as necessary and optional head torch where appropriate
- viii. personal multi-gas meter
- ix. mask as appropriate for intended use
- x. safety belt

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J3. The surveyor should use the necessary personal protective safety equipment and tools, according to the specific conditions and locations of survey, always in conformance with the respective manufacturers' recommendations.

J4. If PPE provided by shipyards is to be used, for special and specific reasons, then the surveyor should ensure that the PPE is suitable for his task, size and is clean, not damaged and maintained and used in conformance with the manufacturers' recommendations.

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