

**Z15**

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# Hull, Structure, Equipment and Machinery Surveys of Mobile Offshore Drilling Units

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**Note:**

1. UR Z15 supersedes ex-UR D12.
2. Changes introduced in Rev.1 are to be uniformly applied by IACS Societies for surveys commenced on or after 1 January 2016.

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(cont)**1. GENERAL****1.1. Application**

1.1.1. The requirements apply to all Mobile Offshore Drilling Units after their construction.

1.1.2. The requirements apply to surveys of the hull, structure, equipment, and machinery subject to classification.

1.1.3. For Surface-Type Units the survey requirements detailed in this document replace those requirements laid out in IACS Unified Requirements Z1, Z3, Z6, Z7, Z18 and Z21, except when noted in the text. The Thickness Measurement requirements of Unified Requirement Z7 have been adapted and incorporated into Appendix B Table I of this document.

**1.2. Definition****1.2.1. Ballast Tank**

A Ballast Tank is a tank which is used primarily for salt water ballast.

**1.2.2. Preload Tank**

A Preload Tank is a tank within the hull of a self-elevating unit. These tanks are periodically filled with salt water ballast and used to preload the footings of the unit prior to commencing drilling operations. Preload Tanks are considered equivalent to Ballast Tanks.

**1.2.3. Spaces**

Spaces are separated compartments.

**1.2.4. Coating Condition**

Coating Condition is defined as follows:

GOOD	condition with only minor spot rusting
FAIR	condition with local breakdown at edges of stiffeners and weld Connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition
POOR	condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration

**1.2.5. Close-Up Survey**

A Close-Up Survey is a survey where the details of structural components are within the close visual inspection range of the surveyor i.e. normally within reach of hand.

**1.2.6. Transverse Section (Girth Belt)**

A Transverse Section (Girth Belt) includes all continuous longitudinal members such as plating, longitudinals and girders at a given section of the unit.

**1.2.7. Representative Spaces**

Representative Spaces are those which are expected to reflect the conditions of other spaces of similar type and service and with similar corrosion prevention systems. When selecting Representative Spaces, account is to be taken of the service and repair history on board and identifiable Critical Structural Areas and/or Suspect Areas.

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**(cont)****1.2.8. Critical Structural Area**

Critical Structural Areas are locations which have been identified from calculations to require monitoring or from the service history of the subject Unit or from similar Units or sister Units, if applicable, to be sensitive to cracking, buckling or corrosion which would impair the structural integrity of the Unit.

**1.2.9. Suspect Area**

Suspect Areas are locations showing Substantial Corrosion and/or are considered by the Surveyor to be prone to rapid wastage.

**1.2.10. Substantial Corrosion**

Substantial Corrosion is an extent of corrosion such that assessment of corrosion pattern indicates a wastage in excess of 75% of allowable margins, but within acceptable limits.

**1.2.11. Excessive Diminution**

Excessive Diminution is an extent of corrosion beyond allowable limits.

**1.2.12. Corrosion Prevention System**

A Corrosion Prevention System is normally considered a full hard protective coating. Hard Protective Coating is usually to be epoxy coating or equivalent. Other coating systems, which are neither soft nor semi-hard coatings, may be considered acceptable as alternatives provided that they are applied and maintained in compliance with the manufacturer's specifications.

**1.2.13. Prompt and Thorough Repair**

A Prompt and Thorough Repair is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated condition of classification.

**1.2.14. Special consideration**

Special consideration or specially considered (in connection with close-up surveys and thickness measurements) means sufficient close-up inspection and thickness measurements are to be taken to confirm the actual average condition of the structure under the coating.

**1.2.15. Propulsion Assist**

Propulsion Assist are non-self-propelled Units fitted with thrusters intended to assist in manoeuvring or propelling while under tow.

**1.3. Repairs**

1.3.1. Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affects or, in the opinion of the Surveyor, will affect the Unit's structural, watertight or weathertight integrity, is to be promptly and thoroughly (see 1.2.13.) repaired.

For locations where adequate repair facilities are not available, consideration may be given to allow the unit to proceed directly to a repair facility. This may require temporary repairs for the intended voyage.

1.3.2. Additionally, when a survey results in the identification of structural defects or corrosion, either of which, in the opinion of the Surveyor, will impair the unit's fitness for continued service, remedial measures are to be implemented before the unit continues in service.

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1.3.3. Where the damage mentioned in Para. 1.3.1 is isolated and of a localised nature which does not affect the unit's structural integrity, consideration may be given by the surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity and impose a Recommendation/Condition of Class in accordance with IACS PR 35, with a specific time limit.

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(cont)**2. SPECIAL SURVEY****2.1. Schedule**

2.1.1. Special Surveys (Renewal Surveys) of hull, structure, equipment, and machinery are to be carried out at 5 year intervals to renew the Classification Certificate(s).

2.1.2. The first Special Survey is to be completed within 5 years from the date of the initial classification survey and thereafter within 5 years from the credited date of the previous Special Survey. Extensions of class beyond the 5th year may be granted in exceptional circumstances (for a definition of exceptional circumstances, see IACS Procedural Requirement PR 1C). In this case the next period of class will start from the expiry date of the Special Survey before the extension was granted.

2.1.3. For survey completed within 3 months before the expiry date of the Special Survey, the next period of class will start from the expiry date of the Special Survey. For Survey completed more than three months before the expiry date of the Special Survey, the period of class will start from the survey completion date.

2.1.4. The Special Survey may be commenced at the 4th Annual Survey and be progressed with a view to completion by the 5th anniversary date. When the Special Survey is commenced prior to the 4th Annual Survey, the entire survey is to be completed within 15 months if such work is to be credited to the Special Survey.

2.1.5. A survey planning meeting is to be held prior to the commencement of the survey.

2.1.6. When considered necessary by the Society the interval between Special Surveys may be reduced.

2.1.7. Special Survey requirements of units of unusual design, in lay-up or in unusual circumstances will be determined on individual basis.

2.1.8. At the request of the Owner, and upon the Society's approval of the proposed arrangements, a system of Continuous Survey may be undertaken whereby the Special Survey requirements are carried out in regular rotation in accordance with the Rules of the Society to complete all the requirements of the particular Special Survey within a five year period. Any defects that may affect classification found during the survey, are to be reported to the Society and dealt with to the satisfaction of the Surveyor.

**2.2. Scope**

2.2.1. The Special Surveys shall include, in addition to Annual Survey requirements per Section 3, the following examinations, tests, and checks of sufficient extent to verify that the hull, structure, equipment, and machinery are in satisfactory condition and that the Mobile Offshore Drilling Unit is in compliance with the applicable Rule requirements for the new period of class of 5 years to be assigned subject to proper maintenance and operation and the Periodical Surveys carried out at the due dates.

2.2.2. The examinations of the hull are to be supplemented by thickness measurements and testing as required, to verify the structural integrity. The aim of the examination is to discover Excessive Diminution, Substantial Corrosion, significant deformation, fractures, damages or other structural deterioration, that may be present.

2.2.3. The Special Survey is to include examination of underwater parts per Section 4.

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(cont)**2.3. Special Survey No. 1 – Hull, Structure and Equipment**

## 2.3.1. All Units

The following parts are to be examined:

- The hull or platform structure including tanks, watertight bulkheads and deck, cofferdams, void spaces, sponsons, chain lockers, duct keels, helicopter deck and its supporting structure, machinery spaces, peak spaces, steering gear spaces, and all other internal spaces are to be examined externally and internally for damage, fractures, or excessive diminution. Thickness gauging of plating and framing may be required where wastage is evident or suspected.
- All tanks, compartments and free-flooding spaces throughout the drilling unit are to be examined externally and internally for excess wastage or damage.
- Internal examinations of spud cans and mats may be specially considered.
- Watertight integrity of tanks, bulkheads, hull, decks and other compartments is to be verified by visual inspection.
- Suspect areas and critical structural areas should be examined and may be required to be tested for tightness, non-destructive tested or thickness gauged.
- All special and primary application structures (as defined in IACS Recommendation No. 11) and identified critical structural areas are to be subjected to Close up survey.
- Tanks and other normally closed compartments are to be ventilated, gas freed and cleaned as necessary to expose damages and allow meaningful examination and thickness gauged in case of excessive diminution.
- Internal examination and testing of void spaces, compartments filled with foam or corrosion inhibitors, and tanks used only for lube oil, light fuel oil, diesel oil, fresh water, drinking water or other non-corrosive products may be waived provided that upon a general examination the Surveyor considers their condition to be satisfactory. External thickness gauging may be required to confirm corrosion control.
- Structures such as derrick substructure and supporting structure, jack-houses, deck houses, superstructures, helicopter landing areas, raw water (sea water intake) towers and their respective attachments to the deck or hull.
- Windlass and attachments of anchor racks and anchor cable fairleads.
- Foundations and supporting headers, brackets, and stiffeners for drilling related apparatus, where attached to hull, deck, superstructure or deck house.
- Thickness gaugings are to be carried out where wastage is evident or suspect.
- Where provided, the condition of corrosion prevention system of ballast tanks is to be examined. Where a hard protective coating is found in POOR condition and it is not renewed, where soft or semi-hard coating has been applied, or where a hard protective coating was not applied from time of construction, the tanks in question are to be examined at a frequency determined by the classification society. Thickness measurements are to be carried out as deemed necessary by the Surveyor.

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- Thickness measurements are to be carried out in accordance with Appendix B, tables 1, 2 or 3 as applicable. The Surveyor may extend the thickness measurements as deemed necessary. When thickness measurements indicate substantial corrosion, the extent of thickness measurements is to be increased to determine areas of substantial corrosion. Table 4 of Appendix B may be used as guidance for these additional thickness measurements. These extended thickness measurements are to be carried out before the survey is credited as completed.

### 2.3.2. Surface-type Units

In addition to the requirements of 2.3.1 the following items are to be examined:

- Structural appendages and ducts for positioning units.

### 2.3.3. Self-Elevating Units

In addition to the requirements of 2.3.1 the following items are to be examined:

- All legs, including chords, diagonal and horizontal braces, gussets, racks, joints, together with leg guides. Tubular or similar type legs are to be examined externally and internally, together with internal stiffeners and pinholes as applicable.
- Structure in, around and under jack-house and leg wells. Non-destructive testing of these areas may be required.
- Leg jacking or other elevating systems externally.
- Leg connections to bottom mats or spud cans, including non-destructive testing of leg connections to mats or spud cans.
- Jetting piping systems or other external piping, particularly where penetrating mats or spud cans.
- Spud cans or mats. Where the spud cans or mat are partly or entirely obscured below the mud line where the Special Survey is otherwise being completed, consideration may be given to postponement of the examinations until the next Rig move.

### 2.3.4. Column-Stabilized Units

In addition to the requirements of 2.3.1 the following items are to be examined:

- Connections of columns and diagonals to upper hull, structure or platform and lower hull, structure or pontoons. Joints of supporting structure including diagonals, braces and horizontals, together with gussets and brackets. Internal continuation or back-up structure for the above. Non-destructive examination may be required of these areas.

## 2.4. Special Survey No. 2 and Subsequent Special Surveys - Hull, Structure and Equipment

These Surveys are to be at least as comprehensive as Special Survey No. 1, with special attention being given to the condition and thickness of material in high corrosion areas. Representative gaugings will be required as per Appendix B. Special attention should be paid to splash zones on structure, legs or related structure, and in ballast tanks, pre-load tanks, free-flooding spaces, spud cans and mats.



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(cont)**2.5. Special Surveys – Machinery****2.5.1. Non-Self-Propelled Units**

In addition to the requirements for Annual Surveys, at each Special Survey, special attention is to be given to the following items as applicable:

- All openings to the sea, including sanitary and other overboard discharges, together with cocks and valves connected therewith are to be examined internally and externally while the Unit is in drydock, or at the time of underwater examination in lieu of drydocking, and the fastenings to the shell plating are to be renewed when considered necessary by the Surveyor.
- Pumps and pumping arrangements, including valves, cocks, pipes and strainers are to be examined. Non-metallic flexible expansion pieces in the main salt water circulating system are to be examined internally and externally. The Surveyor is to be satisfied with the operation of the bilge and ballast systems. Other systems are to be tested as considered necessary.
- The foundations of machinery are to be examined.
- Heat exchangers and other unfired pressure vessels within the scope of classification are to be examined, opened up or thickness gauged and pressure tested as considered necessary, and associated relief valves proved operable. Evaporators that operate with a vacuum on the shell need not be opened, but may be accepted on basis of satisfactory external examination and operational test or review of operating records.

**2.5.2. Self-Propelled Units**

In addition to the requirements for non-propelled units, the main and auxiliary propulsion machinery, including associated pressure vessels should be surveyed. In addition, examination of the steering machinery is to be carried out, including an operational test and checking or relief-valve settings. The machinery may be required to be opened for further examination as considered necessary by the Surveyor.

**2.5.3. Units with Propulsion - Assist or Dynamic Position**

Propulsion-assist and dynamic positioning equipment should be surveyed on the basis of Special Survey-Machinery in accordance with the requirements of the Society.

**2.6. Special Survey - Electrical Equipment**

In addition to the requirements for Annual Surveys, at each Special Survey, special attention is to be given to the following items as applicable:

- Fittings and connections on main switchboards and distribution panels are to be examined, and care is to be taken to see that no circuits are overfused.
- Cables are to be examined as far as practicable without undue disturbance of fixtures.
- All generators are to be run under load, either separately or in parallel. Switches and circuit breakers are to be tested.
- All equipment and circuits are to be inspected for possible development of physical changes or deterioration. The insulation resistance of the circuits is to be measured

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between conductors and between conductors and ground and these values compared with those previously measured.

- Electrical auxiliaries installed for vital purposes, generators and motors are to be examined and their prime movers opened for inspection. The insulation resistance of each generator and motor is to be measured.
- The windings of main propulsion generators and motors are to be thoroughly examined and found or made dry and clean. Particular attention is to be paid to the ends of all windings of stators and rotors.
- Emergency power systems are to be examined and tested.

**2.7. Special Survey - Shipboard Automatic and Remote Control Systems**

In addition to the requirements of Annual Surveys the following parts are to be examined:

- Control Actuators: All mechanical, hydraulic, and pneumatic control actuators and their power systems are to be examined and tested as considered necessary.
- Electrical equipments: The insulation resistance of the windings of electrical control motors or actuators is to be measured, with all circuits of different voltages above ground being tested separately to the Surveyor's satisfaction.
- Unattended Plants: Control systems for unattended machinery spaces are to be subjected to dock trials at reduced power on the propulsion engine to verify the proper performance of all automatic functions, alarms, and safety systems.

**2.8. Special Survey - Special Features (All Types)**

Mobile Offshore Drilling Units may have many items of machinery and electrical equipment not found on conventional vessels. Certain of these items are required for classification even if the unit is without propulsion machinery. Items to be especially examined and reported upon at all Special Surveys are as follows:

2.8.1. Hazardous Areas - Enclosed hazardous areas such as those containing open active mud tanks, shale shakers, degassers and desanders are to be examined and doors and closures in boundary bulkheads verified as effective. Electric lighting, electrical fixtures, and instrumentation are to be examined, proven satisfactory and verified as explosion-proof or intrinsically safe. Ventilating systems including ductwork, fans, intake and exhaust locations for enclosed restricted areas are to be examined, tested and proven satisfactory. Ventilating air alarm systems to be proven satisfactory. Electrical motors are to be examined including closed-loop ventilating systems for large D-C motors. Automatic power disconnect to motors in case of loss of ventilating air is to be proved satisfactory.

2.8.2. Remote Shutdown Arrangements - Remote shutdown for fuel-oil transfer service pumps and ventilating equipment, together with oil tank outlet valves where required to be capable of being remotely closed are to be proved satisfactory. Emergency switch(s) for all electrical equipment including main and emergency generators, except alarm and communication systems and lighting in vital areas such as escape routes and landing platforms, are to be proved satisfactory.

2.8.3. Fire Fighting Systems where included in the Society's Rules - A general examination of the fire detection and extinguishing systems is to be made in order that the Surveyor may be satisfied with its efficient state. The following items are to be especially examined:

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- Fire hoses, nozzles, and spanners at each fire station.
- Servicing of all portable extinguishers.
- Weighing and re-charging as necessary of all dry chemical and CO<sub>2</sub> extinguishers.
- Fire pumps and piping including operation and capacity.
- Alarm systems including fire and gas detection.

2.8.4. Self Elevating Systems - On self elevating type Mobile Offshore Drilling Units, the elevating systems are to be examined and reported on. Pinions and gears of the climbing pinion gear train of rack and pinion systems are to be examined, as far as practicable, to the Surveyor's satisfaction by an effective crack detection method.

2.8.5. Piping Systems - Piping systems used solely for drilling operations and complying either with the Society's requirements or a recognized standard are to be examined, as far as practical, operationally or hydrostatically tested to working pressure, to the satisfaction of the Surveyor.

2.8.6. Miscellaneous - Bilge alarm systems, if fitted, to be tested.

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(cont)**3. ANNUAL SURVEY****3.1. Schedule**

Annual Surveys are to be held within 3 months before or after each anniversary date from the date of the initial classification survey or the completion for the last Special Survey.

**3.2. Scope**

The survey consists of an examination for the purpose of verifying, as far as practicable, that the hull, structure, equipment, and machinery are maintained in accordance with the applicable Rule requirements.

**3.3. Annual Survey - Hull, Structure and Equipment**

3.3.1. At each Annual Survey the exposed parts of the hull, deck, deck house, structures attached to the deck, derrick substructure, including supporting structure, accessible internal spaces, and the applicable parts listed below are to be generally examined and placed in satisfactory condition as found necessary.

3.3.2. The Surveyors are to be satisfied at each Annual Survey that no material alterations have been made to the unit, its structural arrangements, subdivision, superstructure, fittings, and closing appliances upon which the stability calculations or the load line assignment is based.

3.3.3. Suspect Areas identified at previous surveys are to be examined. Thickness measurements are to be taken of the areas of substantial corrosion and the extent of thickness measurements is to be increased to determine areas of substantial corrosion. Appendix B, Table 4 may be used as guidance for these additional thickness measurements. These extended thickness measurements are to be carried out before the annual survey is credited as completed.

**3.3.4. All Units**

The following items are to be examined:

- Accessible hatchways, manholes and other openings.
- Machinery casings and covers, companionways, and deck houses protecting openings.
- Portlights together with deadcovers, cargo ports and similar openings in hull sides, ends, or in enclosed superstructures.
- Ventilators, tank vent pipes together with flame screens, and overboard discharges from enclosed spaces.
- Watertight bulkheads and end bulkheads of enclosed superstructures.
- Closing appliances for all the above, including hatchcovers, doors, together with their respective securing devices, dogs, sill, coamings and supports.
- Freeing ports together with bars, shutters and hinges.
- Windlass and attachment of anchor racks and anchor cables.

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- Protection of the crew, guard rails, lifelines, gangways, and deck houses accommodating crew.

**3.3.5. Surface-Type Units**

In addition to the requirements of 3.3.4 the following items are to be examined:

The hull and deck structure around the drilling well (moon-pool) and in vicinity of any other structural changes in section, slots, steps, or openings in the deck or hull and the back-up structure in way of structural members or sponsons connecting to the hull.

**3.3.6. Self-Elevating Units**

In addition to the requirements of 3.3.4 the following items are to be examined:

Jack-house structures and attachments to upper hull or platform. Jacking or other elevating systems and leg guides, externally. Legs as accessible above the waterline, Plating and supporting structure in way of leg wells.

**3.3.7. Column-Stabilized Units**

In addition to the requirements of 3.3.4 the following items are to be examined:

Columns, diagonal and horizontal braces together with any other parts of the upper hull supporting structure as accessible above the waterline.

Note: At the 1st Annual Survey after construction, Column Stabilized and Self Elevating Units may be subject to examination of major structural components including non-destructive testing, as deemed necessary by the Society. If the Society deems such survey to be necessary, the extent should be agreed to by the Society and the Owner or operator prior to commencement of the Survey.

**3.4. Annual Survey - Machinery****3.4.1. Self-Propelled Units**

A general examination of main and auxiliary engines, boilers, steering machinery, pumps, pipings, electrical installation including those in hazardous areas, and fire extinguishing systems is to be carried out.

**3.4.2. Non-Self Propelled Units**

A general examination of items required for classification such as auxiliary machinery, pumps, piping, electrical installation in hazardous areas and fire extinguishing systems is to be carried out.

**3.4.3. Units with Propulsion-Assist or Dynamic Positioning**

Propulsion-assist and dynamic positioning equipment should be surveyed on the basis of Annual Survey-Machinery in accordance with the requirements of the Society.

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**(cont)****3.5. Annual Survey - Electrical Equipment**

A general examination of electrical machinery, the emergency sources of electrical power, the switchgear, and other electrical equipment, including operation of same is to be carried out. The operation of the emergency sources of power, including their automatic operation, is to be confirmed as far as practicable.

**3.6. Annual Survey - Shipboard Automatic and Remote Control Systems**

A general examination of the automatic and remote-control system is to be made to the Surveyor's satisfaction. The machinery-space fire-detection and bilge water-level alarms are to be tested to confirm satisfactory operation.

**3.7. Annual Survey - Special Features**

A general examination of hazardous areas, remote shutdown arrangements, fire fighting systems where included in the Society's Rules, self-elevating systems, piping systems, and bilge systems is to be made.

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(cont)**4. SURVEY OF THE OUTSIDE OF UNIT'S BOTTOM AND RELATED ITEMS****4.1. Schedule**

4.1.1. There is to be a minimum of two examinations of the outside of the unit's bottom and related items during each five-year special survey period. One such examination is to be carried out in conjunction with the special survey. In all cases the interval between any two such examinations is not to exceed 36 months. For units operating in salt water for less than six (6) months each year, the survey interval may be increased by the Society.

4.1.2. Consideration may be given at the discretion of the Society, to any special circumstances justifying an extension of the interval.

4.1.3. Proposals for alternative means of examining the unit's bottom and related items while afloat may be considered, provided they are in general agreement with Appendix A.

**4.2. Parts to be Examined****4.2.1. Surface-type Units (ship or barge type units)**

- External surfaces of the hull, keel, stem, stern frame, rudder, nozzles, and sea strainers are to be selectively cleaned to the satisfaction of the attending Surveyor and examined together with appendages, the propeller, exposed parts of stern bearing assembly, rudder pintle and gudgeon securing arrangements, sea chest and strainers, and their fastenings.
- Propeller shaft bearing, rudder bearing, and steering nozzle clearances are to be ascertained and recorded.

**4.2.2. Self-Elevating Units**

- External surfaces of the upper hull or platform, spud cans, mat, underwater areas of legs, together with their connections as applicable, are to be selectively cleaned to the satisfaction of the attending Surveyor and examined.
- At each Drydocking Survey or equivalent, after Special Survey No. 2, the Surveyor is to be satisfied with the condition of the internal structure of the mat or spud cans. Leg connections to mat and spud cans are to be examined at each Drydock Survey or equivalent. Non-destructive testing may be required of areas considered to be critical by the Society or found to be suspect by the Surveyor.

**4.2.3. Column-Stabilized Units**

- External surfaces of the upper hull or platform, footings, pontoons or lower hulls, underwater areas of columns, bracing and their connections, sea chests, and propulsion units as applicable, are to be selectively cleaned and examined to the satisfaction of the attending Surveyor. Non-destructive testing may be required of areas considered to be critical by the Society or found to be suspect by the Surveyor.

**4.3. Ballast Spaces**

In conjunction with Drydocking Surveys (or equivalent) after Special Survey No. 1 and between subsequent Special Surveys, the following ballast spaces are to be internally examined, thickness gauged, placed in satisfactory condition as found necessary, and

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reported upon. If such examination reveals no visible structural defects, the examination may be limited to a verification that the corrosion prevention arrangements remain effective.

**4.3.1. All Units**

Particular attention is to be given to corrosion prevention systems in ballast spaces, free-flooding areas and other locations subjected to sea water from both sides.

**4.3.2. Surface type units**

One peak tank and at least two other representative ballast tanks between the peak bulkheads used primarily for water ballast.

**4.3.3. Self elevating units**

Representative ballast tanks or free-flooding compartments in mat or spud cans, if accessible, and at least two representative hull pre-load tanks.

**4.3.4. Column stabilized units**

Representative ballast tanks in footings, lower hulls, or free-flooding compartments as accessible, and at least two ballast tanks in columns or upper hull, if applicable.



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(cont)**5. PROPULSION SYSTEM SURVEYS****5.1. Schedule**

Refer to the schedule in UR Z21 for propeller shaft surveys.

**5.2. Propeller Shaft surveys and extension of survey intervals**

Surveys are to be carried out in accordance with the Rules of the Society, except that in the case of Mobile Offshore Drilling unit, due to low running hours on propeller shaft, extended intervals between propeller shaft surveys may be considered based on:

- Satisfactory diver's external examination of stern bearing and outboard seal area including wear-down check as far as is possible.
- Internal examination of the shaft area (inboard seals) in propulsion room(s).
- Confirmation of satisfactory lubricating oil records (oil loss rate, contamination).
- Shaft seal elements are examined/replaced in accordance with seal manufacturer's recommendations.

**5.3. Other propulsion systems**

Other propulsion systems shall be surveyed according to the Society's Rule.

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(cont)**6. BOILERS SURVEYS****6.1. Schedule**

Boiler Surveys are to be carried out according to the schedule found in UR Z18.2.

**6.2. Scope**

6.2.1. At each Boiler Survey the boilers, superheaters, and economizers are to be examined internally (water-steam side) and externally (fire side).

6.2.2. Boiler mountings and safety valves are to be examined at each Boiler Survey and opened as considered necessary by the Surveyor.

6.2.3. The proper operation of the safety valves is to be confirmed at each survey.

6.2.4. When considered necessary by the Surveyor, the boilers and superheaters are to be subjected to hydrostatic pressure test.

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**(cont)****7. SURVEY PREPLANNING AND RECORD KEEPING**

7.1. A specific Survey Program for Special Surveys and Special Continuous Surveys must be worked out in advance of the Special Survey by the Owner in cooperation with the Classification Society. The Survey Program shall be in written format.

7.2. Plans and procedures for survey of the outside of the unit's bottom and related items are to be submitted for review in advance of the survey and made available on board. These should include drawings or forms for identifying the areas to be surveyed, the extent of hull cleaning, non-destructive testing locations (including NDT methods), nomenclature, and for the recording of any damage or deterioration found. Submitted data, after review by the Society, will be subject to revision if found to be necessary in light of experience.

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(cont)**8. OCCASIONAL SURVEYS****8.1. Damage Survey**

8.1.1. It is the responsibility of the Owner/operator of the unit to report to the Society without delay any damage, defect or breakdown, which could invalidate the conditions for which a classification has been assigned so that it may be examined at the earliest opportunity by the Society's Surveyor(s). All repairs found necessary by the Surveyor are to be carried out to his satisfaction.

**8.2. Repairs**

8.2.1. Where repairs to hull, legs, columns or other structures, machinery or equipment, which affect or may affect classification, are planned in advance to be carried out, a complete repair procedure including the extent of proposed repair and the need for Surveyors attendance is to be submitted to and agreed upon by the Society reasonably in advance. Failure to notify the Society, in advance of the repairs, may result in suspension of the unit's classification until such time as the repair is redone or evidence submitted to satisfy the Surveyor that the repair was properly carried out. This applies also to repairs during voyage or on site.

8.2.2. The above is not intended to include maintenance and overhaul to hull, other structures, machinery and equipment in accordance with recommended manufacturers procedures and established marine practice and which does not require Society approval; however, any repair as a result of such maintenance and overhauls which affects or may affect classification is to be noted in the ships log and submitted to the Surveyor.

**8.3. Lay-up and Reactivation Surveys**

8.3.1. When the Classification Society is notified by the Owner that a Unit has been laid-up, this status will be noted in the vessel's survey status and surveys falling due during lay-up may then be held in abeyance until the vessel reactivates, at which time they are to be brought up-to-date.

8.3.2. Units which have been laid up and are returning to active service, regardless of whether the Classification Society has been previously informed that the vessel has been in lay-up, a Reactivation Survey is required. The requirements for the Reactivation Survey are to be specially considered in each case, having due regard being given to the status of surveys at the time of the commencement of lay-up, the length of the lay-up period and the conditions under which the vessel has been maintained during that period.

**8.4. Alterations**

No alterations which may affect classification are to be made to the hull or machinery of a classed unit unless plans of proposed alterations are submitted and approved by the Society before the work of alterations is commenced. Such work is to be carried out in accordance with approved plans and tested on completion as required by the Rules and to the satisfaction of the Surveyor.

**8.5. Welding and Replacement of Materials**

8.5.1. Welding of steels, including high strength structural steel, is to be to the satisfaction of the Society.

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**(cont)**

8.5.2. Welding or other fabrication performed on steels of special characteristics or repairs or renewals of such steel or in areas adjacent to such steel is to be accomplished with procedures approved by the Society considering the special materials involved. Substitution of steels differing from those originally installed is not to be made without approval by the Society.

8.5.3. The Society may reference IACS Recommendations No. 11 - "Materials Selection Guideline for Mobile Offshore Drilling Units" when considering suitable replacement materials.

**Z15**  
(cont)**9. PREPARATION FOR SURVEY****9.1. Conditions for Survey**

9.1.1. The Owner is to provide the necessary facilities for a safe execution of the survey. For confined space entry, the requirements of IACS Procedural Requirement PR37 should be followed.

9.1.2. Tanks and spaces are to be safe for access, i.e. gas freed, ventilated and illuminated.

9.1.3. In preparation for survey and thickness measurements and to allow for a thorough examination, all spaces are to be cleaned including removal from surfaces of all loose accumulated corrosion scale. Spaces are to be sufficiently clean and free from water, scale, dirt, oil residues etc. to reveal corrosion, deformation, fractures, damages, or other structural deterioration. However, those areas of structure whose renewal has already been decided by the Owner need only be cleaned and descaled to the extent necessary to determine the limits of the areas to be renewed.

9.1.4. Sufficient illumination is to be provided to reveal corrosion, deformation, fractures, damages or other structural deterioration.

9.1.5. Where soft or semi-hard coatings have been applied, safe access is to be provided for the surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures which may include spot removal of the coating. When safe access cannot be provided, the soft or semi-hard coating is to be removed.

**9.2. Access to Structures**

9.2.1. For survey, means are to be provided to enable the surveyor to examine the hull structure in a safe and practical way.

9.2.2. For survey in void compartments and water ballast tanks, one or more of the following means for access, acceptable to the Surveyor, is to be provided:

- permanent staging and passages through structures;
- temporary staging and passages through structures;
- lifts and movable platforms;
- boats or rafts;
- other equivalent means.

**9.3. Equipment for Survey**

9.3.1. Thickness measurement is normally to be carried out by means of ultrasonic test equipment. The accuracy of the equipment is to be proven to the Surveyor as required. Thickness measurements are to be carried out by a firm approved by the society in accordance with UR Z17.

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(cont)

9.3.2. One or more of the following fracture detection procedures may be required if deemed necessary by the Surveyor:

- radiographic equipment;
- ultrasonic equipment;
- magnetic particle equipment;
- dye penetrant.

Other acceptable NDT Techniques.

**9.4. Survey Offshore or at Anchorage**

9.4.1. Survey offshore or at anchorage may be accepted provided the Surveyor is given the necessary assistance from the personnel onboard.

9.4.2. A communication system is to be arranged between the survey party in the tank or space and the responsible officer on deck. This system must also include the personnel in charge of ballast pump handling if boats or rafts are used.

9.4.3. When boats or rafts are used, appropriate life jackets are to be available for all participants. Boats or rafts are to have satisfactory residual buoyancy and stability even if one chamber is ruptured. A safety checklist is to be provided.

9.4.4. Surveys of tanks by means of boats or rafts may only be undertaken at the sole discretion of the Surveyor, who is to take into account the safety arrangements provided, including weather forecasting and ship response in reasonable sea conditions.

See footnote\*

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\* Reference is made to IACS Recommendation 39 – Guidelines for use of Boats or Rafts for Close-up surveys.

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(cont)**Appendix A - Underwater Inspection in Lieu of Drydocking Survey****A1 General**

Following are the procedures and conditions under which a properly conducted underwater inspection may be credited as equivalent to a Drydocking Survey.

**A2 Conditions****A2.1 Limitations**

Underwater Inspection in lieu of Drydocking Survey may not be acceptable where there is record of abnormal deterioration or damage to the underwater structure; or where damage affecting the fitness of the unit is found during the course of the survey.

**A2.2 Thickness Gauging and Non-Destructive Testing**

Underwater or internal thickness gaugings of suspect areas may be required in conjunction with the underwater inspection. Means for underwater non-destructive testing may also be required for fracture detection.

**A2.3 Plans and Data**

Plans and procedures for the Drydocking Survey (Underwater Inspection) are to be submitted for review in advance of the survey and made available on board. These should include drawings or forms for identifying the areas to be surveyed, the extent of underwater cleaning, non-destructive testing locations (including NDT methods), nomenclature, and for the recording of any damage or deterioration found.

**A2.4 Underwater Conditions**

The in-water visibility and the cleanliness of the hull below the waterline is to be clear enough to permit a meaningful examination which allows the surveyor and diver and/or ROV pilot to determine the condition of the plating, appendages and the welding. The Classification Society is to be satisfied with the methods of orientation of the divers/ROVs on the plating, which should make use where necessary of permanent markings on the plating at selected points. Overall or spot cleaning may be required.

**A3 Physical Features**

The following physical features are to be incorporated into the unit's design in order to facilitate the underwater inspection. When verified they will be noted in the unit's classification for reference at subsequent surveys.

**A3.1 Stern Bearing**

For self-propelled units, means are to be provided for ascertaining that the seal assembly on oil-lubricated bearings is intact and for verifying that the clearance or wear-down of the stern bearing is not excessive. For use of the wear-down gauges, up-to-date records of the base depths are to be maintained on board. Whenever the stainless-steel seal sleeve is renewed or machined, the base readings for the wear-down gauge are to be re-established and noted in the vessel's records and in the survey report.



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**(cont)****A3.2 Rudder Bearings**

For self-propelled units with rudders, means and access are to be provided for determining the condition and clearance of the rudder bearings, and for verifying that all parts of the pintle and gudgeon assemblies are intact secure. This may require bolted access plates and a measuring arrangement.

**A3.3 Sea Suctions**

Means are to be provided to enable the diver to confirm that the sea suction openings are clear. Hinged sea suction grids would facilitate this operation.

**A3.4 Sea Valves**

For the Drydocking Survey (Underwater Inspection) associated with the Special Survey, means must be provided to examine any sea valve.

**A4 Procedures****A4.1 Exposed Areas**

An examination of the outside of the structure above the waterline is to be carried out by the Society's Surveyor. Means and access are to be provided to enable the Surveyor to accomplish visual inspection and non-destructive testing as necessary.

**A4.2 Underwater Areas**

An examination of the entire unit below the waterline is to be carried out by an approved firm in accordance with UR Z17.

**A4.3 Damage Areas**

Damage areas are to be photographed. Internal examination, measurements, marking and thickness gauging of such locations may be necessary as determined by the attending Surveyor. Means are to be provided for location, orienting and identifying underwater surfaces in photographs or on video tapes.

**A5 Alternatives**

The Society is prepared to consider alternatives to the above guidelines including remotely operated vehicles, provided means and details for accomplishing results are not less effective.

Information Note:

Appendix A would be applicable to all drilling unit types due to contents of paragraph A2.3 - Plans and Data.

## Appendix B - Minimum Requirements for Thickness Measurements for Special Survey

TABLE 1

## Minimum Requirements for Thickness Measurements for Surface-Type Units at Special Survey

Special Survey No.1 Age ≤ 5	Special Survey No.2 < 5 Age ≤ 10	Special Survey No.3 10 < Age ≤ 15	Special Survey No.4 and subsequent 15 < Age
1) Suspect areas throughout the unit.	1) Suspect areas throughout the unit.	1) Suspect areas throughout the unit.	1) Suspect areas throughout the unit
	2) One transverse section of deck plating abreast the moon pool opening within the amidships 0.6L, together with internals in way as deemed necessary. Where unit is configured with side ballast tanks, the plating and internals of the tanks are also to be gauged in way of the section chosen.	2) Two Transverse Sections (Girth Belts) of deck, bottom and side plating abreast the moon pool and one hatch opening within the amidships 0.6L together with internals in way as deemed necessary. Where unit is configured with side ballast tanks, the plating and internals of the tanks to be gauged in way of the required belts, Remaining internals in ballast tanks to be gauged as deemed necessary.	2) A minimum of three Transverse Sections (Girth Belts) of deck, bottom, side, and longitudinal-bulkhead plating in way of the moon pool and other areas within the amidships 0.6L, together with internals in way (including in perimeter ballast tanks, where fitted in way of belts).
	3) Moon pool boundary bulkhead plating.	3) Moon pool boundary bulkhead plating.	3) Moon pool boundary bulkhead plating.
		4) Internals in forepeak tank and aft peak tank as deemed necessary.	4) Internals in forepeak and after peak tanks as deemed necessary.
			5) Lowest strake of all transverse bulkheads in hold spaces. Remaining bulkhead plating to be gauged as deemed necessary.
			6) All plates in two wind and water strakes, port and starboard, full length.
			7) All exposed main deck plating full length and all exposed first-tier super-structure deck plating (poop, bridge and forecastle decks).
			8) All keel plates full length plus additional bottom plating as deemed necessary by the Surveyor, particularly in way of cofferdams and machinery spaces.
			9) Duct keel or pipe tunnel plating or pipe tunnel plating and internals as deemed necessary.
			10) Plating of sea chests. Shell plating in way of overboard discharges as considered necessary by the attending surveyor.

## Notes:

1. Thickness measurement locations are to be selected to provide the best representative sampling of areas likely to be most exposed to corrosion, considering ballast history and arrangement and condition of protective coatings.

2. Thickness measurements of internals may be specially considered by the Surveyor if the hard protective coating is in GOOD condition.

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**(cont)**

3. For units less than 100 meters in length, the number of transverse sections required at Special Survey No. 3 may be reduced to one (1), and the number of transverse sections required at subsequent Special Surveys may be reduced to two (2).

4. For units more than 100 meters in length, at Special Survey No. 3, thickness measurements of exposed deck plating within amidship 0.5 L may be required.

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(cont)

TABLE 2

## Minimum Requirements for Thickness Measurements for Self-Elevating Units at Special Survey

Special Survey No.1 Age ≤ 5	Special Survey No.2 <5 Age ≤ 10	Special Survey No.3 10 < Age ≤ 15	Special Survey No.4 and subsequent 15 < Age
1) Suspect areas throughout the unit (particular attention to be paid to the legs in way of the Splash Zone).	1) Suspect areas throughout the unit.	1) Suspect areas throughout the unit.	1) Suspect areas throughout the unit.
	2) Legs in way of Splash Zone.	2) Legs in way of Splash Zone.	2) Legs in way of Splash Zone.
	3) Primary application structures where wastage is evident.	3) Representative gaugings, throughout, of special and primary application structures.	3) Comprehensive gaugings, throughout, of special and primary application structures.
	4) Representative gaugings of upper hull deck and bottom plating and internals of one preload (ballast) tank.	4) Leg well structure.	4) Leg well structure.
		5) Representative gaugings of deck, bottom, and side shell plating of hull and mat.	5) Representative gaugings of deck, bottom, and side shell plating of hull and mat.
		6) Representative gaugings of upper hull deck and bottom plating and internals of at least two preload (ballast) tanks.	6) Substructure of derrick as deemed necessary.
			7) Representative gaugings of internals of all preload (ballast) tanks.

Note:

Structural application designation (Special, Primary, Secondary) are defined in IACS Recommendation No. 11

TABLE 3

**Minimum Requirements for Thickness Measurements for Column-Stabilized Units  
at Special Survey**

Special Survey No.1 Age ≤ 5	Special Survey No.2 <5 Age ≤ 10	Special Survey No.3 10 < Age ≤ 15	Special Survey No.4 and subsequent 15 < Age
1) Suspect areas throughout the unit.	1) Suspect areas throughout the unit.	1) Suspect areas throughout the unit.	1) Suspect areas throughout the unit.
2) Columns and bracings where wastage is evident in Splash Zone.	2) Representative gaugings of columns and bracings in Splash Zone together with internals in way as deemed necessary.	2) Representative gaugings, throughout, of special and primary application structures.	2) Comprehensive gaugings, throughout, of special and primary application structures.
	3) Special and primary application structure where wastage is evident.	3) One Transverse Section (Girth Belt) of each of 2 columns and 2 bracings in Splash Zone together with internals in way as deemed necessary.	3) One Transverse Section (Girth Belt) of each of one-half of the columns and bracings in Splash Zone and internals in way as deemed necessary (i.e., gauge half of the unit's columns and bracings in Splash Zone).
		4) Lower hulls in way of mooring lines where wastage is evident.	4) Lower hulls in way of mooring lines where wastage is evident.
		5) One Transverse Section (Girth Belt) of each lower hull between one set of columns.	5) One Transverse Section (Girth Belt) of each lower hull between one set of columns.
			6) Representative gaugings of substructure of drilling derrick.

Note:

Structural application designation (Special, Primary, Secondary) are defined in IACS Recommendation No. 11

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(cont)

TABLE 4

Guidance for Additional Thickness Measurements in way of Substantial Corrosion

STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
Plating	Suspect area and adjacent plates.	5 point pattern over 1 square meter.
Stiffeners	Suspect area.	3 measurements each in line across web and flange.

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