

**Z25**

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# Periodic Survey of Fuel Installations on Ships other than Liquefied Gas Carriers utilizing gas or other low flash point fuels

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### Note:

1. The requirements of this UR are to be uniformly applied by IACS Societies for surveys commenced on or after 1 January 2018.
2. Changes introduced in Rev.1 are to be uniformly implemented from 1 January 2019.

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(cont)**1. Application**

These requirements apply to ships, other than those covered by the UR Z16, which utilize gas or other low flash point fuels as a fuel for propulsion prime mover/auxiliary power generation arrangements and associated systems. These requirements are in addition to the requirements of UR Z18.

These survey requirements do not cover fire protection, fire-fighting installation, and personnel protection equipment.

**2. Special Survey****2.1 Schedule**

2.1.1 Special Surveys are to be carried out at 5 years intervals to renew the Classification Certificate.

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. However, an extension of class of 3 months maximum beyond the 5th year can be granted in exceptional circumstances. 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 surveys 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 surveys completed more than 3 months before the expiry date of the Special Survey, the period of class will start from the survey completion date. In cases where the vessel has been laid up or has been out of service for a considerable period because of a major repair or modification and the owner elects to only carry out the overdue surveys, the next period of class will start from the expiry date of the Special Survey. If the owner elects to carry out the next due 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 Special Surveys may be carried out on a continuous survey basis. In this case, the interval between consecutive examinations of each item is not to exceed five (5) years.

**2.2 Scope****2.2.1 General**

The Special Survey is to include, in addition to the requirements of the Annual Survey, examination, tests and checks of sufficient extent to ensure that the fuel installations are in a satisfactory condition and is fit for its intended purpose for the new period of class of 5 years to be assigned, subject to proper maintenance and operation and to periodical surveys being carried out at the due dates.

**2.2.2 Fuel Handling and Piping**

All piping for fuel storage, fuel bunkering, and fuel supply such as venting, compressing, refrigerating, liquefying, heating storing, burning or otherwise handling the fuel and liquid

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nitrogen installations are to be examined. Removal of insulation from the piping and opening for examination may be required. Where deemed suspect, a hydrostatic test to 1.25 times the Maximum Allowable Relief Valve Setting (MARVS) for the pipeline is to be carried out. After reassembly, the complete piping is to be tested for leaks. Where water cannot be tolerated and the piping cannot be dried prior to putting the system into service, the Surveyor may accept alternative testing fluids or alternative means of testing.

### 2.2.3 Fuel Valves

All emergency shut-down valves, check valves, block and bleed valves, master gas valves, remote operating valves, isolating valves for pressure relief valves in the fuel storage, fuel bunkering, and fuel supply piping systems are to be examined and proven operable. A random selection of valves is to be opened for examination.

### 2.2.4 Pressure Relief Valves

- i) Fuel Storage Tank Pressure Relief Valves. The pressure relief valves for the fuel storage tanks are to be opened for examination, adjusted, and function tested. If the tanks are equipped with relief valves with non-metallic membranes in the main or pilot valves, such non-metallic membranes are to be replaced.
- ii) Fuel Supply and Bunkering Piping Pressure Relief Valves. Pressure relief valves for the fuel supply and bunkering piping are to be opened for examination, adjusted, and function tested. Where a proper record of continuous overhaul and retesting of individually identifiable relief valves is maintained, consideration will be given to acceptance on the basis of opening, internal examination, and testing of a representative sampling of valves, including each size and type of liquefied gas or vapor relief valve in use, provided there is logbook evidence that the remaining valves have been overhauled and tested since crediting of the previous Special Survey.
- iii) Pressure/Vacuum Relief Valves. The pressure/vacuum relief valves, rupture disc and other pressure relief devices for interbarrier spaces and hold spaces are to be opened, examined, tested and readjusted as necessary, depending on their design.

### 2.2.5 Fuel Handling Equipment

Fuel pumps, compressors, process pressure vessels, inert gas generators, heat exchangers and other components used in connection with fuel handling are to be examined as required in the Rules of each individual Society for periodical survey of machinery.

### 2.2.6 Electrical Equipment

- i) Examination of electrical equipment to include the physical condition of electrical cables and supports, intrinsically safe, explosion proof, or increased safety features of electrical equipment.
- ii) Functional testing of pressurized equipment and associated alarms.
- iii) Testing of systems for de-energizing electrical equipment which is not certified for use in hazardous areas.
- iv) An electrical insulation resistance test of the circuits terminating in, or passing through, the hazardous zones and spaces is to be carried out.

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**(cont)****2.2.7 Safety Systems**

Gas detectors, temperature sensors, pressure sensors, level indicators, and other equipment providing input to the fuel safety system are to be tested to confirm satisfactory operating condition.

- i) Proper response of the fuel safety system upon fault conditions is to be verified.
- ii) Pressure, temperature and level indicating equipment are to be calibrated in accordance with the manufacturer's requirements.

**2.2.8 Fuel Storage Tanks**

Fuel storage tanks are to be examined in accordance with an approved survey plan. Liquefied gas fuel storage tanks are to be examined based upon Recommendation No. 148.

**3. Annual Survey****3.1 Schedule**

3.1.1 Annual Surveys are to be held within 3 months before or after each anniversary date of the date of the initial classification survey or of the date credited for the last Special Survey. They will normally be performed at the same time as an Annual Hull survey.

**3.2 Scope****3.2.1 General**

The following is to be carried out during the survey of the Fuel Storage, Fuel Bunkering System, and Fuel Supply System:

**3.2.1.1 Logbooks/Records**

The logbooks and operating records are to be examined with regard to correct functioning of the gas detection systems, fuel supply/gas systems, etc. The hours per day of the re-liquefaction plant, gas combustion unit, as applicable, the boil-off rate, and nitrogen consumption (for membrane containment systems) are to be considered together with gas detection records.

**3.2.1.2 Operating and Maintenance Instruction Manuals**

The manufacturer/builder instructions and manuals covering the operations, safety and maintenance requirements and occupational health hazards relevant to fuel storage, fuel bunkering, and fuel supply and associated systems for the use of the fuel, are to be confirmed as being aboard the vessel.

**3.2.1.3 Control, Monitoring and Safety Systems**

- i) Gas detection and other leakage detection equipment in compartments containing fuel storage, fuel bunkering, and fuel supply equipment or components or associated systems, including indicators and alarms, is to be confirmed in satisfactory operating condition. Recalibration of the gas detection systems should be verified in accordance with the manufacturers' recommendations.

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- ii) Verification of the satisfactory operation of the control, monitoring and automatic shut-down systems as far as practicable of the fuel supply and bunkering systems.
- iii) Operational test, as far as practicable, of the shutdown of ESD protected machinery spaces.

#### 3.2.1.4 Fuel Handling Piping, Machinery and Equipment

Piping, hoses, emergency shut-down valves, remote operating valves, relief valves, machinery and equipment for fuel storage, fuel bunkering, and fuel supply such as venting, compressing, refrigerating, liquefying, heating, cooling or otherwise handling the fuel is to be examined, as far as practicable. Means for inerting is to be examined. Stopping of pumps and compressors upon emergency shut-down of the system is to be confirmed as far as practicable.

#### 3.2.1.5 Ventilating System

Examination of the ventilation system, including portable ventilating equipment where fitted, is to be made for spaces containing fuel storage, fuel bunkering, and fuel supply units or components or associated systems, including air locks, pump rooms, compressor rooms, fuel preparation rooms, fuel valve rooms, control rooms and spaces containing gas burning equipment. Where alarms, such as differential pressure and loss of pressure alarms, are fitted, these should be operationally tested as far as practicable.

#### 3.2.1.6 Drip Trays

Portable and fixed drip trays and insulation for the protection of the ship's structure in the event of leakage are to be examined.

#### 3.2.1.7 Hazardous Areas

Electrical equipment and bulkhead/deck penetrations including access openings in hazardous areas are to be examined for continued suitability for their intended service and installation area.

#### 3.2.1.8 Electrical Bonding.

Electrical bonding arrangements in hazardous areas, including bonding straps where fitted, are to be examined.

### 3.2.2 Fuel Storage, Bunkering and Supply Systems

The following are to be examined, so far as applicable. Insulation need not be removed, but any deterioration or evidence of dampness is to be investigated:

#### 3.2.2.1 Fuel Storage

- i) External examination of the storage tanks including secondary barrier if fitted and accessible.
- ii) General examination of the fuel storage hold place.
- iii) Internal examination of tank connection space.
- iv) External examination of tank and relief valves.

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- v) Verification of satisfactory operation of tank monitoring system.
- vi) Examination and testing of installed bilge alarms and means of drainage of the compartment.
- vii) Testing of the remote and local closing of the installed main tank valve.

**3.2.2.2 Fuel Bunkering System**

- i) Examination of bunkering stations and the fuel bunkering system.
- ii) Verification of satisfactory operation of the fuel bunkering control, monitoring and shut-down systems.

**3.2.2.3 Fuel Supply System**

Examination of the fuel supply system during working condition as far as practicable.

- i) Verification of satisfactory operation of the fuel supply system control, monitoring and shut-down systems.
- ii) Testing of the remote and local closing of the master fuel valve for each engine compartment.

**4. Intermediate Survey****4.1 Schedule**

4.1.1 The Intermediate Survey is to be held at or between either the 2nd or 3rd Annual Survey.

4.1.2 Those items which are additional to the requirements of the Annual Surveys may be surveyed either at or between the 2nd and 3rd Annual Survey.

**4.2 Scope****4.2.1 General**

In addition to the applicable requirements of the Annual Survey, the Intermediate Survey is also to include:

**4.2.1.1 Safety Systems**

Gas detectors, temperature sensors, pressure sensors, level indicators, and other equipment providing input to the fuel safety system are to be randomly tested to confirm satisfactory operating condition. Proper response of the fuel safety system upon fault conditions is to be verified.

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