RULES FOR AUTOMATIC AND REMOTE CONTROL SYSTEMS

GUIDANCE FOR AUTOMATIC AND REMOTE CONTROL SYSTEMS

Rules for Automatic and Remote Control Systems
2009 AMENDMENT NO.1

Guidance for Automatic and Remote Control Systems 2009 AMENDMENT NO.1

Rule No.48 / Notice No.65 30th October 2009
Resolved by Technical Committee on 24th June 2009
Approved by Board of Directors on 28th July 2009

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RULES FOR AUTOMATIC AND REMOTE CONTROL SYSTEMS

RULES

2009 AMENDMENT NO.1

Rule No.48 30th October 2009

Resolved by Technical Committee on 24th June 2009

Approved by Board of Directors on 28th July 2009

Rule No.48 30th October 2009
AMENDMENT TO THE RULES FOR AUTOMATIC AND REMOTE CONTROL SYSTEMS

"Rules for automatic and remote control systems" has been partly amended as follows:

Chapter 3 CENTRALIZED MONITORING AND CONTROL SYSTEMS FOR MACHINERY

3.3 Additional Requirements for Safety Measures

3.3.2 Main Propulsion Machinery or Controllable Pitch Propellers

Sub-paragraph -1 has been amended as follows.

1 Main propulsion machinery in diesel ships

(1) Safety devices
Safety devices are to be provided to shut off automatically fuel supply to the main propulsion diesel engines for the following conditions:
(a) Over-speed
(b) Pressure drop of lubricating oil to main bearings and thrust bearings
(c) Pressure drop of lubricating oil to crosshead bearings in case of crosshead engines which have a separate lubricating oil system
(d) Pressure drop of lubricating oil to camshafts in case of crosshead engines which have a separate lubricating oil system
~~(e) High concentration of oil mist in crankcases in case of trunk piston engines (applicable to engines of 2,250 *kW* maximum continuous power and above or having cylinders of more than 300 *mm* bore). In case where alternative measures deemed appropriate by the Society detecting such condition are taken, the devices may be dispensed with.~~

(2) Reduction of speed or load
Measures are to be taken to reduce speed or load automatically to the main propulsion machinery for the following conditions. In case where alternative measures such as activating alarm to request the reduction are taken, a manual reduction of speed or load may be accepted.
(a) Pressure drop of lubricating oil to main bearings and a thrust bearing in case of crosshead engines
(b) Pressure drop of lubricating oil to crosshead bearings in case of crosshead engines which have a separate lubricating oil system
(c) High temperature of thrust bearings or thrust bearing lubricating oil in case of engines with thrust bearings
~~(d) High concentration of oil mist in crankcase in case of crosshead engines (applicable to engines of 2,250 *kW* maximum continuous power and above or having cylinders of more than 300 *mm* bore)~~
~~High temperature of main bearings, crank pin bearings, crosshead bearings and their lubricating oil at outlet may be accepted alternatively.~~
(~~e~~d) Low flow of lubricating oil at each cylinder lubricator (non-flow may be accepted)
(~~f~~e) Pressure drop of piston coolant at inlet in case of crosshead engines (not required when the cooling oil is provided from the main lubricating oil system of the engine)
(~~g~~f) High temperature of piston coolant at each cylinder outlet in case of crosshead engines
(~~h~~g) Low flow of piston coolant at each cylinder outlet (alternative means may be accepted for

crosshead engines whose piston coolant flow cannot be measured.)

(~~i~~h) Pressure drop of cylinder cooling water at inlet (low flow may be accepted in case of trunk piston engines)

(~~j~~i) High temperature of cylinder cooling water at each cylinder outlet
Temperature at cylinder common outlet may be accepted in case of engines which have no individual stop valve at each cylinder outlet.

(~~k~~j) High temperature or fire in the scavenge air box in case of crosshead engines

(~~l~~k) High temperature of exhaust gas at each cylinder outlet (not required for trunk piston engines of maximum continuous power not exceeding 500*kW*/cylinder)

(~~m~~l) Other fault conditions considered necessary by the Society

(3) Standby pumps
Standby pumps for the pumps used as auxiliary machinery essential for main propulsion are to be so arranged as to start automatically or as to be capable of being remotely started from the centralized control station or the centralized monitoring and control station on bridge immediately in the following conditions:

(a) For lubricating oil pumps; when delivery pressure or flow rate of the pumps in operation falls below the predetermined value.

(b) For cooling pumps used for cylinders, pistons, fuel valves and coolers and fuel oil supply pumps; when delivery pressure or flow rate of the pumps in operation falls below the predetermined value or when the pump stops.

(4) Alarm devices
Main propulsion diesel engines are to be provided with alarm devices which activates in the event of the abnormal conditions given in **Table 3.1**.

Table 3.1 has been amended as follows.

Table 3.1 Main Propulsion Diesel Engine (and Gearing)

Monitored Variables		Alarms	Remarks
Temperature	Cylinder cooling water each cylinder outlet	H	cylinder cooling water common outlet in case of without individual
	Piston coolant each cylinder outlet	H	in case of crosshead engines
	Fuel valve coolant outlet	H	
	L.O. inlet	H	
	L.O. camshaft inlet	H	in case of crosshead engines with a separate L.O. system
	Thrust bearing or L.O. thrust bearing outlet	H	in case of engines with a thrust bearing
	L.O. turbocharger each bearing outlet	H	~~in case of engines with a separate L.O. system~~ in cases where it is not possible to measure such temperature, continuous monitoring of inlet pressure and inlet temperature in combination with bearing inspections conducted at specific intervals deemed appropriate by Society, etc. may be accepted as an alternative measure.
	L.O. reduction gear inlet	H	in case of engines with a separate L.O. system
	F.O. burning pump inlet	H L	in case where viscosity is controlled. Alternatively, high and low viscosity alarms may be accepted.
	Exhaust gas each cylinder outlet	H	not required for trunk piston engines of max. continuous power not exceeding 500*kW*/cylinder
	Exhaust gas deviation each cylinder outlet	H	

	Exhaust gas each turbocharger inlet	H	
	Exhaust gas each turbocharger outlet	H	
	Air in scavenge air box	H	in case of crosshead engines. Alternatively, fire alarm may be accepted.
	Air in air receiver	H	in case of trunk piston engines
	Air in air cooler outlet	H L	in case where temperature is automatically controlled
Pressure	Cylinder cooling water inlet	L	
	Piston coolant inlet	L	in case of crosshead engines
	Fuel valve coolant inlet	L	
	L.O. main bearing and thrust bearing inlet	L	
	L.O. crosshead bearing inlet	L	in case of crosshead engines with a separate L.O. system
	L.O. camshaft inlet	L	
	L.O. strainer in/out differential	H	
	L.O. turbocharger inlet	L	in case of crosshead engines with a separate L.O. system
	L.O. reduction gear inlet	L	
	F.O. burning pump inlet	L	
	Common accumulators fuel oil pressure	L	in the case of electronically-controlled diesel engines (only they have common accumulators)
	Common accumulators or high pressure pipe hydraulic oil pressure	L	in the case of electronically-controlled diesel engines
	Starting air engine inlet	L	not required in case where an indicator is provided to show the intermediate valve or the automatic starting valve is open or close
	Cooling sea water	L	
	Low temperature cooling water	L	in case where a central cooling system is adopted
Others	Oily contamination of cylinder cooling water	H	in case where cylinder cooling water is used in F.O. or L.O. heat exchanger
	Piston coolant flow rate each cylinder outlet	L	in case of crosshead engines Non –flow alarm may be accepted. Other alternative means may be accepted where it is impracticable to monitor the piston coolant flow due to engine design.
	Cylinder oil flow rate each lubricator	L	non-flow may be accepted
	~~Oil mist concentration on crankcase~~	~~H~~	~~applicable to engines of 2,250*kW* maximum continuous power and above or having cylinder of more than 300*mm* bore. In case where alternative measures deemed appropriate by the Society detecting such condition are taken, the devices may be dispensed with.~~
	Scavenge air receiver water level	H	alternative means may be accepted
	Wring way	○	in case of self-reversing engines
	Failure of engine starting	○	
	Leakage from F.O. burning pipe, level in leakage tank	○	

Note : “H” and “L” mean high and low. ”○” means abnormal condition occurred. Same meaning is applied in **Table 3.1** to **3.9**.

3.3.4 Generating Sets

Sub-paragraph -1(1) has been amended as follows.

1 Safety devices

Safety devices for electric generating sets are to comply with the following **(1)** through **(3)**.

(1) Diesel engines driving generators are to be provided with safety devices to shut off automatically fuel oil supply to the engines in the following conditions :

(a) Over-speed

(b) Pressure drop of lubricating oil

~~(c) High concentration of oil mist in crankcase (applicable to engines of 2,250 *kW* maximum continuous power and above or having cylinders of more than 300 *mm* bore). In case where the alternative measures deemed appropriate by the Society detecting such condition are taken, the devices may be dispensed with.~~

(~~d~~c) High temperature, low pressure or low flow rate of cooling water at the outlet

(2) Turbines driving generators are to be provided with safety devices to shut off automatically steam supply to the turbines in the following conditions:

(a) Over-speed

(b) Pressure drop of lubricating oil

(c) High exhaust gas pressure or low condenser vacuum

(d) Abnormal vibration (except where the steam is supplied by the main boiler)

(3) Propulsion generators are to be provided with a means to reduce speed (or reduce load) of the propulsion motor automatically when the propulsion generator is overloaded. However, when alarm devices asking for speed reduction (or load reduction) as deemed appropriate by the Society are provided, the manual reduction may be accepted.

2 Alarm devices

Electric generating sets are to be provided with alarm devices which activates in the event of the abnormal conditions given in **Table 3.4**.

Table 3.4 has been amended as follows.

Table 3.4 Electric Generating Sets

Monitored Variables		Alarms	Remarks
Diesel engine for generator			
Temperature	L.O. inlet	H	
	Cooling water or air outlet	H	
	Exhaust gas, each turbo-blower inlet or each cylinder outlet	H	at each cylinder outlet is required in case of the engines with max. continuous power exceeding 500*kW*/cylinder
	F.O. burning pump inlet	H L	in case where viscosity is controlled. Alternatively, high and low viscosity alarms may be accepted.
Pressure	L.O. inlet	L	
	Common accumulators fuel oil pressure	L	in the case of electronically-controlled diesel engines (only they have common accumulators)
	Common accumulators or high pressure pipe hydraulic oil pressure	L	in the case of electronically-controlled diesel engines
	Cooling water inlet	L	low flow may be accepted
	Starting air	L	not required when starting air piping for propulsion engine is commonly used

Others	~~Oil mist concentration on crankcase~~	~~H~~	~~applicable to engines of 2,250*kW* maximum continuous power and above or having cylinder of more than 300*mm* bore. In case where alternative measures deemed appropriate by the Society detecting such condition are taken, the devices may be dispensed with.~~
	Leakage from F.O. burning pipe, level leakage tank	○	
Steam turbine for generator			
Temperature	L.O. inlet	H	
Pressure	L.O. inlet	L	
	Steam inlet	L	for steam turbine ships, only applicable where extracted steam is used
	Exhaust	H	
Main generator			
Electricity	Ampere	H	sensors for controllers may be used
	Voltage	H L	
	Frequency or revolution of generator	H	
Propulsion generator			
Electricity	Current	H	sensors for controllers may be used
	Voltage	H L	
	Frequency or revolution of generator	H	
Temperature	Bearing L.O. inlet	H	applicable to the forced lubrication system
	Stator winding or communication pole winding	H	applicable of 500*kW* or more
	Cooling air cooling water outlet	H	
Pressure	Bearing L.O. inlet	L	applicable to the forced lubrication system

3.3.6 Prime Movers Driving Auxiliary Machinery

1 Safety measures

Prime movers driving auxiliary machinery essential for main propulsion of the ship are to be so arranged as to stop automatically in the following conditions:

(1) Over-speed

(2) Pressure drop of lubricating oil

2 Alarm devices

Prime movers driving auxiliary machinery essential for main propulsion of the ship are to be provided with alarm devices which activates in the event of the abnormal conditions given in **Table 3.7**.

Table 3.7 has been amended as follows.

Table 3.7 Engine Driving Auxiliary Machinery

Monitored Variables		Alarms	Remarks
Diesel engines			
Temperature	L.O. inlet	H	
	Cooling water outlet	H	low pressure/flow may be accepted
	Exhaust gas, turbo charger each inlet or cylinder each outlet	H	
	F.O. burning pump inlet	H L	in case where viscosity is controlled. Alternatively, high and low viscosity alarms may be accepted.
Pressure	L.O. inlet	L	
	Common accumulators fuel oil pressure	L	in the case of electronically-controlled diesel engines (only they have common accumulators)

	Common accumulators or high pressure pipe hydraulic oil pressure	L	in the case of electronically-controlled diesel engines
	Cooling water outlet	L	low flow or high temperature at cooling water outlet may be accepted
Others	~~Oil mist concentration on crankcase~~	~~H~~	~~applicable to engines of 2,250*kW* maximum continuous power and above or having cylinder of more than 300*mm* bore. In case where alternative measures deemed appropriate by the Society detecting such condition are taken, the devices may be dispensed with.~~
	Leakage from F.O. burning pipe, level in leakage tank	○	
Turbine			
Temperature	L.O. inlet	H	
Pressure	L.O. inlet	L	
	Steam inlet	L	for steam turbine ships, only applicable when extracted steam is used
	Exhaust steam	H	

EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 1 January 2010.

2. Notwithstanding the amendments to the Rules, the current requirements may apply to diesel engines whose date of application for certification is before the effective date and that are installed on ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:

This Procedural Requirement applies from 1 July 2009.

GUIDANCE FOR AUTOMATIC AND REMOTE CONTROL SYSTEMS

GUIDANCE

2009 AMENDMENT NO.1

Notice No.65 30th October 2009

Resolved by Technical Committee on 24th June 2009

Notice No.65 30th October 2009
AMENDMENT TO THE GUIDANCE FOR AUTOMATIC AND REMOTE CONTROL SYSTEMS

"Guidance for automatic and remote control systems" has been partly amended as follows:

Chapter 3 CENTRALIZED MONITORING AND CONTROL SYSTEMS FOR MACHINERY

Section 3.3 has been deleted.

~~**3.3 Additional Requirements for Safety Measures**~~

~~**3.3.2 Main Propulsion Machinery or Controllable Pitch Propellers**~~
~~The wording "alternative measures deemed appropriate by the Society" specified in **3.3.2-1(1)(e) of the Rules** and the same specified in the Remarks for the "Oil mist concentration in crankcase" in **Table 3.1 of the Rules** means a temperature monitoring for main bearings and crank pin bearings.~~

~~**3.3.4 Electric Generating Sets**~~
~~The wording "alternative measures deemed appropriate by the Society" specified in **3.3.4-1(1)(e) of the Rules** and the same specified in the Remarks for the "Oil mist concentration in crankcase" in **Table 3.4 of the Rules** means a temperature monitoring for main bearings and crank pin bearings.~~

~~**3.3.6 Prime Movers Driving Auxiliary Machinery**~~
~~The wording "alternative measures deemed appropriate by the Society" specified in the Remarks for the "Oil mist concentration in crankcase" in **Table 3.7 of the Rules** means a temperature monitoring for main bearings and crank pin bearings.~~

EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 1 January 2010.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to diesel engines whose date of application for certification is before the effective date and that are installed on ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

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1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:

This Procedural Requirement applies from 1 July 2009.