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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

DL/T 1975-2019

**Code of operation and maintenance for oil used in hydraulic
turbine governing system
(English Translation)**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 "Guidelines for Standardization Part 1: Standard Structure and Compilation".

1 Scope

This standard specifies the oil quality standards and basic requirements for operation supervision and maintenance of hydraulic turbine regulating systems.

This standard applies to the maintenance of the oil used in the hydraulic turbine regulating system.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 260 Determination of water content of petroleum products by distillation method GB/T 265 Petroleum products kinematic viscosity determination method and kinematic viscosity calculation method GB/T 3536 Determination of flash point and ignition point of petroleum products Cleveland open cup method GB/T 4945 Petroleum products and lubricants acid value and base value determination method (color indicator method) GB/T 7304 Determination of acid value of petroleum products by potentiometric titration GB/T 7597

Power oil (transformer oil, steam turbine oil) sampling method GB/T 7605 Determination of Demulsification Degree of Turbine Oil in Operation GB/T 8926 In-use lubricating oil insoluble matter determination method GB 11118.1 hydraulic oil (L-HL, L-HM, L-HV, L-HS, L-HG) GB 11120 turbine oil GB/T 11133 Determination of water content in petroleum products, lubricants and additives Karl Fischer coulometric titration method GB/T 11143 Anti-rust performance test method of mineral oil with inhibitor in the presence of water GB/T 12579 Determination of Lubricating Oil Foam Characteristics GB/T 14039 Hydraulic transmission oil solid particle pollution degree code GB/T 17145 Technical Guidelines for Recovery and Recycling of Waste Lubricating Oil Calibration of GB/T 18854 Hydraulic Transmission Liquid Automatic Particle Counter DL/T 429.7 Power system oil quality test method-sludge precipitation measurement method DL/T 432 Measurement method of particle pollution in power oil SH/T 0193 Determination of oxidation stability of lubricating oil (rotating oxygen bomb method) SH/T 0210 Hydraulic oil filterability test method SH/T 0308 Lubricating oil air release value determination method SH/T 0805 Lubricating oil filterability test method

3 Terms and definitions

The following terms and definitions apply to this document.

In-service oil

The oil that has been charged into the equipment and is being used.

Waste oil

Oil products that are forced to be scrapped due to serious deterioration of oil quality or special pollution, and cannot be processed on site and restored to use performance.

Oil grade number

Also known as the viscosity grade, it is expressed by the midpoint kinematic viscosity value of the oil at 40°C.

Oil change over

The behavioral process of running oil to change.

Oil makeup

The behavioral process of adding a certain amount of qualified oil to meet the equipment specification oil quantity.

Emulsify

The process by which oil and water form an emulsion.

Eligibility oil

Pass the inspection to meet the standard oil.

4.1 Selection of oil

4.1.1

L-TSA steam turbine oil should be selected as the oil for the hydraulic turbine control system, and its brand, specification variety, brand, and quality grade should be consistent with the unit shaft.

The lubricating oil is the same.

4.1.2

According to the working conditions, the same type of L-HM anti-wear hydraulic oil can be selected. When L-HM anti-wear hydraulic oil is selected, technical experience should be carried out.

Economic comparison argument.

4.2 Requirements before the oil system is put into operation

4.2.1

There should be no welding slag, iron filings, oxide scale, dirt, molding sand and other sundries in all parts of the oil-using equipment.

4.2.2

Relevant pipelines and fittings should be chemically cleaned, dried and sealed with compressed air, and can be installed after acceptance.

4.2.3

After the system is installed, the system should be flushed according to the design requirements.

4.3 Oil sampling

4.3.1

The oil sampling container and sampling method shall be carried out in accordance with the provisions of GB/T 7597.

4.3.2

When sampling new oil, no less than two samples should be taken, and at least one sample should be kept for review or arbitration.

4.3.3

Sampling during normal operation shall meet the following requirements.

a) For normal operation supervision tests, samples should be taken from the cooler outlet; if the cooler outlet does not have sampling conditions or there is no cooler, samples should be taken from the oil. Sampling from the bottom of the oil in the tank. Before sampling, the oil in the tank should circulate normally for at least 24 hours. Do not take samples in the dead corners of the oil system.

b) When sampling, the sampling port should be cleaned, and the oil sample should be discharged not less than 5 times the volume of the sampling pipeline to flush the sampling pipeline.

Should be collected and poured into waste oil drums for unified disposal.

4.3.4

The sampling bottle should be properly labeled, and the label should include the following. unit name, equipment name and serial number, oil brand, test item content, Sampling location, sampling date, and signature of the person sampling.

5.1 Acceptance of new oil

Turbine oil should be checked and accepted according to the standard of GB 11120, and hydraulic oil should be checked and accepted according to the standard of GB 11118.1.

5.2 Monitoring and testing of operating oil

5.2.1

Regular inspections shall meet the following requirements.

a) Regularly record system oil pressure, oil temperature, oil tank oil level, and oil tank oil level;

b) Regularly record the pressure difference changes of the oil system oil filter and bypass online filter equipment;

c) Regularly check the failure of the desiccant of the fuel tank air filter.

5.2.2

The operating oil quality standards should meet the requirements of Table 1.

5.2.3

Periodic inspection items and inspection cycle should meet the following requirements.

a) See Table 2 for periodic inspection items and inspection cycles.

b) When abnormal oil quality is found, the inspection period should be shortened appropriately.