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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Technical standards for oil and gas recovery and treatment facilities

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1 General

1.0.1 This standard is formulated in order to ensure the operation safety of oil and gas recovery and treatment facilities, improve working conditions, reduce oil and gas emissions, protect the environment, save energy, and promote technological progress.

1.0.2 This standard is applicable to the engineering design of oil gas recovery and treatment facilities for the storage and loading system of volatile and combustible liquid materials in petrochemical enterprises, coal chemical enterprises and petroleum depot projects.

1.0.3 The design of oil and gas recovery and treatment facilities shall not only comply with the provisions of this standard, but also meet the provisions of the relevant current national standards.

2.0.1 Volatile and flammable liquid

Combustible liquid materials with a real vapor pressure greater than 7.9kPa (A) at the corresponding temperature during storage or loading.

2.0.2 Oil and gas vapor

The general term for volatile organic gases and their mixtures with other gases produced during storage or loading of volatile flammable liquid materials.

2.0.3 oil and gas concentration vapor concentration

The percentage of volatile organic compound gas in the total volume of oil and gas.

2.0.4 Vapor recovery and treatment facilities

The general term for oil and gas collection system, oil and gas recovery device, oil and gas treatment device and its supporting public engineering system.

2.0.5 Vapor collection system

During the storage or loading of volatile flammable liquid materials, oil and gas are collected centrally through the top of the storage tank or the closed gas phase pipeline of the loading system and other process equipment. The oil and gas collection system of the storage tank is divided into two methods. direct connection and single tank single control.

2.0.6 Vapor recovery unit

A device for recovering oil and gas by physical methods such as adsorption, absorption, condensation, membrane separation or a combination thereof.

2.0.7 Vapor treatment unit

A device for treating oil and gas with chemical methods such as combustion, oxidation, and plasma.

2.0.8 direct connectivity

The gas phase spaces of two or more storage tanks with the same or similar material storage properties are connected through pipelines, and the gas phase branch line of each storage tank has no exhaust control facilities such as pressure control valves and single exhalation valves, so that the gas phase spaces of multiple storage tanks can pass through pipelines. It forms a whole and achieves the connection method of gas phase pressure balance between storage tanks.

2.0.9 single tank and single control

The oil and gas collection pipeline of each storage tank is equipped with a single exhalation valve or pressure control valve, and a pipeline detonation flame arrester. The oil and gas in different storage tanks are not considered to be balanced with each other. Way.

2.0.10 dock-to-ship safety unit

Safety protection facilities installed on the oil and gas collection pipeline at the front of the wharf. Generally, it is composed of quick cut-off valve, pressure detection, gas-liquid

separator, oxygen content detection, oil and gas concentration measuring instrument, temperature detection, fire arresting equipment, inerting system and so on.

2.0.11 tail gas

Oil and gas are recovered or treated by oil and gas recovery devices and oil and gas treatment devices and then discharged to the atmosphere.

2.0.12 condensate liquid condensate

A combustible liquid in which oil and gas condense due to changes in pressure and temperature.

3 basic rules

3.0.1 The scale of oil and gas recovery and treatment facilities should be comprehensively determined according to the nature of the recovered and processed oil and gas, oil and gas concentration, operating conditions and exhaust volume.

3.0.2 The loading system for volatile combustible liquid materials should be equipped with oil and gas recovery and treatment facilities.

3.0.3 The internal floating roof, vault and low-pressure storage tanks for volatile and combustible liquid materials should be equipped with oil and gas recovery and treatment facilities; when the storage tanks take control and emission reduction measures, the concentration of discharged oil and gas meets the emission limit and control index requirements, oil and gas recovery and treatment facilities may not be provided.

3.0.4 The storage and loading system of benzene, toluene and xylene should be equipped with oil and gas recovery and treatment facilities.

3.0.5 When the concentration of oil and gas discharged from the storage or loading system is greater than 30g/m3, an oil and gas recovery device should be installed; when the oil and gas concentration is less than or equal to 30g/m3 or the oil and gas are difficult to recover, an oil and gas treatment device should be installed.

3.0.6 The content of organic gases in exhaust emissions should meet the requirements of relevant national pollutant control indicators.

3.0.7 A liquid separation tank should be installed in front of the oil and gas recovery device and the oil and gas treatment device.

3.0.8 When explosive gas may appear, measures shall be taken to prevent sparks and flame propagation inside the oil-gas pressurization equipment.

3.The form of 0.9 flame arrester shall be comprehensively determined according to the composition of oil and gas and its installation location, etc., and the pressure drop under

the design flow rate should not be greater than 0.3kPa.

3.0.10 The diameter of oil and gas pipelines for oil and gas recovery and treatment facilities should be determined based on hydraulic calculations.

3.0.11 The design pressure of oil and gas pipelines should not be lower than 1.0MPa, and the design pressure of vacuum pipelines should be 0.1MPa external pressure. 6MPa. The nominal pressure of the oil and gas pipeline and vacuum pipeline system should not be lower than 1.6MPa.

3.0.12 The pipeline equipment in the oil and gas recovery and treatment facilities shall meet the following requirements.

1 The pipeline should adopt seamless steel pipe;

2 Valves for oil and gas pipelines should use steel valves;

3 The material and pressure level of pipe fittings such as elbows, tees, reducers, and pipe caps should be consistent with those of the connected pipes.

3.0.13 Combustible or toxic gas detectors should be installed in the area of oil and gas recovery devices and oil and gas processing devices. The detection of flammable or toxic gases should comply with the relevant provisions of the current national standard "Design Standards for Detection and Alarm of Combustible Gas and Toxic Gas in Petrochemical Industry" GB/T 50493.

3.0.14 Flow, temperature, and pressure detection instruments should be installed on the inlet pipelines of oil and gas recovery devices and oil and gas processing devices; oil and gas processing devices should also be equipped with online oil and gas concentration detection and high-high concentration interlock protection on oil and gas collection main pipes or device inlet pipelines measure.

3.0.15 The exhaust gas discharge pipes and accessories of the oil and gas recovery device and oil and gas treatment device shall meet the following requirements.

1 In the oil depot project, the height of the exhaust pipe outlet should meet the requirements of the current national standard "Emission Standards of Air Pollutants for Oil Storage Depots" GB 20950;

2 In petrochemical enterprises and coal chemical enterprises, the tail gas discharge outlet should be more than 15m above the ground;

3 Exhaust gas discharge pipes should be provided with sampling ports and fire arresting facilities;

4 Exhaust gas discharge nozzles should be 3.5m higher than platforms or building tops within 10m.