

Approval of Manufacturing Boilers and Group 1 Pressure Vessels

April 2023

ClassNK Machinery Department

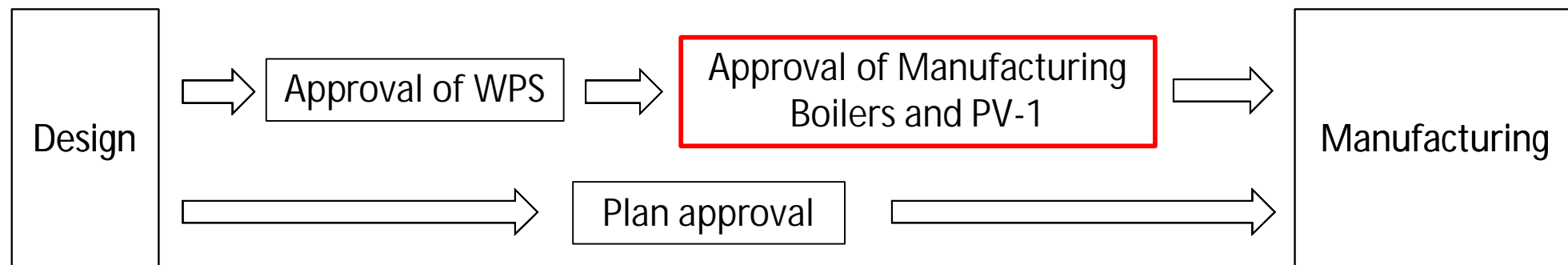
■ Approval

- ✓ **Subject***: Plants that perform welding in manufacturing of boilers and/or group 1 pressure vessels (PV-1)
- ✓ **NK Rules**: 11.2.1-3, Part D of NK Rule
Chapter 5, Part 6 of Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use (Hereinafter referred to as “Guidance”)
- ✓ **Validity**: 5 years

*Sub-contractors performing welding works are required to obtain "Approval for the Manufacture of Boilers and PV-1"

■ Times

- ✓ Before manufacturing boilers or PV-1 for the first time to be installed in NK Classed vessels
- ✓ After obtaining approval of WPS



■ Group 1 pressure vessels (PV-1)

- ✓ Pressure vessels / heat exchangers which conform to either one of the following [10.1.3.1(1), Part D of NK Rule]
 - (a) Shell plates exceeding 38mm in thickness (See Note 1.)
 - (b) Design pressure exceeding 4MPa (See Note 1.)
 - (c) Maximum working temperature exceeding 350 degreeC
 - (d) Steam generators with a design pressure exceeding 0.35MPa
 - (e) Vessels which contain inflammable high pressure gases having a vapour pressure not less than 0.2MPa at 38 degreeC

Inflammable high pressure gases : **Natural gas(LNG), Petroleum gas(LPG), Hydrogen, Ammonia, etc.**

Note 1: Pressure vessels which have shell plates that exceed 38 mm in thickness and/or a design pressure that exceeds 4 MPa are classified into “PV-2” provided that they are only subjected to hydraulic oil or water pressure at atmospheric temperature.

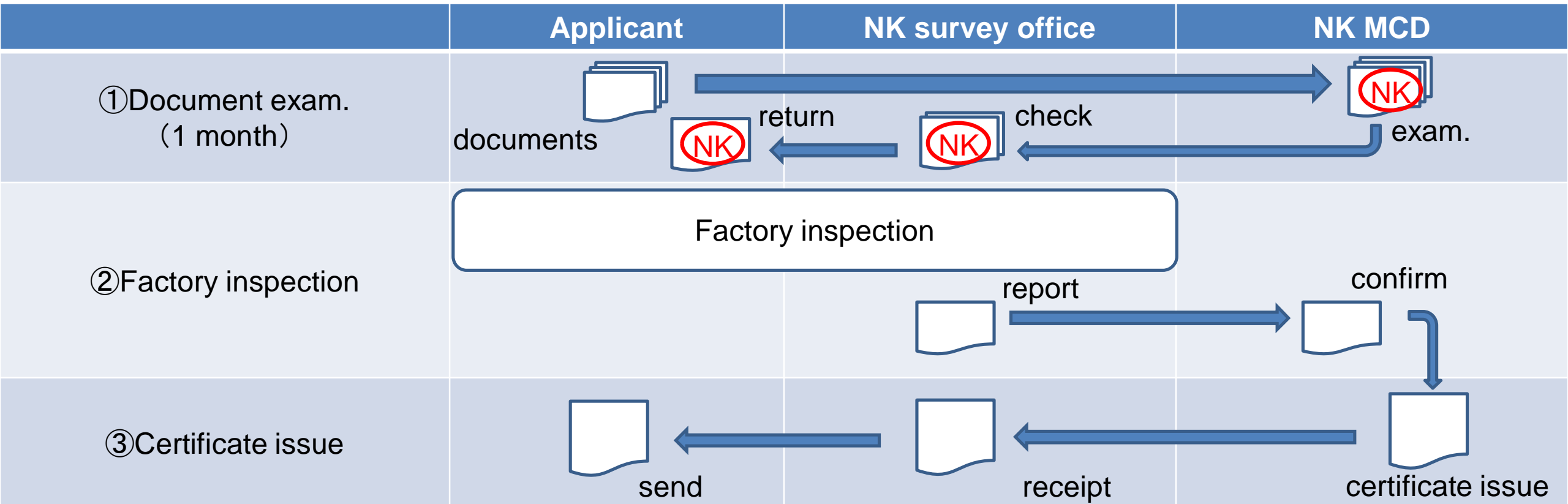
■ Example

- ✓ Cargo/fuel tanks (type C independent tanks) for liquified gases
- ✓ Process pressure vessels / heat exchangers for liquified gases

Approval process

Department in charge

- ✓ Document examination: Machinery Department (MCD, head office)
- ✓ Factory inspection: survey office



- **Application (Form 6-11)**
 - ✓ Please download from our website. (URL: https://www.classnk.or.jp/hp/en/download/dl_appli.aspx)
- **History and introduction of the company**
- **General description of major manufacturing facilities**
- **Production records of welded structures**
- **Chart of organization of manufacturing control system**
 - ✓ E.g., ISO 9001 Cert and Documents related to manufacturing and quality control systems for products
- **Flow chart of the manufacturing process and code on inspection for the products to be surveyed**
 - ✓ Please refer to our rules (see next page).

NK rules for a survey

■ Boilers

- ✓ Welding: 11.4, Part D of NK Rules
- ✓ Tests: 9.10.1, Part D of NK Rules

■ Pressure vessels / heat exchangers for liquified gases carriers

- ✓ Welding: 6.5, Part N and 11.5, Part D of NK Rules
- ✓ Tests: 4.20.3 and 4.23.6, Part N of NK Rules

■ Pressure vessels / heat exchangers for gas fuelled vessels

- ✓ Welding: 16.3, Part GF and 11.5, Part D of NK Rules
- ✓ Tests: 16.5, Part GF of NK Rules

- ⌘ Please also refer to the related rules (e.g. NK Guidance)
- ⌘ Detailed criteria for individual projects need not be provided.

■ Manufacturing facilities

- ✓ The welding facilities are free from the effects of rain and wind
- ✓ The heat treatment facilities are to have appropriate performance
- ✓ Qualifications of welders, etc.

■ Testing and inspection facilities

- ✓ Material tests (tensile, impact, hardness testers, optical metallurgical microscopes, etc.)
- ✓ NDT (radiographic testing equipment, magnetic particle flaw detection equipment, etc.)
- ✓ Pressure tests
- ✓ Qualifications of NDT, etc.

■ Management system

- ✓ Quality control, manufacturing control, codes on inspection at the manufacturing plant, etc.

■ Management system (In case where parts of the work is sublet to sub-contractors)

- ✓ Quality control, manufacturing control, codes on inspection at the sub-contractors.

■ Application

- ✓ The appropriate application form (Form 6-11) for stating changes in the manufacturing procedure, etc., if any, is to be submitted to Machinery Department (Head office) together with a copy of the existing certificate.
- ✓ Please apply well in advance of schedule as we require a factory inspection.

■ Process

- ✓ Documents approval + factory inspection

■ Factory inspection

- ✓ Same as the inspection for initial approval

■ Examples of application

- ✓ Change the product to be approved from “Boiler” / “PV-1” to “Boiler and PV-1”
- ✓ Relocate, expand, or add on to factories
- ✓ Change the company name

■ Application

- ✓ The appropriate application form (Form 6-11) for stating changes in the manufacturing procedure, etc., is to be submitted to Machinery Department (Head office) together with a copy of the existing certificate and changed documents.

■ Process

- ✓ Documents approval + factory inspection

■ Factory inspection

- ✓ Same as the inspection for initial approval for changed area

※Validity will not be extended