

In the event of any differences in interpretation of this guide the Finnish version shall take precedence over this translation

START-UP INSPECTION OF NUCLEAR POWER PLANT  
PRESSURE VESSELS

1  
GENERAL

The Institute of Radiation Protection (IRP) performs the start-up inspections for the pressure vessels of the nuclear power plants under its surveillance. General requirements on the start-up inspections and on the documents needed thereby are presented in this guide.

The owner of the nuclear power plant may present to the IRP a written application for the start-up inspection after the pressure vessel to be inspected has been approved at the preinspection and at the structural inspection.

The start-up inspection is divided into two phases:

- 1 A verification inspection, which is performed after the installation of the pressure vessel has been completed.
- 2 Performance tests of the auxiliaries, which are made for a pressure vessel approved at the verification inspection.

The aforementioned inspections may also be performed concerning a system, trial use integrity, or other appropriate entirety.

There shall be present at the inspection the operation supervisor, and a sufficient amount of professional personnel needed at the performance tests.

The general inspection of the plant belonging to the start-up inspection meant in item 4 of the article 16 of the Decree on Pressure Vessels (549/73), and the verification of the competence of the operation supervisors are performed for each nuclear power plant as separate measures from the start-up inspections of the pressure vessels.

In this guide it is meant by a pressure vessel in accordance with the Decree on Pressure Vessels (549/73) a boiler, a pressure container, piping or some other such apparatus, which has or wherein may develop a pressure greater than an atmosphere.

## 2

## INSPECTION APPLICATION

The nuclear power plant owner shall present a written application for the start-up inspection at least one week prior to the planned inspection date. The inspection application shall reveal the inspection date, the responsible person of the applicant, and additionally, concerning the apparatus or other item to be inspected

- name
- safety class
- register number
- number of the preinspection decision
- apparatus symbol, and
- room space, where the apparatus is located.

## 3

## VERIFICATION INSPECTION

It is inspected at the verification inspection, that a preinspection and a structural inspection have been made for the pressure vessel installed at its place, and that the conditions of these have been fulfilled. In addition the structure of the auxiliaries, and the arrangement of the pressure vessel are inspected.

Following documents concerning the pressure vessel shall be presented to the inspector at the verification inspection occasion.

## 3.1

## Inspection book

The inspection book consists of the following documents

- list of contents
- approved preinspection material, and the approval decision, and a written clarification of the fulfilment of the conditions of a conditional decision
- result material of the quality control of the manufacture
- records of the structural inspection
- written clarifications about the remarks made at the structural inspection.

The documents corresponding to the inspection book of the piping associated with the boiler or the pressure vessel may be presented in the inspection book of the boiler or the pressure vessel. Unless the documents of the pipe-work are not presented in the inspection book of the boiler or the pressure vessel, they shall be presented as entireties corresponding to the inspection book, e.g. for each pipe line.

### 3.2

Flow diagram, arrangement drawing, and arrangement clarification

The flow diagram, the arrangement drawing and the arrangement clarification are documents, on the basis of which it can

- be clarified, whether the arrangement corresponds to the arrangement plan
- be identified and localized the pressure vessel unambiguously.

### 3.3

List of auxiliaries

The list of auxiliaries is made, when needed, on a separate form confirmed by the IRP. On the list of auxiliaries shall be marked

- denominations
- nominal magnitudes
- type markings
- nominal pressures, and, if needed,
- construction material clarifications of the auxiliaries.

The auxiliaries shall be capable to be identified by markings made on the list of auxiliaries and on the auxiliaries or, unless a marking on the auxiliary is not possible, by separate drawings. At the inspection it is verified, that the auxiliaries are consistent with the approved designs and the list of auxiliaries.

## 4

PERFORMANCE TESTS OF THE AUXILIARIES

The pressure vessel is allowed to participate in the start-up test of the nuclear power plant or in separate performance tests after the pressure vessel in question has been accepted in the verification inspection. The nuclear power plant owner has to inform the IRP in writing of the starting date of the performance test in good time before its beginning.

The performance tests of auxiliaries are carried out in accordance with the start-up test programme or, when it is not required, a written test programme agreed upon separately beforehand with the IRP when the pressure vessel is functioning at normal operation values. In the performance tests there are checked that

- the safety devices operate reliably and their blowing capacity is sufficient
- the pressure meters are reliable
- the valves operate and are tight
- the limit positions of the actuators of the gate and control valves are set correctly
- the thermal expansion elements as well as the guide, spring, and other supports operate as planned.
- the other possible auxiliaries are capable to function.

## 5

## OPERATION PERMIT

After the accepted performance of the auxiliaries performance tests the inspector of the IRP gives a preliminary operation permit of the pressure vessel that is indicated in the control record of the performance tests. The operation permit of the pressure vessel is given by the IRP without a separate application.

## 6

## ARCHIVES

The documents concerning the pressure vessel inspection shall be laid up in the archives at the plant site available for the operation supervisor so that they can be found rapidly when needed. The Institute of Radiation Protection has, if necessary, a free access to the archives and a right to use it.

## 7

## LAWS, STANDARDS, AND RECOMMENDATIONS

Act on Pressure Vessels (98/73)  
Decree on Pressure Vessels (549/73)  
Decree on the Amendment of the Decree on Pressure Vessels (672/75)  
Decision of the Ministry of Trade and Industry on the Application of the Decree on Pressure Vessels (69/75)  
Decision of the Ministry of Trade and Industry on the Pressure Vessels Referred to in the Article 4 (70/75)

Decision of the Ministry of Trade and Industry  
on the Piping Joined to a Steam Boiler or a  
Pressure Container (71/75)  
Standards SFS 2869, 3206, and 3270  
Proposal Standards 407, 409, 412, and 417  
of the Pressure Vessel Board