

# Convention on Nuclear Safety 7<sup>th</sup> Review Meeting – 2017



**International Atomic Energy Agency IAEA, Vienna**

## **Country Review Report for The Netherlands**

**Drafted by Country Group N° 7**

(Australia, Croatia, Denmark, India, Ireland, Mali, Netherlands, Peru, Sri Lanka, Switzerland, Ukraine)

Rapporteur: Mr. Simon Coenen

**Version: Final**

*DISCLAIMER: Per INFCIRC 571, Revision 7, Para. 16-19 and Annex IV, Contracting Parties were invited to comment on the implementation of the CNS reporting guidance. Contracting Parties were also encouraged to submit proposed Good Practices, Challenges, and Suggestions prior to the Review Meeting. The draft Country Review Report documents the preliminary observations identified by the Contracting Parties. The Country Review Report is the result of the CNS Review Process and was agreed by consensus by the Country Group.*

## Glossary

*The Glossary provides here the definitions of “Challenges”, “Suggestion” and “Good Practice” according to Annex IV of INFCIRC/571/Rev. 7. The definition of “Area of Good Performance” was agreed upon by the Officers of the 7<sup>th</sup> CNS Review Meeting at the CNS Officers’ Meeting on 3-4 October 2016.*

A **Challenge** is “a difficult issue for the Contracting Party and may be a demanding undertaking (beyond the day-to-day activities); or a weakness that needs to be remediated.”

A **Suggestion** is “an area for improvement. It is an action needed to improve the implementation of the obligations of the CNS.”

A **Good Practice** is “a new or revised practice, policy or programme that makes a significant contribution to nuclear safety. A Good Practice is one that has been tried and proven by at least one Contracting Party but has not been widely implemented by other Contracting Parties; and is applicable to other Contracting Parties with similar programmes.”

An **Area of Good Performance** is “a practice, policy or programme that is worthwhile to commend and has been undertaken and implemented effectively. An Area of Good Performance is a significant accomplishment for the particular CP although it may have been implemented by other CPs.”

## Executive Summary

The Netherlands has 1 nuclear power reactor unit in operation (515 MWth PWR, Borssele) and 1 in permanent shutdown (Dodewaard). The Netherlands also voluntarily reported on its research reactors: it has 2 research reactors : the 45 MWth HFR in Petten and the 2 MWth reactor of Delft University . The Netherlands also host a uranium enrichment facility (URENCO) and an interim radioactive waste storage facility (COVRA).

4 out of 4 Challenges from the 6<sup>th</sup> Review Meeting have been closed.

The Country Group highlights the following measures to improve safety in The Netherlands's national nuclear programme:

- Changes to the Nuclear Energy Act, such as
  - The establishment that the Minister of Infrastructure and the Environment is now the principal regulatory authority.
  - The establishment of the ANVS as an independent regulatory body.
  - Publication by ANVS on Safety Guidelines for water cooled reactors.
- The Netherlands participated fully in the post-Fukushima activities led by ENSREG and IAEA, as well in the WANO post-Fukushima self assessments.
- Research Reactor PALLAS is in pre-licensing phase.
- Implementation of Stresstest and PSR measures, mostly to be completed in 2017, including installation of additional mobile equipment, in vessel retention, improved supply methods of cooling water and electricity.

The Country Group highlights the following international peer review missions of The Netherlands:

- The reports of the recent peer review missions (SALTO Follow Up 2014, OSART 2014, IRRS 2014, ...) are systematically published on the website of the regulatory body ANVS.
- OSART FU in 2016 was/will be published recently/soon.
- Netherlands took also part in ENSREG Peer review (a.o. stresstest) and WANO Peer Reviews.

The Country Group identified the following Challenges for The Netherlands:

- **Challenge 1:** Maintaining nuclear safety at the NPP during the remaining operating years, facing end of operation December 31st 2033.
- **Challenge 2 :** Development of expertise and regulatory strategy related to safety relevant financial issues at license holders.
- **Challenge 3 :** Strengthening the 3S's and safety culture within ANVS's activities.
- **Challenge 4 :** Cross border inspections.

In addition the country group identified 3 Areas of Good Performance.

The Country Group concluded that The Netherlands:

- Submitted a National Report 3 weeks after the deadline and therefore did not follow Rule 39 of INFCIRC/573 Rev. 6). However sufficient time was available for other countries to put forward their questions;
- Attended the 7<sup>th</sup> CNS Review Meeting, and therefore complies with Article 24.1;
- Held a national presentation and answered questions, and therefore complies with Article 20.3.

## 1. Basic Information on The Netherlands's Nuclear Programme

The Netherlands has 1 nuclear power reactor unit in operation (515 MWe PWR, Borssele) and 1 in permanent shutdown (Dodewaard). The Netherlands also voluntarily reported on its research reactors: it has 2 research reactors : the 45 MWth HFR in Petten and the 2 MWth reactor of Delft University . The Netherlands also host a uranium enrichment facility (URENCO) and an interim radioactive waste storage facility (COVRA).

## 2. Follow-Up from previous CNS Review Meeting

### 2.1 Challenges

The Netherlands provided the following updates on Challenges identified during the 6<sup>th</sup> CNS Review Meeting:

**Challenge 1:** Establish the new independent regulatory body.

Various changes in the regulation have been introduced and will be effective shortly in 2017. These changes include a.o.

- A modification of the Nuclear Energy Act stating that Minister of Infrastructure and the Environment is now the principal responsible authority for conducting the regulatory process under the Nuclear Energy Act and for the main functions of the Regulatory Body.
- Another update of the Nuclear Energy Act will establish the new Authority for Nuclear Safety and Radiation Protection, the ANVS as an independent regulatory body. In the past, there were various organizations that together constituted the regulatory body.

Follow Up Status: **Closed.**

**Challenge 2:** Workload of the regulatory body.

Due to the new structure, the ANVS has more tasks than the combined pas entities of the regulatory body and its role is growing. A thorough analysis of the manpower has been performed. In the future, the Netherlands will continue to make use of national and international TSO's.

Follow Up Status: **Closed.**

**Challenge 3:** Maintaining number and quality of staff.

The Netherlands have merged several entities into AVNS which constitutes a large improvement for the development and maintenance of competences for most disciplines. On the other hand, being a larger and independent entity, there is a need to develop secondary support processes.

Staff has grown the past few years and amounts now up to 122 FTE, to be increased to 141. All staff (except for the Board) will be civil servants.

For the disciplines where the expertise is lacking, not yet fully developed or when temporary more capacity is needed, support of TSO's is arranged. In the area of nuclear safety GRS supports the ANVS currently with about 10-15 fte, about half of which relates to supervision, the other half to rulemaking and licensing for new build projects in the area of research reactors.

Since 2016 ANVS has a dedicated knowledge management coordinator and a strategic knowledge agenda is being developed. Also a strategic HRM-plan is under development, including related training and qualification programmes.

Also for the licence holder, it is foreseen that safety related organisational changes need to have prior approval by ANVS.

Follow Up Status: **Closed.**

**Challenge 4:** Emergency preparedness and response – harmonization with neighbouring countries

The policy regarding planning zones has been evaluated, taking notice of the emergency planning

policies in neighbouring countries, according to the HERCA-WENRA approach, to which The Netherlands actively contributed. As a result, the planning zones will be aligned with that of the neighbouring countries. In case of an emergency in a neighbouring country, the Netherlands will initially follow the protective actions of the accident country. In case of an emergency in the Netherlands the protective actions will be based on the Dutch policy of intervention levels. In order to do so, the planning zones will be aligned with that of the neighbouring countries.

Furthermore, a range of intervention levels is introduced. The default value within this range is the intervention level that will be used in case of an accident with a nuclear installation in The Netherlands. If deemed appropriate a different intervention level in the range can be used. In case of an incident in a neighbouring country, intervention levels within the range can be used to link with the neighbouring country.

Formalization of the new intervention levels is expected to be realized in the course of 2017.

Follow Up Status: **Closed**.

## 2.2 Suggestions

No suggestions were identified for the Netherlands during the 6<sup>th</sup> RM.

## 3. Measures to improve safety

### 3.1 Changes to the regulatory framework and the national nuclear programme

Since the last Review Meeting, the Country Group took note of the following changes to the regulatory framework and the national nuclear programme.

- Some changes were adopted to the Nuclear Energy Act, such as
  - The establishment that the Minister of Infrastructure and the Environment is now the principal regulatory authority.
  - The establishment of the ANVS as an independent regulatory body in 2015, formalized in 2017.
  - Publishing by ANVS on several new Safety Guidelines for water cooled reactors.
- Research Reactor PALLAS is in pre-licensing phase.

### 3.2 Safety improvements for existing nuclear power plants

The Country Group took note of the following implemented and planned safety measures for existing nuclear power plants in The Netherlands:

- The Netherlands participated fully in the post-Fukushima activities led by ENSREG and IAEA, as well in the WANO post-Fukushima self assessments. The national action plans that resulted from these assessments and their progress have been reported and published on the ANVS website.
- For the Borssele NPP, subsequent backfitting has been performed since more than 30 years. Procedures and dedicated equipment are in place for severe accident management, measures have been taken (e.g. several bunkered safety systems, filtered venting, PARs, SAMGs) to help avoiding containment failure, etc. Since the 6<sup>th</sup> RM the Netherlands implemented additional measures based on Stresstest and PSR, mostly to be completed in 2017, including installation of additional mobile equipment, in vessel retention, improved supply methods of cooling water and electricity.
- Implementation of LTO licence requirements has been started. All of these requirements are to be fulfilled by 2020.

### 3.3 Response to international peer review missions

The Country Group took note of the following implemented or planned measures in response to the results of international peer review missions:

- SALTO 2014 (Follow up from 2012 mission): 14 out of 15 issues were closed. One issue with respect to documenting plant programmes for ageing managements, remained open, but this issue has been resolved in the meantime. The report is publically available on the ANVS website.
- OSART 2014: every 10 years, an OSART mission is to be conducted at the Borsele NPP. The 2014 mission was the 3<sup>rd</sup> OSART mission. The OSART team identified some areas of good performance (11), as well as some areas that need improvement (30). The report is publically available on the ANVS website.
- In 2016 a first stage OSART Follow Up took place. The second stage will take place in 2017. The first stage report will be published soon.
- IRRS 2014: The IRRS team identified certain issues to be taken into consideration such as development of national policies on nuclear and radiation safety, the integrated management system, planning and prioritising inspections. The report was published in 2015. Several issues have already been closed. Some will take more time. A follow-up will be held in the last quarter of 2018.
- Other peer review activities include the ENSREG Peer review of the post Fukushima National Action plan and the WANO peer review of the Borssele NPP.
- Since 2017 Netherlands participates (both NPP and research reactors) to the ENSREG Topical Peer Review on Ageing Management.

#### **4. Implementation of the Vienna Declaration on Nuclear Safety (VDNS)**

On 9 February 2015, the Contracting Parties adopted INFCIRC 872, “Vienna Declaration on Nuclear Safety”, which is a commitment to certain principles to guide them in the implementation of the CNS’ objective to prevent accidents and mitigate their radiological consequences, should they occur. The Contracting Parties agreed to discuss the principles of the Vienna Declaration on Nuclear Safety in their National Reports and in the subsequent Review Meetings.

##### **4.1 Implementation of the VDNS’s principle on new nuclear power plants**

The first principle of the VDNS is:

“New nuclear power plants are to be designed, sited, and constructed, consistent with the objective of preventing accidents in the commissioning and operation and, should an accident occur, mitigating possible releases of radionuclides causing long-term off site contamination and avoiding early radioactive releases or radioactive releases large enough to require long-term protective measures and actions.”

The Netherlands defines a new nuclear power plant in the following way: A plant for which a construction licence is issued after August 14, 2014. (see also EU nuclear safety directive). According to national regulations transposing the EU directive, such a plant shall, during commissioning, operation and decommissioning, aim at preventing accidents and, should an accident occur, at avoiding “early and large” radioactive releases, and mitigating the consequences.

The 2009 EU Nuclear Safety Directive has been updated in 2014 and largely covers the safety objectives of the Vienna Declaration. As required to EU Member States transposition into the Dutch regulatory framework will be completed by mid-2017. In the foreseeable future there are only plans for a new research reactor (to replace the High Flux Reactor in Petten) but no plans for new NPPs.

The Netherlands reports, that its national requirements and regulation incorporate appropriate technical criteria and standards to address :

- the objective of preventing accidents in the commissioning and operation of new nuclear power plants by practical elimination of core-melt accidents leading to early and/or large releases;

- the objective of mitigating against possible releases of radionuclides causing long-term offsite contamination and avoiding early radioactive releases or radioactive releases large enough to require long-term protective measures and actions by including technical criteria and standards to address prevention and mitigation of consequences in the Dutch Safety Requirements (DSR).

#### **4.2 Implementation of the VDNS's principle on existing nuclear power plants**

The second principle of the VDNS is:

“ Comprehensive and systematic safety assessments are to be carried out periodically and regularly for existing installations throughout their lifetime in order to identify safety improvements that are oriented to meet the above objective. Reasonably practicable or achievable safety improvements are to be implemented in a timely manner.”

The Netherlands reports, that its national requirements and regulation:

- The Council Directive 2014/87/EURATOM of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations will be fully implemented in a Dutch Ministerial Order in 2017.
- This ministerial order addresses the application of the principles and safety objectives of the Vienna Declaration to existing NPPs in the following way :
  - require the performance of periodic (every 10 years) comprehensive and systematic safety assessments of existing NPPs and research reactors.
  - Reasonably achievable measures have to be taken. If a licence modification is needed the licensee has to apply as soon as possible.
  - In the licence of the NPP, the required timeframe for implementation is 5 years, unless this is not reasonably achievable.

#### **4.3 Taking into account IAEA Safety Standards and other international Good Practices in the national requirements and regulations addressing the VDNS principles**

The Netherlands reports that its national requirements and regulation take into account the relevant IAEA Safety Standards throughout the life-time of a nuclear power plant, by

- The Dutch Safety guidelines, as well as many other regulatory documents are based on the IAEA Safety Fundamentals, Safety Requirements and Safety Guides.
- For new reactors the guidance document VOBK/DSR was published in 2015, which is amongst others based on modern IAEA-standards

#### **4.4 Issues faced by The Netherlands in the implementation of the VDNS**

The Netherlands does not expect to face specific issues in applying the Vienna Declaration principles and safety objectives to its existing fleet or new builds of nuclear power plants:

- At this point the Vienna Declaration applies only to 1 NPP. It will be applied during the next PSR (2021-2023).
- The Netherlands also has a long history of using PSR with specific backfitting as a result of these PSR's

### **5. Results of the Review**

#### **5.1 General Quality of the National Report**

Contracting Parties and officers were invited to provide general comments on the The Netherlands' implementation of the obligations of the CNS (e.g., report submitted on time), addressed all articles, addressed the Vienna Declaration on Nuclear Safety, and addressed all Challenges and Fukushima lessons learned, the general quality of its National Report, transparency issues, and the compliance

with the CNS guidance documents and special peer review topics identified in the previous CNS Review Meeting or specified by the President of the CNS (reporting on the management of spent fuel on site and radioactive waste on site - especially for CPs not signatories of the Joint Convention and if relevant on the use of the templates for articles 17 and 18)..

With regards to the general quality of the National Report and transparency issues, the members of the Country Group made the following observations:

- The Report is qualified to be comprehensive and reader friendly.

With regards to the compliance with the requirements of the CNS and its Guidelines, the members of the Country Group made the following observations:

- The Report was submitted after the deadline of 15 August 2016 (6 September 2016), . . , still leaving sufficient time for other countries to ask questions
- The content and structure of The Netherlands National Report complies with the CNS guidance.
- The directions of the Summary Report of 6<sup>th</sup> Review Meeting were taken into consideration.
- The directions given by the President of the 7<sup>th</sup> Review Meeting were followed.

## 5.2 Participation in the Review Process

With regards to The Netherlands's participation in the Review process, the members of the Country Group made the following observations. The Netherlands,

- posted 265 questions to Contracting Parties;
- delivered answers to the questions of Contracting Parties on time;
- delivered its national presentation.

## 5.3 Challenges

The Country Group identified the following Challenge(s) for The Netherlands:

- **Challenge 1:** Maintaining nuclear safety at the NPP during the remaining operating years, facing end of operation December 31st 2033.
- **Challenge 2 :** Development of expertise and regulatory strategy related to safety relevant financial issues at license holders.
- **Challenge 3 :** Strengthening the 3S's and safety culture within ANVS's activities.
- **Challenge 4 :** Cross border inspections.

## 5.4 Suggestions

The Country Group did not identify a Suggestion for The Netherlands.

## 5.5 Good Practices and Area of Good Performance

During the peer review of The Netherlands's National Report, the Contracting Parties were invited to recommend Good Practices and to highlight Area of Good Performance.

The Country Group did not identify a Good Practice:

The following Area of Good Performance of The Netherlands were commended by the Country Group:

- **Area of Good Performance 1:** The requirement of a two-yearly safety evaluation report, in which the License Holder presents its own assessment of performance with respect to the technical, organizational, personnel and administrative provisions of its license.



- **Area of Good Performance 2** : Establishment of ANVS as an independent regulatory body incorporating the 3S's.
- **Area of Good Performance 3** : Extensive LTO evaluation and implementation programme, including a series of SALTO missions.

## 6 Fulfilment of CNS Review Requirements

The Country Group concluded that: The Netherlands

- Submitted a National Report after the deadline and therefore did not follow Rule 39 of INFCIRC/573 Rev. 6);
- Attended the 7<sup>th</sup> CNS Review Meeting, and therefore complies with Article 24.1;
- Held a national presentation and answered questions, and therefore complies with Article 20.3.