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# **APPLICATION OF SAFEGUARDS IN THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA**

*Report by the Director General*

# Board of Governors General Conference

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## Application of Safeguards in the Democratic People's Republic of Korea

*Report by the Director General*

### A. Introduction

1. The Director General's report on the application of safeguards in the Democratic People's Republic of Korea (DPRK), issued on 26 August 2024, was submitted to the Board of Governors and to the 68th regular session of the General Conference in September 2024 (GOV/2024/42-GC(68)/15).
2. Having considered the report of August 2024, the General Conference adopted resolution GC(68)/RES/13 on 19 September 2024 and decided to remain seized of the matter and to include the item on the agenda for its 69th (2025) regular session.
3. This report of the Director General to the Board of Governors and the General Conference covers developments since the report of August 2024.

### B. Background

4. The Agency has not been able to verify the correctness and completeness of the DPRK's declarations under the Agreement between the DPRK and the Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) (hereinafter referred to as the "NPT Safeguards Agreement").<sup>1</sup> Following ad hoc inspections to verify the information

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<sup>1</sup> The DPRK concluded an agreement with the Agency, based on INFCIRC/66/Rev.2, for the application of safeguards in respect of a research reactor in July 1977 (INFCIRC/252). Under this item-specific safeguards agreement, safeguards were applied by the Agency to two nuclear research facilities in Yongbyon: the IRT Research Reactor and a critical assembly. Although the DPRK acceded to the NPT in December 1985, its NPT Safeguards Agreement with the Agency, based on INFCIRC/153 (Corrected), only entered into force in April 1992 (INFCIRC/403). As provided for in Article 23 of the NPT Safeguards Agreement, the application of safeguards under the earlier safeguards agreement (INFCIRC/252) is suspended while the NPT Safeguards Agreement is in force.

contained in the initial report provided by the DPRK, on 1 April 1993 the Board of Governors found, pursuant to Article 19 of the NPT Safeguards Agreement, that “the Agency is not able to verify that there has been no diversion of nuclear material required to be safeguarded under the terms of the Agreement to nuclear weapons or other nuclear explosive devices”. The Board decided to report the DPRK’s non-compliance and the Agency’s inability to verify such non-diversion to all Member States of the Agency, to the UN Security Council and to the UN General Assembly.<sup>2</sup> Since 1994, the Agency has not been able to conduct all necessary safeguards activities provided for in the NPT Safeguards Agreement.

5. From November 1994 to December 2002, the Agency maintained a continuous inspector presence at the Yongbyon site to monitor a freeze at five facilities under the Agreed Framework between the United States of America (USA) and the DPRK.<sup>3</sup> From July 2007 to April 2009, the Agency maintained a continuous inspector presence at Yongbyon to monitor and verify the status of shut down or sealed facilities under the Initial Actions for the implementation of the Joint Statement of 19 September 2005, agreed by the States parties in the Six Party Talks.<sup>4</sup> From the end of 2002 until July 2007, the Agency was not able, and since April 2009 has not been able, to implement any safeguards measures in the DPRK.

6. Following the DPRK’s nuclear tests in 2006, 2009, 2013, 2016 and 2017, the UN Security Council adopted resolutions 1718 (2006), 1874 (2009), 2094 (2013), 2270 (2016), 2321 (2016) and 2375 (2017). In these resolutions, the UN Security Council, inter alia: demanded that the DPRK return at an early date to the NPT and IAEA safeguards; decided that the DPRK shall abandon all nuclear weapons and its existing nuclear programme in a complete, verifiable and irreversible manner and immediately cease all related activities and act strictly in accordance with the obligations applicable to parties under the NPT and the terms and conditions of its NPT Safeguards Agreement; and decided that the DPRK shall provide the Agency with transparency measures extending beyond these requirements, including such access to individuals, documentation, equipment and facilities as may be required and deemed necessary by the Agency. Contrary to the requirements of those resolutions, the DPRK has not abandoned its existing nuclear programme in a complete, verifiable and irreversible manner or ceased all related activities.

7. As the Agency remains unable to carry out verification activities in the DPRK, and as further nuclear activities continue to take place in the country, the Agency’s knowledge of the DPRK’s nuclear programme is limited. Nevertheless, it is important for the Agency to remain cognizant of developments in that programme to the fullest extent possible, especially in light of the General Conference’s support of the Secretariat’s continued enhanced readiness to play its essential role in verifying the DPRK’s nuclear programme, including the capability to re-establish the implementation of safeguards related activities in the DPRK.<sup>5</sup>

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<sup>2</sup> GOV/2645 (1993).

<sup>3</sup> GOV/2022/40-GC(66)/16, para. 7.

<sup>4</sup> The States parties in the Six Party Talks process were the People’s Republic of China, the DPRK, Japan, the Republic of Korea, the Russian Federation and the USA.

<sup>5</sup> GC(68)/RES/13, para. 12.

## C. Developments

8. On 9 September 2024, on the occasion of the 76<sup>th</sup> founding anniversary of the DPRK, General Secretary of the Workers' Party of Korea (WPK) and President of the State Affairs, Kim Jong Un (hereinafter referred to as General Secretary Kim), declared that the DPRK would “steadily strengthen its nuclear force” and increase the “number of nuclear weapons by geometrical progression”. He also emphasised that the DPRK was a “responsible nuclear weapons state”.<sup>6</sup>

9. On 13 September 2024, General Secretary Kim conducted an inspection of “the production base of weapon-grade nuclear materials”, as well as the Nuclear Weapons Institute. DPRK State media released a series of photographs from the inspected locations. During the inspection, General Secretary Kim called for an increase in the production of centrifuges to “exponentially increase” nuclear weapons output, to “further raise the individual separation ability” of centrifuges and to deploy a “new-type centrifuge which has already reached its completion stage”.<sup>7</sup>

10. On 29 January 2025, DPRK State media published a second series of photographs depicting General Secretary Kim's visit to “the nuclear-material production base” and the Nuclear Weapons Institute. General Secretary Kim described 2025 as a “crucial year” for “bolstering up the nuclear forces” and emphasised the need for “overfulfilling the plan for producing weapons-grade nuclear materials and in strengthening the nuclear shield” of the DPRK.<sup>8</sup>

11. During an inspection of the DPRK's “major shipyards” on 8 March 2025, General Secretary Kim visited the construction site of a “nuclear-powered strategic guided missile submarine”. DPRK State media released photographs depicting General Secretary Kim touring the submarine assembly hall. During his visit, General Secretary Kim underscored the strategic significance of developing the “naval force into an elite and nuclear-armed naval force”.<sup>9</sup>

## D. Nuclear Programme Update

12. As indicated earlier (paragraph 5), the Agency has not been able to implement any safeguards measures in the DPRK since April 2009. Without access to nuclear facilities and other relevant locations in the DPRK, the Agency cannot confirm either the operational status or the configuration/design features of any of the nuclear facilities or locations described in this section, nor can it confirm the nature and purpose of the activities conducted therein. However, the Agency, through the analysis of commercially available satellite imagery and open sources, continues to monitor developments in the DPRK's nuclear programme.

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<sup>6</sup> ‘Respected Comrade Kim Jong Un Makes Important Speech on National Day’, KCNA, 10 September 2024.

<sup>7</sup> ‘Respected Comrade Kim Jong Un Inspects Nuclear Weapons Institute and Production Base for Weapon-grade Nuclear Materials’, KCNA, 13 September 2024.

<sup>8</sup> ‘Respected Comrade Kim Jong Un inspects Nuclear-material Production Base and Nuclear Weapons Institute’, KCNA, 29 January 2025.

<sup>9</sup> ‘Respected Comrade Kim Jong Un Inspects Major Shipyards to Learn about Warship-building and Advance Strategic Policy for Epochal Development in Shipbuilding Industry’, KCNA, 8 March 2025.

## **D.1. Mining and Milling**

13. During the reporting period, there were indications of ongoing mining, milling and concentration activities at the Pyongsan Uranium Mine and the Pyongsan Uranium Concentrate Plant, consistent with activities observed by the Agency during previous years.

## **D.2. Conversion and Fuel Fabrication**

14. As previously reported,<sup>10</sup> work commenced in July 2022 on a major renovation of the derelict UF<sub>4</sub> Production Process Building, and there are indications that some of the processes formerly conducted within the UO<sub>2</sub> Production Process Building have been reconstituted in the UF<sub>4</sub> Production Process Building. There were indications that the renovated UF<sub>4</sub> Production Process Building was operational by October 2024.

15. As previously reported,<sup>11</sup> between 2009 and 2019, the Agency observed some buildings being renovated and new buildings being constructed in the south-eastern corner of the Nuclear Fuel Rod Fabrication Plant. While the Agency is unable to determine the purpose of these buildings, based on their location and configuration, they may be related to conversion and fuel fabrication. During the reporting period, there were indications of ongoing activities in these buildings.

16. As previously reported,<sup>12</sup> the Agency observed the construction of a group of four new buildings in the southern part of the Nuclear Fuel Rod Fabrication Plant. Two of these buildings, which are secured within a common perimeter wall, have features consistent with chemical processing activities. During the reporting period, there were indications of activity within these two buildings.

## **D.3. Enrichment**

### **D.3.1. Uranium Enrichment Facility at Kangson**

17. The Agency has previously reported<sup>13</sup> on a complex of buildings within a security perimeter at Kangson, in the vicinity of Pyongyang, which has infrastructure characteristics consistent with uranium enrichment. The Agency has referred to this location as the Kangson Complex. Also, as previously reported,<sup>14</sup> between February and April 2024, a new annex was constructed along the south-western side of the main building of the facility, thereby expanding the available floorspace, and support buildings were also renovated and expanded.

18. On 13 September 2024, as referred to earlier (paragraph 9), General Secretary Kim conducted an inspection of “the production base of weapon-grade nuclear materials”. Based on a comparison of commercially available satellite imagery of the main building and annex when they were under construction with the photographs of the facility when visited by General Secretary Kim, the Agency has identified the location as the Kangson Complex.

19. The photographs of the visit released by DPRK State media indicate that gas centrifuge cascades are installed at the Kangson Complex on the lower floor of the main building and on the upper floor of the recently constructed annex. The photographs of the main building are consistent with twelve cascades, each comprised of 344 centrifuges, consistent with a cascade configuration for the production

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<sup>10</sup> GOV/2022/40-GC(66)/16, para. 26, GOV/2023/41-GC(67)/20, paras 14 and 15, GOV/2024/42-GC(68)/15, para. 15.

<sup>11</sup> GOV/2022/40-GC(66)/16, para. 32; GOV/2024/42-GC(68)/15, para 16.

<sup>12</sup> GOV/2023/41-GC(67)/20, para. 17, GOV/2024/42-GC(68)/15, para. 17.

<sup>13</sup> GOV/2024/42-GC(68)/15, para. 19.

<sup>14</sup> GOV/2024/42-GC(68)/15, para. 20.



of low enriched uranium (LEU). The photograph of the upper floor of the annex shows additional cascades, some complete and some still being installed, and there are indications that these cascades are also configured for LEU production. The centrifuges being installed in the annex appear to be of the same type as those installed in the main building, with a similar configuration. This supports the Agency's earlier assessment<sup>15</sup> of the Kangson Complex, and therefore the Agency will henceforth refer to this location as the Kangson Uranium Enrichment Facility. Since the location is reported by the DPRK as "the production base of weapon-grade nuclear materials"<sup>16</sup>, the Agency cannot exclude the possibility that there are cascades configured for the production of high enriched uranium (HEU) elsewhere in the building.

20. During the reporting period, there were indications of ongoing activities at the Kangson Uranium Enrichment Facility. There were also indications of an increase in the cooling capacity of the facility, with additional cooling cells delivered in 2025.

### **D.3.2. Uranium Enrichment at the Yongbyon Site**

21. The Agency has previously reported<sup>17</sup> that, in November 2010, a group, including Dr Siegfried Hecker, was shown what appeared to be a centrifuge enrichment facility located in the Rod Production Process Plant of the Nuclear Fuel Rod Fabrication Plant at the Yongbyon site. The group was told that construction of the centrifuge facility had started in April 2009, that it contained approximately 2000 centrifuges arranged in six cascades with a capacity of 8000 separative work units (SWU) per year, and that it was operating and configured to produce LEU. In 2013, the DPRK constructed an extension, thereby effectively doubling the building's floor area, and between September 2021 and May 2022, the floor space was further expanded through the construction of an annex.

22. On 29 January 2025, as indicated earlier (paragraph 10), DPRK State media published photographs of General Secretary Kim's visit to "the nuclear-material production base". Based on a comparison of these photographs to Dr Hecker's report and to commercially available satellite imagery of the buildings and annex under construction, the Agency has identified the location as the reported Yongbyon Centrifuge Enrichment Facility.

23. The photographs are consistent with six cascades of centrifuges within the section of the building shown to Dr Hecker's group in 2010 (Hall 1) and eight cascades in the 2013 extension (Hall 2), and show a further six cascades in the annex constructed in 2021-2022. The cascades, each of 344 centrifuges, are consistent with a cascade configuration for the production of LEU. The Agency will henceforth refer to this location as the Yongbyon Uranium Enrichment Facility. There were no indications of cascades configured for the production of HEU in the photographs.

24. During the reporting period, the Agency observed indications that the Yongbyon Uranium Enrichment Facility continued to operate.

25. The centrifuges depicted in the photographs taken at both Kangson and Yongbyon appear to be of the same type, and there are no indications of the installation of advanced centrifuges.

26. During the reporting period, the Agency observed the start of construction work in December 2024 at a location south-west of the 50MW(e) Nuclear Power Plant at the Yongbyon site. The location previously housed a barracks, parts of which were removed to allow the construction of a large new building within a walled perimeter. The two-storey building has dimensions and features, including

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<sup>15</sup> GOV/2024/42-GC(68)/15, para. 19.

<sup>16</sup> 'Respected Comrade Kim Jong Un Inspects Nuclear Weapons Institute and Production Base for Weapon-grade Nuclear Materials', KCNA, 13 September 2024.

<sup>17</sup> GOV/2022/40-GC(66)/16, paras 35, 37 and 38, GOV/2024/42-GC(67)/20, para. 18

internal layout, similar to those of the Kangson Uranium Enrichment Facility. The building was externally complete by May 2025, but the construction of support buildings and related infrastructure was still ongoing at the end of the reporting period.

## **D.4. Reactors**

### **D.4.1. Graphite Reactors**

27. The Agency has continued to observe indications of the operation of the 5MW(e) Experimental Nuclear Power Plant at Yongbyon, including the discharge of cooling water, throughout the reporting period, with occasional shutdowns of a few days' duration. The Agency observed that the reactor was also shut down for approximately 60 days between mid-August and mid-October 2024. The Agency notes that this shutdown period is of sufficient duration to have enabled the reactor to have been refuelled and then to start its seventh operational cycle.

28. External refurbishment of the 5MW(e) reactor and its associated buildings was carried out during June and July 2025.

29. As previously reported,<sup>18</sup> construction of the 50MW(e) Nuclear Power Plant at Yongbyon was halted during the 1994 Agreed Framework. While some support structures to the 50MW(e) reactor had been demolished previously, more extensive demolition commenced in April 2025 and was ongoing at the end of the reporting period.

30. Construction of the 200MW(e) Nuclear Power Plant at Taechon, also halted during the 1994 Agreed Framework<sup>19</sup>, has not been restarted and the 200MW(e) reactor remains in an unfinished and derelict state.

### **D.4.2. Light Water Reactor**

31. Periods of shutdown of the Light Water Reactor (LWR) were observed in both September and October 2024, then from early November 2024 to early April 2025, there were indications that the LWR was in stable operation. The LWR was shut down for much of April 2025. Operation resumed during May 2025 was ongoing at the end of the reporting period, though with occasional, brief periods of shutdown. Overall, the Agency observed that the LWR was operating for approximately 70% of the reporting period.

32. Infrastructure changes observed at the LWR during the reporting period included the construction of new annexes along the northern side of the reactor containment building on both sides of the traverser, the installation of buried tanks to the north of the reactor containment building, and the delivery of two additional electrical generators.

33. As previously reported,<sup>20</sup> a group of buildings located south of the LWR compound was externally complete by December 2022. These buildings may support the fabrication and maintenance of reactor components. Ongoing activity was observed at this location during the reporting period.

### **D.4.3. IRT Research Reactor**

34. No indications of operation of the IRT reactor were observed during the reporting period.

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<sup>18</sup> GOV/2011/53-GC(55)/24, para. 39; GOV/2024/42-GC(68)/15, para. 22.

<sup>19</sup> GOV/2011/53-GC(55)/24, para. 39; GOV/2024/42-GC(68)/15, para. 22.

<sup>20</sup> GOV/2023/41-GC(67/20), para. 24.

## D.5. Reprocessing

35. As previously reported,<sup>21</sup> the steam plant that serves only the Radiochemical Laboratory was renovated between March and June 2024.

36. Operation of the steam plant was observed during late November 2024, but further work was then undertaken at the steam plant during December 2024, and the steam plant did not commence uninterrupted operation until late January 2025. Since late January 2025, almost continuous operation of the steam plant has been observed, along with occasional deliveries of chemicals to the Radiochemical Laboratory. These indicators are consistent with a campaign to reprocess the irradiated fuel from the 5MW(e) reactor's sixth operational cycle.

37. As previously reported,<sup>22</sup> in March 2023, the Agency observed that the soil and vegetation covering a radioactive waste storage location situated north of the Radiochemical Laboratory had been removed, exposing the liquid waste storage tanks and solid waste storage compartments. Between March and June 2025, a semi-buried, rectangular concrete structure, the features of which are consistent with radioactive waste storage, was installed north-west of the existing waste storage location.

38. Another radioactive waste storage location<sup>23</sup>, built in 1992 and consisting of semi-buried storage compartments, is situated south-east of the aforementioned waste storage location. In early March 2025, the storage compartments were covered with earth.

## D.6. Nuclear-Powered Submarine

39. On 8 March 2025, as indicated earlier (paragraph 11), General Secretary Kim visited the construction site of a "nuclear-powered strategic guided missile submarine". The Agency has compared commercial satellite imagery to the photographs of the submarine in an assembly hall and has identified the location as a shipyard in Sinpho. Although these photographs appear to show a submarine hull, the Agency is unable to determine whether a nuclear reactor has been developed for the submarine and, if so, whether it has already been installed.

## D.7. Weaponization and Nuclear Testing

40. As previously reported,<sup>24</sup> at the nuclear test site located near the settlement of Punggye-ri, excavation work at Adit 3 to reopen the test tunnel had possibly been completed by May 2022. As also previously reported,<sup>25</sup> the road to the former Adit 4 entrance at the nuclear test site was restored in 2022 and a small support structure was constructed during April 2023.

41. During the reporting period, there were no indications of significant activity at the nuclear test site at Punggye-ri, which remains prepared to support a nuclear test.<sup>26</sup>

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<sup>21</sup> GOV/2024/42-GC(68)/15, para. 26.

<sup>22</sup> GOV/2023/41-GC(67)/20, para. 28.

<sup>23</sup> GOV/2011/53-GC(55)/24, para. 40.

<sup>24</sup> GOV/2022/40-GC(66)/16, para. 74.

<sup>25</sup> GOV/2022/40-GC(66)/16, para. 74.

<sup>26</sup> IAEA Director General's Introductory Statement to the Board of Governors, 3 June 2024



## **E. Agency Readiness Activities**

42. Once a political agreement has been reached among the countries concerned, the Agency is ready to return promptly to the DPRK, if requested to do so by the DPRK and subject to approval by the Board of Governors. The DPRK Team within the Department of Safeguards continues to undertake activities to maintain the Agency's enhanced readiness to play its essential role in verifying the DPRK's nuclear programme.

43. All of these efforts related to the Agency's enhanced readiness have been conducted within available resources, including extrabudgetary contributions from a number of Member States.<sup>27</sup>

## **F. Summary**

44. Since 1994, the Agency has not been able to conduct all necessary safeguards activities provided for in the NPT Safeguards Agreement and since April 2009, Agency inspectors have not been present in the DPRK.

45. During the reporting period, the Agency observed further development in the DPRK's nuclear programme, including the expanded operation of uranium enrichment facilities at Kangson and Yongbyon, and the possible construction of an additional uranium enrichment facility underway at Yongbyon. Activities at other nuclear facilities and related locations remained ongoing.

46. There were indications consistent with the operation of the 5MW(e) reactor and the LWR at the Yongbyon site, and there were also indicators consistent with a campaign to reprocess, at the Radiochemical Laboratory, the irradiated fuel from the 5MW(e) reactor's sixth operational cycle. There were indications of ongoing mining, milling and concentration activities at the Pyongsan Uranium Mine and the Pyongsan Uranium Concentrate Plant.

47. The DPRK's nuclear activities continue to be a cause for serious concern. The continued operation of the Kangson and Yongbyon Uranium Enrichment Facilities, operation of the 5MW(e) reactor and the LWR, activities at the Radiochemical Laboratory, and ongoing maintenance of the nuclear test site are deeply troubling. The continuation and further development of the DPRK's nuclear programme is a clear violation of relevant UN Security Council resolutions and is deeply regrettable.

48. Concerning the safety of the LWR, the Agency lacks the necessary information to make an assessment. Nuclear safety should always be a paramount consideration when operating a reactor. Nuclear safety is a sovereign responsibility of the State and the Agency normally supports States in this area.

49. The Director General continues to call upon the DPRK to comply fully with its obligations under relevant UN Security Council resolutions, to cooperate promptly with the Agency in the full and effective implementation of its NPT Safeguards Agreement and to resolve all outstanding issues, especially those that have arisen during the absence of Agency inspectors from the DPRK.

50. The Agency continues to maintain its enhanced readiness to return to the DPRK and to strengthen its ability to play its essential role in verifying the DPRK's nuclear programme.

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<sup>27</sup> The commercial satellite imagery, equipment and supplies procured for possible verification and monitoring activities by the Agency in the DPRK have been purchased using extrabudgetary contributions from Member States.



# IAEA

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