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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 3 September 2020, was submitted to the Board of Governors and to the 64th regular session of the General Conference in September 2020 (GOV/2020/42-GC(64)/18). This report provides an update of developments of direct relevance to the Agency, along with information on the DPRK's nuclear programme.

2. Having considered the report of September 2020, the General Conference adopted resolution GC(64)/RES/14 on 25 September 2020 and decided to remain seized of the matter and to include the item in the agenda for its 65th (2021) regular session.

3. The current report, which is being submitted to the Board of Governors and the General Conference, covers developments since the report of September 2020.

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").¹ On 1 April 1993, the Board of Governors found, pursuant to Article 19 of the NPT Safeguards Agreement, that the Agency was not able to verify that there had been no diversion of nuclear material required to be safeguarded under the terms of the Agreement to nuclear weapons or other nuclear explosive devices, and 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 United Nations (UN) Security Council and to the UN General Assembly. Since 1994, the Agency has not been able to conduct all necessary safeguards activities provided for in the NPT Safeguards Agreement. 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.

5. 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 existing nuclear programmes 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.

6. In April 2013, the General Department of Atomic Energy of the DPRK announced that the DPRK would take measures for "readjusting and restarting all the nuclear facilities in Nyongbyon² including uranium enrichment plant and 5 MW[(e)] graphite moderated reactor".³ In September 2015, the Director of the Atomic Energy Institute of the DPRK announced that "all the nuclear facilities in Nyongbyon including the uranium enrichment plant and 5 MW [(e)] graphite-moderated reactor were rearranged, changed or readjusted and they started normal operation...".⁴

7. As the Agency remains unable to carry out verification activities in the DPRK, its knowledge of the DPRK's nuclear programme is limited and, as further nuclear activities take place in the country, this knowledge is declining. Nevertheless, it is important for the Agency to remain cognizant of developments in that programme to the fullest extent possible, especially in light of support by the General Conference of the Secretariat's intensified efforts to enhance its readiness to play its essential

¹ 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 (INFCIRC/252) in July 1977. 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.

² Nyongbyon is also known as Yongbyon.

³ 'DPRK to Adjust Uses of Existing Nuclear Facilities', Korean Central News Agency (KCNA), 2 April 2013. The Agency refers to this reactor as the Yongbyon Experimental Nuclear Power Plant (5 MW(e)).

⁴ 'Director of Atomic Energy Institute of DPRK on Its Nuclear Activities', KCNA, 15 September 2015.

role in verifying the DPRK's nuclear programme, including the capability to re-establish the implementation of safeguards related activities in the DPRK.⁵

C. Developments

8. In January 2021, Kim Jong Un, Chairman of the Workers' Party of Korea and the State Affairs Commission of the DPRK, delivered a report⁶ on the work of the Seventh Central Committee of the Party at the Eighth Congress of the Workers' Party of Korea. The report, inter alia, "detailed the historic course of masterminding a great revolutionary turn for possessing the completely new nuclear capabilities aimed at attaining the goal of modernization of the nuclear force", including the following:

- a. "In the period under review the already accumulated nuclear technology developed to such a high degree as to miniaturize, lighten and standardize nuclear weapons and to make them tactical ones and to complete the development of a super-large hydrogen bomb."
- b. "the design of new nuclear-powered submarine was researched and was in the stage of final examination ..."
- c. "plans for... launching in real earnest into the founding of the nuclear power industry to cope with the long-range demands and the subjective and objective changes in the future."

9. 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. As previously reported, a DPRK Team was formed within the Department of Safeguards in August 2017 to enhance the Agency's readiness to play its essential role in verifying the DPRK's nuclear programme.⁷ During the reporting period, the Agency has continued to maintain its enhanced readiness to return to the DPRK and has undertaken, inter alia, the following activities:

- a. Continued and further refined its safeguards relevant open source information collection and analysis of the DPRK's nuclear programme.
- b. Continued to collect and analyse a wide range of high-resolution commercial satellite imagery, both optical and radar, to monitor the DPRK's nuclear programme.
- c. Maintained equipment and supplies necessary to ensure that the Agency is prepared to promptly initiate verification and monitoring activities in the DPRK.
- d. Held training workshops to prepare Agency inspectors to conduct verification and monitoring activities in the DPRK and to update them on recent developments in the DPRK relevant to the nuclear programme.
- e. Continued to document the Agency's knowledge of the DPRK's nuclear programme, including through 3D modelling of facilities, information integration using a geospatial information system (GIS) and video recording interviews with those Agency inspectors who have experience in conducting verification and monitoring activities in the DPRK.

⁵ GC(64)/RES/14, paras 11-12.

⁶ 'On Report Made by Supreme Leader Kim Jong Un at 8th Congress of WPK,' KCNA, 9 January 2021.

⁷ GOV/2017/36-GC(61)/21, para. 12.

10. 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.⁸

D. Other Information on the DPRK's Nuclear Programme

11. During the reporting period, the Agency has continued to monitor developments in the DPRK's nuclear programme and to evaluate all safeguards relevant information available to it, including open source information and satellite imagery. The Agency has not had access to the Yongbyon site or to other locations in the DPRK. Without such access, the Agency cannot confirm either the operational status or the configuration/design features of the facilities or locations as described in this section, or the nature and purpose of the activities conducted therein.

12. **The Yongbyon Site.** The details of developments observed at the Yongbyon site during the reporting period are as follows.⁹

- a. ***Yongbyon Experimental Nuclear Power Plant (5MW(e)).*** There were no indications of reactor operation from early December 2018 to the beginning of July 2021.¹⁰ However, since early July 2021, there have been indications, including the discharge of cooling water, consistent with the operation of the reactor.
- b. ***Radiochemical Laboratory.*** The steam plant that serves the Radiochemical Laboratory operated for approximately five months, from mid-February 2021 until early July 2021. The duration of the operation of the steam plant and Radiochemical Laboratory in 2021 is significantly longer than that observed in the past during possible waste treatment or maintenance activities.¹¹ The five-month timeframe is consistent with the time required to reprocess a complete core of irradiated fuel from the 5MW(e) reactor, according to design information for the Radiochemical Laboratory provided by the DPRK to the Agency in 1992. In 2003, 2005, and 2009, the DPRK announced that it had conducted reprocessing campaigns at the Radiochemical Laboratory, each of which had lasted approximately five months.¹²
- c. ***Yongbyon Nuclear Fuel Rod Fabrication Plant.*** The reported centrifuge enrichment facility is located within the Yongbyon Nuclear Fuel Rod Fabrication Plant. During the reporting period, while regular vehicular movements were observed, there were indications, for a

⁸ All commercial satellite imagery of the DPRK, and equipment and supplies procured for possible verification and monitoring activities in the DPRK, have been purchased with extrabudgetary contributions from Member States.

⁹ The names of the nuclear facilities at the Yongbyon site are as previously declared by the DPRK to the Agency (GOV/2011/53-GC(55)/24, Annex), except for the Light Water Reactor (LWR), which the DPRK has not declared to the Agency.

¹⁰ GOV/2020/42-GC(64)/18, para. 12.

¹¹ Steam plant operation was observed between late April and early May 2018 (GOV/2018/34-GC(62)/12, paras 15-16 and footnote 18).

¹² As previously reported, in October 2003, the DPRK announced that it had completed the reprocessing of 8000 irradiated fuel rods by the end of June 2003, a process that commenced after the departure of Agency inspectors from the DPRK on 31 December 2002. Between June and October 2005, a further reprocessing campaign was reportedly conducted of 8000 irradiated fuel rods discharged from the 5 MW(e) reactor in April 2005. In 2009, the DPRK announced the commencement of reprocessing of irradiated fuel rods in April 2009, and its completion by the end of August 2009 (GOV/2011/53-GC(55), paras 18, 41-44). Activities consistent with the operation of the Radiochemical Laboratory were observed for a similar period of time in 2016 (GOV/2016/45-GC(60)/16, para. 16). However, the DPRK did not announce any reprocessing activities in 2016.

period of time, that the reported centrifuge enrichment facility was not in operation. Emissions have been observed at the UO₂ Production Process Building.¹³

- d. **Light Water Reactor (LWR) under construction.**¹⁴ Observations of activity near the LWR, including deliveries of materials and the presence of construction vehicles, indicate that internal construction work has continued during the reporting period. However, no additional transfers of major reactor components have been observed. No indications of reactor operation were observed, although there were indications of further testing of the infrastructure for cooling water during late 2020, and again in March and in April 2021. Based on the information currently available, it is not possible to estimate when the reactor could become operational.

13. **The Pyongsan Mine and Concentration Plant.**¹⁵ There have been indications of ongoing mining, milling and concentration activities at locations previously declared as the Pyongsan uranium mine and the Pyongsan uranium concentration plant.¹⁶

14. **Kangson Complex.** As previously reported, the Agency has continued to evaluate all safeguards relevant information, including satellite imagery and open source information, about a group of buildings within a security perimeter at Kangson, in the vicinity of Pyongyang.¹⁷ The construction of the Kangson complex took place before the construction of the reported centrifuge enrichment facility at Yongbyon, a sequence which is consistent with the Agency's assessed chronology of the development of the DPRK's reported uranium enrichment programme.¹⁸ In addition, the Kangson complex shares infrastructure characteristics with the reported centrifuge enrichment facility at Yongbyon. There were indications of ongoing activities at the Kangson complex during the reporting period.

E. Summary

15. During the reporting period, there were indications of the operation of the Radiochemical Laboratory from mid-February to early July 2021. This period of operation is consistent with previous reprocessing campaigns announced by the DPRK of irradiated fuel discharged from the 5MW(e) reactor.¹⁹ Since early July 2021, there have been indications consistent with the operation of the 5MW(e) reactor. While regular vehicular movements were observed, there were indications, for a period of time, that the Yongbyon reported centrifuge enrichment facility was not in operation. There were indications of ongoing activities at the Kangson complex. There were indications that the DPRK has continued internal construction activities at the LWR under construction.

16. The DPRK's nuclear activities continue to be a cause for serious concern. Furthermore, the new indications of the operation of the 5MW(e) reactor and the Radiochemical Laboratory are deeply

¹³ This building was included in the design information provided by the DPRK to the Agency of the Yongbyon Nuclear Fuel Rod Fabrication Plant in 1992. Indications of operation have been observed intermittently since 1992.

¹⁴ The DPRK stated in April 2009 that it would build an LWR. GOV/2011/53-GC(55)/24, para. 31.

¹⁵ Pyongsan is also known as Phyongsan.

¹⁶ GOV/2011/53-GC(55)/24, para. 28.

¹⁷ GOV/2018/34-GC(62)/12, para. 22; GOV/2020/42-GC(64)/18, para. 14.

¹⁸ GOV/2011/53-GC(55)/24, paras 30-35, 50.

¹⁹ GOV/2016/45-GC(60)/16, para. 16, GOV/2011/53-GC(55)/24, paras 40-45.

troubling. The continuation of the DPRK's nuclear programme is a clear violation of relevant UN Security Council resolutions and is deeply regrettable.

17. 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.

18. 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.