

Report of the Panel of Experts established pursuant to resolution 1874 (2009)

Summary

Over the period under review the Democratic People's Republic of Korea has continued to reject and to violate Security Council resolutions. In November 2010 the Democratic People's Republic of Korea revealed that it had been pursuing a programme of uranium enrichment and was constructing a new nuclear reactor. The country has also continued to defy the bans on imports and exports of nuclear-related items, of conventional arms and of luxury goods, and this report details several seizures of banned shipments.

The Panel believes that, while sanctions have clearly not stopped the Democratic People's Republic of Korea's nuclear programmes and trade in arms, they have made it more difficult and expensive for the country to pursue these. Nevertheless Member States continue to face numerous difficulties in implementing sanctions. The Panel has discovered loopholes and other vulnerabilities in shipping and transportation practices that the Democratic People's Republic of Korea and others have exploited, and notes increasing sophistication on the part of the Democratic People's Republic of Korea both in the establishment of shell and front companies and offshore financial agents, and in the proliferation of affiliates, substitutes and aliases intended to mask already designated entities and individuals.

This report therefore includes a variety of recommendations to improve the effectiveness of sanctions. These include suggested responses to the Democratic People's Republic of Korea's uranium enrichment programme, further efforts to encourage Member States to report as required by the Council, extending the list of items prohibited by the Committee established pursuant to resolution 1718 (2006), clearer guidelines on the definition of luxury goods and an expansion and updating of the list of eight entities and five individuals currently sanctioned by the Committee.

In pursuing its mandate the Panel has consulted extensively with Member States, inspected seized goods and interviewed numerous experts at international conferences and in New York. It has increased its knowledge of techniques of sanctions evasion used by the Democratic People's Republic of Korea (which include extensive falsification of documents and diversion of cargo), illicit financial transactions carried out by the Democratic People's Republic of Korea, the channels through which banned goods travel, and cooperation of the Democratic People's Republic of Korea with other States in pursuing proscribed activities. The Panel is grateful for the cooperation it has received from many Member States.

Much remains to be done to improve sanctions implementation among Member States and to constrain the networks that facilitate sanctions evasion. Looking forward, the Panel plans to work with Member States to improve the rate of filing of national implementation and compliance-related reports, to work towards establishing best practice for vigilance on cargo to and from the Democratic People's Republic of Korea, to suggest other entities and individuals for designation, and to recommend ways of countering the efforts of the Democratic People's Republic of Korea to evade sanctions.

Contents

	<i>Page</i>
Abbreviations.....	5
I. Introduction.....	6
II. Methodology.....	7
III. Background.....	7
IV. Panel of Experts.....	9
V. Reports of Member States.....	12
A. National implementation reports.....	13
B. Compliance-related reports (inspection, seizure and disposal).....	15
VI. Nuclear, other weapons of mass destruction and ballistic missile programmes of the Democratic People's Republic of Korea.....	16
A. Nuclear programmes.....	16
B. Ballistic missile programmes.....	24
C. Other existing weapons of mass destruction programmes.....	26
VII. Export and import-related measures.....	27
A. Nuclear, other weapons of mass destruction and ballistic missile-related exports and imports.....	27
B. Arms exports and imports.....	30
C. Ban on luxury goods.....	32
VIII. Interdiction.....	34
A. Trade and transportation infrastructure.....	34
B. Patterns of sanctions evasion.....	38
C. Interdiction actions.....	41
IX. Financial measures.....	43
A. Illicit financial transactions.....	44
B. Foreign investment in the Democratic People's Republic of Korea.....	46
X. Designation of goods, entities and individuals.....	48
A. Designation of entities and individuals.....	48
B. Designation of goods.....	52
XI. Unintended impact.....	53
A. Unintended impact on the humanitarian situation.....	53
B. Unintended impact on diplomatic missions.....	54
XII. Recommendations.....	54

Annexes

A.1.	Imagery of the Yongbyon Nuclear Research Centre	61
A.2.	Imagery of the fuel fabrication complex	62
A.3.	Imagery of the 5-MWe reactor and light water reactor construction site	63
A.4.	Imagery of the new launch site close to Tongchangdong	64
A.5.	Items designated by Member States as luxury goods	65
A.6.	List of autonomous designations	72
A.7.	Main transportation routes in the Democratic People's Republic of Korea	81

Abbreviations

HEU	highly enriched uranium
IAEA	International Atomic Energy Agency
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
INFCIRC	information circular (IAEA publication)
LEU	low enriched uranium
LLI	Lloyd's List Intelligence
MWe	Megawatt-electrical
MWt	Megawatt-thermal
SWU	separative work unit
UF ₆	uranium hexafluoride
WCO	World Customs Organization

I. Introduction

1. In paragraph 26 of Security Council resolution 1874 (2009), the Secretary-General was requested to establish a Panel of Experts to gather, examine and analyse information regarding the implementation of the measures imposed by the Council in its resolutions 1718 (2006) and 1874 (2009) and, in particular, to document incidents of non-compliance; to assist the Security Council Committee established pursuant to resolution 1718 (2006) in carrying out its functions; and to make recommendations on actions that the Council, the Committee or Member States may consider to improve implementation of those measures. This is the Panel's second annual report.

2. The situation remains challenging. At the date of this report there are no indications that the Democratic People's Republic of Korea is ready to roll back its proscribed programmes. The political and security climate on and around the Korean peninsula has deteriorated in the wake of unprovoked acts of war by the Democratic People's Republic of Korea. With the Six-Party Talks stalled the sanctions remain the primary Council mechanism for both condemnation and constraint of the Democratic People's Republic of Korea's non-conventional capabilities.

3. Although the revelation by the Democratic People's Republic of Korea of its uranium enrichment programme despite the sanctions might seem to raise issues about their effectiveness, it appears that the country may have acquired and developed much of this programme before their adoption. Recent developments are therefore not evidence that they have been ineffective. On the contrary evidence suggests that the sanctions have succeeded in economic terms by raising the costs of illicit transfers while simultaneously lowering the returns to the Democratic People's Republic of Korea. They are also believed to have increased the risk of doing business for States and non-State actors, which may have a deterrent effect. Nevertheless, implementation of the sanctions has to be improved to prevent further development and possible proliferation of the Democratic People's Republic of Korea's nuclear programmes.

4. During the reporting period, the Panel followed up on its investigations and on the findings it has reported to date. This report and its confidential annex present the latest findings of the Panel. It notes both challenges and successes in reports of Member States, outlines the latest information on the proscribed nuclear, ballistic missile and other weapons of mass destruction programmes of the Democratic People's Republic of Korea, and discusses compliance with the Council's sanctions in preventing trade in banned items. It notes both successes and challenges in interdiction¹ of attempts of the Democratic People's Republic of Korea to evade sanctions and considers some of the techniques used in sanctions evasion, including the financial movements associated with illicit transactions. The report then discusses the designation of goods, entities and individuals under the resolutions and the possibility of unintended impact of Security Council measures. It ends by presenting a variety of recommendations to the Council, the Committee and Member States to counter sanctions evasion more effectively.

¹ In this report, the word "interdiction" refers to the inspection, seizure and disposal of cargo as defined in paragraphs 11, 12 and 14 of resolution 1874 (2009).

II. Methodology

5. Since it began its work on 14 September 2009, the Panel of Experts has carried out its research and investigations on the basis of the terms of its mandate provided in paragraph 26 of resolution 1874 (2009), directions received from the Committee and operating rules and procedures adopted by its members. In this the Panel has also been mindful of the best practices recommended by the Informal Working Group of the Security Council on General Issues of Sanctions (see S/2006/997).

6. Prominent among these are maintaining high evidentiary methodological standards while recognizing that the Panel does not have the investigative power of a body of a judiciary character and lacks subpoena powers. In addition to first-hand and on-site observations by the Experts themselves, the Panel relies on two sorts of information: confidential information supplied by cooperating States and/or international organizations, officials, journalists and private individuals; and information in the public domain. In weighing the reliability of confidential information, the Panel always kept in mind the identity and role of the sources supplying it. In its work the Panel has tried to ensure that its assertions and findings are corroborated by credible information sources.

7. While observing the principles of objectivity, transparency and accountability in and for its work, the Panel has also agreed on the importance of ensuring confidentiality. Information that has been provided to the Panel of Experts on a confidential or restricted basis has been handled accordingly and in a manner consistent with the responsibilities of the Panel of Experts.

8. In its investigations and report writing the Panel faces some particular challenges, including:

- The vehement rejection of all aspects of resolutions 1718 (2006) and 1874 (2009) by the leadership of the Democratic People's Republic of Korea means that the Panel, unlike many other Security Council panels, has had no direct access to the State sanctioned.
- An almost complete lack of transparency on the part of the Democratic People's Republic of Korea towards the international community.
- The difficulty of investigating potential violations that occurred before the imposition of a reporting mechanism in case of interdiction of prohibited cargo to or from the Democratic People's Republic of Korea (June 2009), as well as other previous suspicious activities of the Democratic People's Republic of Korea.

III. Background

9. In response to the first nuclear test conducted by the Democratic People's Republic of Korea, on 9 October 2006, the Security Council, under Chapter VII of the Charter of the United Nations, adopted resolution 1718 (2006) on 14 October 2006, by which it imposed a series of sanctions against the Democratic People's Republic of Korea to compel the country to abandon all nuclear weapons, existing nuclear programmes, all other existing weapons of mass destruction and ballistic missile programmes. Despite the international sanctions and the Six-Party Talks, the Democratic People's Republic of Korea conducted a second nuclear test on 25 May

2009. Faced with such a blatant provocation and the country's persistent non-compliance with relevant Security Council resolutions as well as with the Treaty on the Non-Proliferation of Nuclear Weapons and other international obligations, the Security Council unanimously adopted resolution 1874 (2009) on 12 June 2009, strengthening the measures previously adopted.

10. On 13 June 2009, the Democratic People's Republic of Korea announced that it strongly condemned and rejected Security Council resolution 1874 (2009). It also declared that it would take a series of countermeasures "to defend the national dignity and the country's sovereignty", including the weaponization of all newly extracted plutonium and the commencement of a uranium enrichment process pursuant to its recent decision to build its own light water reactor.² The Democratic People's Republic of Korea further indicated that it did not intend to return to the Six-Party Talks.

11. In parallel with these hostile allegations, on 26 March 2010 the Republic of Korea corvette *Cheonan* was sunk, with the loss of 46 lives. The Security Council deplored this attack in its presidential statement (S/PRST/2010/13) and determined that such an incident endangers peace and security in the region and beyond. An investigation by a multinational team of experts organized by the Republic of Korea concluded that the Democratic People's Republic of Korea had torpedoed the *Cheonan*; the Democratic People's Republic of Korea denied this. Then on 23 November 2010, the Democratic People's Republic of Korea shelled Yeonpyeong Island, killing four nationals of the Republic of Korea, including civilians.³ The military actions and unprovoked acts of war of the Democratic People's Republic of Korea showed that its conventional forces remain a direct military threat to the Republic of Korea.

12. Many analysts indicate that the internal challenges of the Democratic People's Republic of Korea, such as the difficult economic situation, the complex succession issues,⁴ and a worsening food shortage, may lead the regime to be more dependent on the military. The Democratic People's Republic of Korea amended its constitution in April 2009 to elevate the "military-first" (Songun) ideology to a national guiding principle. It remains to be seen how this elevation of the status of

² See Korean Central News Agency, "DPRK Foreign Ministry Declares Strong Counter-Measures against UNSC's 'Resolution 1874'", 13 June 2009.

³ The report of the United Nations Command established pursuant to Security Council resolution 84 (1950) states that the Korean People's Army attack against Yeonpyeong-Do was a deliberate and premeditated action, as well as a hostile act and an act of armed force against the Republic of Korea and its forces. It also states that it could not be justified by the Republic of Korea live fire exercise of 23 November which was conducted in the waters contiguous to Yeonpyeong-Do and the North-west Islands or waters customarily patrolled and administered by the Republic of Korea and the United Nations Command. See the special investigation into the Korean People's Army attack on Yeonpyeong-Do and the Republic of Korea Marine Corps' response on 23 November 2010 (S/2010/648, annex). The Democratic People's Republic of Korea states that its shelling was a response to Republic of Korea fire on its territorial waters. See Open Announcement No. 2 issued on 23 February 2011 by the Inspection Group of the National Defence Commission of the Democratic People's Republic of Korea on the truth behind the Yonphyong Island shelling (S/2011/129, annex).

⁴ The Korean Central News Agency announced on 27 and 28 September 2010 that Kim Jong-un, the youngest son of Kim Jong-il, the leader of the Democratic People's Republic of Korea, was promoted to the rank of General of the Korean People's Army and named to the Central Committee of the Korean Workers' Party.

the military in the national leadership and pre-eminent role of the military will affect the leadership in making important decisions.

13. Several recent reports indicate that the economy of the Democratic People's Republic of Korea continues to suffer from chronic difficulties including growing trade deficits, the lack of foreign currency reserves and especially from food shortages. According to these reports, the country faces a protracted economic crisis and serious food shortage due to a combination of natural tragedies and man-made problems.⁵ These include poor soil management, outdated economic, transport and information infrastructure, all of which were exacerbated by heavy rains in August/September 2010, the coldest winter on record in 2010/11 and the outbreak of foot and mouth disease in February/March 2011. This followed a currency reform debacle in November/December 2009 that disrupted internal market trade and led to further economic constraints, food disruptions and a number of reported political protests.

14. Careful monitoring and research are required to determine the effects of these developments in and around the Democratic People's Republic of Korea, and its relationship with neighbouring countries. In particular, the Panel of Experts is concerned by the recent revelations of the country's uranium enrichment programme and its statements that it would bolster its "nuclear deterrent".⁶ These concerns were echoed by the display of new ballistic missiles during the military parade celebrating the sixty-fifth anniversary of the Korean Workers' Party.⁷ These indicate that the Democratic People's Republic of Korea remains actively engaged in illicit activities relating to its nuclear and ballistic missile-related programmes proscribed by Security Council resolutions 1718 (2006) and 1874 (2009).

IV. Panel of Experts

15. The Panel of Experts was initially appointed by the Secretary-General on 12 August 2009 in accordance with paragraph 26 of Security Council resolution 1874 (2009).

⁵ See Food and Agriculture Organization of the United Nations and World Food Programme, *The State of Food Insecurity in the World* (Rome, 2010); and the report of the Rapid Food Security Assessment Mission to the Democratic People's Republic of Korea (World Food Programme, Food and Agriculture Organization of the United Nations and United Nations Children's Fund, 24 March 2011). The accuracy of these reports has been questioned. See for example the remarks made by the Minister of Unification of the Republic of Korea during a meeting with representatives of the European Union Chamber of Commerce in the Republic of Korea on 25 April 2011; available from <http://eng.unikorea.go.kr>.

⁶ On 27 July 2010, in response to joint United States-Republic of Korea naval drills, General Kim Yong-chun, Minister of the People's Armed Forces, declared that the Democratic People's Republic of Korea would bolster its nuclear deterrent in a more advanced way. In his statement at the sixty-fifth session of the General Assembly on 29 September 2010, Pak Kil-yon, Vice-Minister for Foreign Affairs, announced that, as long as United States nuclear aircraft carriers sail around the seas of the Democratic People's Republic of Korea, its nuclear deterrent could never be abandoned, but should be strengthened.

⁷ During the military parade of 10 October 2010, a new ballistic missile, referred to as Musudan, and a Nodong with a new warhead were publicly displayed for the first time. The Musudan, which has yet to be tested, is considered to have an intermediate range (3,000 to 5,500 km).

16. On 12 May 2010, the Panel presented to the Security Council its final report pursuant to paragraph 26 of resolution 1874 (2009). The report provided information on the findings, in particular on incidents of non-compliance, made by the Panel during the reporting period and 23 recommendations on actions that the Security Council, the Committee or Member States might consider to improve the implementation of the measures set out in resolutions 1718 (2006) and 1874 (2009). That report was issued on 5 November 2010 under the symbol S/2010/571.

17. By its resolution 1928 (2010), adopted on 7 June 2010, the Security Council decided to extend the mandate of the Panel of Experts until 12 June 2011. The Panel's mandate is a repeat of the initial mandate detailed in paragraph 26 of resolution 1874 (2009), namely (a) to assist the Committee established pursuant to resolution 1718 (2006) in carrying out its mandate; (b) to gather, examine and analyse information regarding the implementation of the measures imposed by the Council in its resolutions 1718 (2006) and 1874 (2009), in particular incidents of non-compliance; and (c) to make recommendations on actions that the Council, the Committee or Member States may consider to improve the implementation of those measures. The Council also requested the Panel of Experts to provide a midterm report on its work no later than 12 November 2010, and a final report no later than 30 days prior to the termination of its mandate, with its findings and recommendations.

18. The members of the Panel were reappointed by the Secretary-General on 8 July 2010 (see S/2010/376) as follows: David J. Birch (United Kingdom of Great Britain and Northern Ireland, Coordinator), Masahiko Asada (Japan), Victor D. Comras (United States of America), Erik Marzolf (France), Young-wan Song (Republic of Korea), Alexander Vilnin (Russian Federation) and Xiaodong Xue (China). However, owing to other professional and personal commitments, Mr. Comras, Mr. Asada, Mr. Birch and Mr. Song withdrew from the Panel on 1 and 11 October 2010, 20 December 2010 and 28 February 2011, respectively. Their successors, George A. Lopez (United States of America), Takehiko Yamamoto (Japan), Duk Ho Moon (Republic of Korea) and John Everard (United Kingdom) were appointed by the Secretary-General on 14 October 2010, 22 February 2011 and 21 March 2011 respectively (see S/2010/527, S/2011/88 and S/2011/170).

19. On 10 November 2010, the Panel presented to the Security Council its midterm report pursuant to resolution 1928 (2010).⁸ That report highlighted the results of more intense and recent investigations into sanctions implementation by Member States and sanctions evasion by the Democratic People's Republic of Korea and presented several tasks that the Panel planned to undertake in following up its previous recommendations.

20. As requested by the Committee on 6 December 2010, the Panel submitted to the Committee on 28 January 2011 a report entitled "Assessing the recent nuclear programme developments in the Democratic People's Republic of Korea".⁹ In that report, the Panel focused on how the Democratic People's Republic of Korea could acquire specialized materials, components and technology related to uranium enrichment based on gas centrifuges and construction of a light water reactor, despite the fact that it was subject to resolutions 1718 (2006) and 1874 (2009). It

⁸ The report remains an internal document of the Security Council.

⁹ The report remains an internal document of the Committee.

also contained a number of recommendations for action to be taken by the Committee to improve implementation of sanctions, aimed at preventing further development and possible proliferation of the Democratic People's Republic of Korea nuclear programmes. It followed the briefing held by the Committee with Siegfried S. Hecker of Stanford University (United States) on 15 December 2010 concerning his report on the construction of a uranium enrichment facility and a light water reactor in Yongbyon in violation of resolutions 1718 (2006) and 1874 (2009).

21. The Panel's work during the reporting period included broad consultations and dialogue with various interested countries and appropriate experts regarding the implementation of the measures imposed by resolutions 1718 (2006) and 1874 (2009), in particular incidents of non-compliance. In addition to their meetings with representatives of several missions to the United Nations in New York, members of the Panel visited Israel (12 August 2010), Thailand (18-20 August 2010), Austria (15 September 2010), the United Arab Emirates (10-12 October 2010), the United States (13-14 December 2010), Japan (11-14 January 2011) and the Republic of Korea (17-19 January 2011). The Panel also met with representatives of the World Customs Organization (WCO) (21 September 2010), the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) (30 March 2011). The Panel also had contacts with the International Atomic Energy Agency (IAEA), the International Maritime Organization (IMO) and the International Criminal Police Organization (INTERPOL).

22. Two of the aforementioned visits, conducted at the invitation both of Member States and of the Committee, were aimed at physically inspecting, and establishing documentary evidence of, the prohibited cargo seized in relation with incidents of non-compliance reported in 2009. Following those visits, the Panel assisted the Committee in considering and taking appropriate actions on requests regarding the disposal of the cargo. The Panel has not yet had the opportunity physically to inspect and to establish documentary evidence of cargo seized in relation with another incident of non-compliance reported to the Committee in February 2010.

23. Acting on the basis of the terms of its mandate provided by the Security Council in paragraph 26 of resolution 1874 (2009), as further detailed in the implementation assistance notice about the roles of the Committee and the Panel of Experts in investigating sanctions violations,¹⁰ the Panel intensified its efforts to gather all necessary information to determine the full circumstances of possible or alleged incidents of non-compliance from States, relevant United Nations bodies, and other interested parties. During the reporting period, the Panel addressed several requests for information to Member States through their Permanent Missions to the United Nations. Those requests were aimed at gathering additional and/or complementary information in relation to reports received by the Committee regarding inspection, seizure and disposal, as well as other possible incidents of non-compliance which came to the attention of the Panel through other sources.

24. During the reporting period, the Panel has been active in assisting the Committee. In accordance with the Committee's successive programmes of work,

¹⁰ The notice, "Information to assist United Nations Member States in carrying out their obligations under Security Council resolutions 1718 (2006) and 1874 (2009)", was approved by the Committee on 10 August 2010. It was transmitted to all Member States in a note verbale dated 3 September 2010 and is available from the Committee's website www.un.org/sc/committees/1718.

the Panel provided to the Committee several discussions papers and/or draft implementation assistance notices regarding the application of some of the measures set out in resolutions 1718 (2006) and 1874 (2009). The Panel also assisted the Committee in responses to enquiries made by Member States. In July 2010, the Panel provided to the Committee its views regarding the designation of goods and entities subject to the measures imposed by the Security Council. Further, the Panel provided to the Committee on 27 January 2011 its views on how the request to open a non-resident foreign currency account made by an Embassy of the Democratic People's Republic of Korea could be met in a manner consistent with resolutions 1718 (2006) and 1874 (2009).

25. The Panel has also been active in assisting the Committee's outreach activities. On 20 December 2010, the Panel participated in the open briefing to the wider United Nations membership carried out by the Chair of the Committee to inform Member States about the activities of the Committee and the Panel of Experts, including the adoption of the Committee's comprehensive programme of work, cooperation with Member States, preparation of documents to assist implementation, and efforts made to improve national reporting requirements.

26. In addition, members of the Panel participated in the 11th International Export Control Conference (Kyiv, 8 and 9 June 2010), the Harvard Project for Asia and International Relations Conference 2010 (Singapore, 22 August 2010), the 22nd United Nations Conference on Disarmament Issues (Saitama, Japan, 25-27 August 2010), the 12th Beijing Seminar on International Security (Beijing, 5-9 September 2010), the European Union/United Nations Sanctions Seminar (Brussels, 29 and 30 November 2010), the 18th Asian Export Control Seminar (Tokyo, 15-17 February 2011) and the Global Trans-shipment Seminar (Dubai, 7-9 March 2011). On these occasions, the Panel had the opportunity to make presentations, to collect relevant information on the implementation of the Security Council measures, and to exchange views and discuss issues of common interest with other participants, including submission of national implementation reports.

27. As recommended by the Informal Working Group of the Security Council on General Issues of Sanctions (see S/2006/997) and in order to increase efficiency and decrease duplication of effort the Panel contacted and met other sanctions expert groups to exchange views and information related to the implementation of relevant Security Council resolutions. In all such cases each Panel has abided by the strictest standards of confidentiality regarding information provided to it on a confidential or restricted basis.

28. The interactions of the Panel are democratic, inclusive and participatory. Internal decisions have been taken jointly by the Experts and the Panel has always attempted to reach consensus. In the rare cases when consensus cannot be achieved on substantive issues, the perspective of the majority is reflected and different view(s) in the Panel are also reflected.

V. Reports of Member States

29. Resolutions 1718 (2006) and 1874 (2009) stipulate two types of reporting mechanisms by Member States. The first one involves reporting to the Security Council on the steps taken by Member States to implement the measures imposed by resolutions 1718 (2006) and 1874 (2009). The second involves reporting to the

Committee on inspection, seizure and disposal of cargo, the provision of which is prohibited to or from the Democratic People's Republic of Korea.

30. Information provided in both types of reports plays an important role in ensuring the effective implementation of the Security Council measures. In paragraph 3 of resolution 1928 (2010) the Council, reiterating the obligation laid down by paragraph 27 of resolution 1874 (2009), urged all States, relevant United Nations bodies and other interested parties to cooperate fully with the Committee established pursuant to resolution 1718 (2006) and the Panel of Experts, in particular by supplying any information at their disposal on the implementation of the measures imposed by resolutions 1718 (2006) and 1874 (2009).

A. National implementation reports

31. Member States are called upon to report to the Security Council and thereafter upon request by the Committee on concrete measures they have taken to implement effectively the provisions of paragraph 8 of resolution 1718 (2006) as well as paragraphs 9, 10, 18, 19 and 20 of resolution 1874 (2009). Submission of national implementation reports by all Member States is extremely important both for an overall evaluation of the steps taken to implement sanctions and to ensure their effective implementation.

32. After the submission of the Panel's final report pursuant to resolution 1874 (2009) on 12 May 2010, 15 Member States provided national implementation reports and additional relevant information. As at the end of April 2011, 78 Member States and the European Union had submitted their national implementation reports pursuant to resolution 1718 (2006) and 61 Member States had done so pursuant to resolution 1874 (2009). A special concern of the Panel continues to be that 107 Member States have yet to report on their national implementation.

33. In terms of geographical distribution, an analysis of the 107 non-reporting or late-reporting Member States indicate that 48 are members of the Group of African States, 28 of the Group of Asian States, 24 of the Group of Latin American and Caribbean States, 5 of the Group of Eastern European States and 2 of the Group of Western European and other States.

34. In June 2010, the Panel submitted to the Committee a quarterly update on the implementation by Member States covering the period from 1 March to 3 May 2010. In accordance with the programme of work of the Committee for the period from 1 November 2010 to 31 October 2011, the Panel remained ready to assist the Committee in conducting and completing, as appropriate, a comprehensive review of the reports received from Member States on their national implementation.

35. The national implementation reports received during the reporting period continued to vary considerably in content, detail and format. Several describe in detail the actions taken to implement the measures set out in the resolutions, but others state only that steps have been taken or will be taken in implementation of the resolutions. As stated earlier, it will remain difficult for the Committee and the Panel of Experts to evaluate the implementation of the measures set out in resolutions 1718 (2006) and 1874 (2009) on the sole basis of such a limited level of information.

36. As instructed, the Panel of Experts submitted to the Committee, including through its final report pursuant to resolution 1874 (2009), a number of recommendations to stimulate more concrete and more in-depth reporting. Those recommendations included, inter alia, circulation of reminders on a regular basis, indicating the availability of the Committee and the Panel of Experts to provide any assistance to the Member States; various outreach activities; provision of an optional guideline template as a checklist and explanation of Member States' reporting responsibilities; and an informal guidance paper on how to prepare national reports. The Panel also recommended that the Committee assign the Panel a special task of entering into dialogue with or providing assistance to non-reporting or late-reporting Member States with respect to completion or submission of national implementation reports.

37. On 3 December 2010, the Panel submitted to the Committee a draft implementation notice aimed at assisting Member States in preparing and submitting reports on measures they have taken to implement certain provisions in resolutions 1718 (2006) and 1874 (2009). This notice, which provides an optional checklist template including all of the measures about which the Security Council has requested information, was approved by the Committee on 21 January 2011 and circulated to Member States in a note verbale dated 7 February 2011.¹¹ In the same note verbale, the Committee seized the opportunity to remind Member States of their reporting obligations pursuant to paragraph 22 of resolution 1874 (2009) and to encourage reporting on their national implementation. The Panel remains ready to assist the Committee in implementing other recommendations to stimulate more concrete and more in-depth reporting.

38. During the reporting period, the Panel of Experts intensified its outreach activities. Since 12 May 2010, Experts of the Panel have participated in seven conferences and seminars where they presented the Security Council measures and invited non-reporting or late-reporting Member States to submit their national implementation reports as soon as possible. Through those conferences and seminars, as well as through its bilateral consultations, the Panel reached out to more than 90 Member States, including 25 non-reporting or late-reporting Member States.

39. The lack of consistent implementation of the measures related to luxury goods (paragraph 8 (a) (iii) of resolution 1718 (2006)) remains an area of specific and important concern. A review of submitted national implementation reports indicates that many continue to omit any mention of luxury goods and that many countries have yet to adopt controls over such exports to the Democratic People's Republic of Korea. It also shows that national definitions of luxury goods vary¹² and associated national export controls are being implemented in an uneven manner, which risks undercutting the effectiveness of this measure. These concerns led the Panel to develop a series of recommendations which were submitted to the Committee, as detailed below.¹³

¹¹ This document is available from the Committee's website, www.un.org/sc/committees/1718.

¹² See the illustrative list of items designated by the Member States as luxury goods as at 30 April 2011 in annex A.5.

¹³ See section VII.C (Ban on luxury goods).

B. Compliance-related reports (inspection, seizure and disposal)

40. Under paragraph 15 of resolution 1874 (2009), any Member State that undertakes an inspection or seizes and disposes of cargo is required to promptly submit reports containing relevant details to the Committee on the inspection, seizure and disposal. Paragraph 16 of that resolution also specifies that Member States that do not receive the cooperation of the flag State with the inspection of a vessel on the high seas or in directing the vessel to a port for inspection are required to report such refusals to the Committee. The fact that the Security Council chose specifically to “require” such reports underlines this obligation. As inspection, seizure and disposal are to be conducted in cases of suspected non-compliance, the Panel has chosen to describe these reports herein as “compliance-related reports”.

41. Since 12 May 2010, the Committee has received five official “compliance-related reports” providing additional relevant information, in response to requests made by the Committee and the Panel of Experts, on incidents of non-compliance previously reported pursuant to paragraph 15 of resolution 1874 (2009).

42. During the reporting period, the Committee received an additional report on an attempted violation which does not fall into the categories defined by paragraphs 15 and 16 of resolution 1874 (2009). The Committee was informed by a Member State that on 9 March 2010 a private company received an unsolicited suspicious business proposal for the development of a joint venture from the Chamber of Commerce of the Democratic People’s Republic of Korea. The purpose of the joint venture was to develop a significant capability within the Democratic People’s Republic of Korea to produce graphite-related products, including ultrapure graphite concentrate, which could have contributed to its nuclear programmes.

43. That report, which contains valuable information, illustrates the importance of expanding the reporting mechanisms specified by resolution 1874 (2009), as proposed by the Panel in its previous final report, to include the provision of information on accomplished (when proscribed items are known to have been supplied to the Democratic People’s Republic of Korea), attempted (when the export of proscribed items to the Democratic People’s Republic of Korea is stopped before the items actually enter into international commerce) and denied cases (when acquisition or export permission is sought but immediately denied by private companies or the relevant authorities). In that regard, it should be recalled that the Panel of Experts is mandated by paragraph 26 of resolution 1874 (2009) to gather, examine and analyse information on all incidents of non-compliance. This case also illustrates the important role that private companies can play in the successful implementation of sanctions and underlines the importance of internal compliance programmes.

44. Upon receiving compliance-related reports, the Committee, in each case, sent notes verbales to all Member States which could provide additional relevant information on this case. The response rates to those enquiries have varied considerably. In some instances, reports have yet to be received. All Member States should be reminded that in resolutions 1874 (2009) and 1928 (2010) the Council urged all States to cooperate fully with the Committee and the Panel of Experts, in particular by supplying any information at their disposal.

45. During the reporting period, the Committee received additional communications from Member States requesting further guidance on the disposal of the prohibited seized cargo. Following the completion of the investigation, including the physical

inspection and the establishment of documentary evidence by the Panel, the Committee did not raise any objection to the disposal of the seized prohibited items.

VI. Nuclear, other weapons of mass destruction and ballistic missile programmes of the Democratic People's Republic of Korea

46. In resolutions 1718 (2006) and 1874 (2009), the Security Council decided that the Democratic People's Republic of Korea shall abandon all nuclear weapons and existing nuclear programmes, all other existing weapons of mass destruction and ballistic missile programmes in a complete, verifiable and irreversible manner. In particular, the Council directed the Democratic People's Republic of Korea to act strictly in accordance with the obligations applicable to parties to the Treaty on the Non-Proliferation of Nuclear Weapons and the terms and conditions of its IAEA Safeguards Agreement (INFCIRC/403) and provide IAEA transparency measures extending beyond these requirements, including such access to individuals, documentation, equipment and facilities as may be required and deemed necessary by IAEA. To date, there is no indication that the Democratic People's Republic of Korea is ready to abandon those programmes in a manner consistent with the Security Council decisions and the international non-proliferation norms. On the contrary, recent developments and observations indicate that the Democratic People's Republic of Korea remains actively engaged in such programmes.

A. Nuclear programmes

47. Over the past years, the Democratic People's Republic of Korea has advanced its nuclear programmes and improved its nuclear weapons capabilities. Without returning to the Non-Proliferation Treaty, the Democratic People's Republic of Korea has not permitted IAEA to implement safeguards in the country since December 2002. Defying international sanctions, the country is bolstering its "nuclear deterrent". With the Six-Party Talks stalled the Democratic People's Republic of Korea was able to reverse disablement measures and the verification protocol was not adopted. During the reporting period, the Democratic People's Republic of Korea periodically announced escalations: weaponization of separated plutonium, revelation of its uranium enrichment programme, construction of a light water reactor, and statements about nuclear fusion technology.

48. Until 2009, the Democratic People's Republic of Korea categorically denied the existence of any uranium enrichment programme, including its illicit procurement activities abroad over the years as well as the production of uranium hexafluoride (UF₆), the feed gas for centrifuges.¹⁴ In April 2009 the Democratic People's Republic of Korea declared officially that it planned to construct a light

¹⁴ In October 2002, the Democratic People's Republic of Korea acknowledged to an American delegation the existence of clandestine uranium enrichment programme, but immediately after denied it had made any such admission. This confrontation led to the termination of the 1994 Agreed Framework. Soon after, the Democratic People's Republic of Korea announced its withdrawal from the treaty on the Non-Proliferation of Nuclear Weapons, extracted bomb-grade plutonium from the 8,000 spent fuel rods stored since 1994, and conducted its first underground nuclear test (October 2006).

water reactor and produce its nuclear fuel. In June 2009, the Democratic People's Republic of Korea further announced that it would commence uranium enrichment. In a letter to the Security Council dated 3 September 2009 (S/2009/443), it indicated that the experimental uranium enrichment had been successfully conducted "to enter into the completion phase". In November 2010, the Democratic People's Republic of Korea revealed to two groups of United States visitors its light water reactor construction site. Then, in a dramatic move, it showed Siegfried Hecker of Stanford University a 2,000 gas centrifuge plant, the Uranium Enrichment Workshop. This was further confirmed by the Korean Central News Agency in an article of 30 November 2010 stating that "a modern factory for uranium enrichment equipped with thousands of centrifuges is operating" to supply fuel to the light water reactor under construction. These unilateral acts show that the Democratic People's Republic of Korea has continued both to refuse to accept and clearly to violate Security Council resolutions 1718 (2006) and 1874 (2009), and run contrary to the agreements established by the Six-Party Talks.¹⁵

49. The Democratic People's Republic of Korea has stated, and Siegfried Hecker's reports have shown,¹⁶ that it is developing uranium enrichment based on gas centrifuge technologies, which are extremely difficult to detect but easy to proliferate.¹⁷ The size and sophistication of the 2,000 centrifuges in six cascades greatly exceeded the international community's expectations and pose serious challenges to efforts to halt proliferation. The revelation and stated intentions of the Democratic People's Republic of Korea complicate the diplomatic process including the Six-Party Talks. Redefining the denuclearization goal, sequencing future milestones, and devising monitoring and verification tasks will be enormous challenges.

1. Uranium enrichment programme revealed

50. Siegfried Hecker reports that he was shown a modern small industrial-scale uranium enrichment facility with 2,000 centrifuges arranged in six cascades and was told that the centrifuge facility was now operational, producing low enriched uranium (LEU) destined for fuel for the experimental light water reactor under construction.¹⁸ The chief process engineer said the centrifuges were not of the P-1 type and that their rotors were made of alloys containing iron, and implied that the rotors had single bellows. The engineer claimed that all components were manufactured domestically, but modelled after the centrifuges at Almelo and

¹⁵ Besides Security Council resolutions 825 (1993), 1695 (2006), 1718 (2006) and 1874 (2009), the Democratic People's Republic of Korea has violated, reversed, or nullified all its previous commitments and obligations, including under the Treaty on the Non-Proliferation of Nuclear Weapons (1970), the Joint Declaration on the Denuclearization of the Korean Peninsula (1992), the IAEA-Democratic People's Republic of Korea Safeguards Agreement (1992), the United States-Democratic People's Republic of Korea Agreed Framework (1994), and the agreements established by the Six-Party Talks.

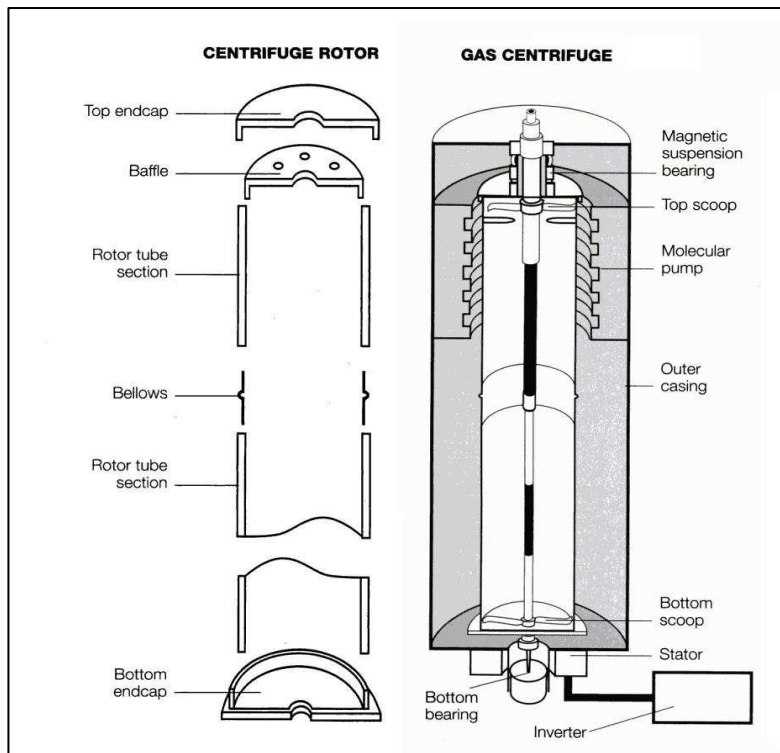
¹⁶ See, for example, Siegfried S. Hecker, "A Return Trip to North Korea's Yongbyon Nuclear Complex", Center for International Security and Cooperation, Stanford University, 20 November 2010, and "Redefining denuclearization in North Korea", *Bulletin of the Atomic Scientists*, 20 December 2010.

¹⁷ Low enriched uranium cascades can be readily reconfigured to produce weapons-grade highly enriched uranium. This is the reason why every fuel production centrifuge plant is put under IAEA safeguards and monitoring.

¹⁸ See annexes A.1 and A.2 for specific location of the Uranium Enrichment Workshop.

Rokkasho-mura.¹⁹ The chief engineer stated that the enrichment capacity was 8,000 kg separative work units per year (SWU/year), which is consistent with the performance of P-2 centrifuges.²⁰ The average enrichment level is 3.5 per cent and the tails are 0.27 per cent. Dr. Hecker assessed that, with an 8,000 kg SWU/year capacity, the Democratic People's Republic of Korea could produce up to two tons of LEU, or up to 25-33 kg of highly enriched uranium (HEU), per year, sufficient for one to two nuclear weapons.

Figure 1
Generic drawing of an early URENCO-type centrifuge



Source: David Albright and Paul Brannan, "Taking stock: North Korea's Uranium Enrichment Program", Institute for Science and International Security, 8 October 2010.

Note: On the basis of Dr. Hecker's description, the Institute for Science and International Security assesses that the centrifuges are likely to be similar to the design shown above. However, the tube is probably one piece with a bellows created at the centre of the tube.

51. Siegfried Hecker has mentioned he was not able independently to verify whether the facility was operational, but the Democratic People's Republic of Korea's claim of a partially or fully operational facility was not inconsistent with what he saw. Owing to the lack of access to the facility, the Panel cannot determine at this stage whether the uranium enrichment workshop is operational. It is not yet

¹⁹ URENCO enrichment facilities are located in Almelo, Netherlands, and Japanese Nuclear Fuels Limited operates a uranium enrichment facility in Rokkasho-mura.

²⁰ Through its long-time cooperation with the Pakistani Khan network, the Democratic People's Republic of Korea is estimated to have duplicated or developed a new design based on P-2 centrifuges.

known whether the Democratic People's Republic of Korea did obtain all it needs to assemble each centrifuge, or further to operate the cascades consisting of 2,000 centrifuges at an ultra-fast speed, or to achieve the final stage of operating them with uranium hexafluoride. The Panel met a couple of independent experts who discussed, with varying degrees of confidence, whether the uranium enrichment workshop could have been operational in November 2010 as claimed by the Democratic People's Republic of Korea engineers or would be in the future. Similarly, the Panel learned that there are some technical aspects described by Dr. Hecker which need to be further clarified.²¹

52. The Democratic People's Republic of Korea has repeatedly claimed to have run the light water reactor and uranium enrichment programmes without external inputs. But it acquired such external inputs both before²² and after²³ imposition of the Security Council sanctions. There are indications that experimental work may have been undertaken in the production of UF₆ at the end of the 1990s²⁴ and that full-scale production of UF₆ could have been achieved in the early 2000s. The volume of known attempts by the Democratic People's Republic of Korea to acquire aluminium tubes in the early 2000s²⁵ suggests that it may have advanced significantly in the experimental phase of its centrifuge programme and was considering moving to a larger scale.

53. Because the Democratic People's Republic of Korea built the uranium enrichment workshop inside the existing uranium metal fuel rod fabrication building,²⁶ the assembly of six cascades of 2,000 centrifuges started only after the IAEA inspectors had left the Yongbyon site in April 2009. However, the country's claim to have developed its uranium enrichment programme in such a short time, including the manufacture of centrifuge components and feed material, is unrealistic. The Panel strongly believes that the 2,000 centrifuge cascades seen by Dr. Hecker were based on centrifuges produced and demonstrated at an undisclosed facility and either rapidly moved to or replicated at the uranium enrichment workshop. Moreover Dr. Hecker and many other experts strongly believe both that the Democratic

²¹ Although most experts believe that the enrichment plant may operate fully as the Democratic People's Republic of Korea engineers stated, a few expressed sceptical opinions. One expert raised a "few puzzling issues" regarding the visual observations made by Dr. Hecker, including the diameter of the centrifuge and the number of centrifuges that form cascades not being as consistent as one would expect for a P-2 centrifuge facility.

²² In 2003, the Democratic People's Republic of Korea attempted to illegally import specialized items, an inverter and several power supply devices, that could have had application in a gas centrifuge programme. Vacuum pumps observed by IAEA in Yongbyon in 2007 were illegally imported in 2003. There are also indications about acquisitions of aluminium tubes in the early 2000s (see footnote 25).

²³ It is reported that, in 2010, the Democratic People's Republic of Korea illegally imported two computer-controlled machine tools. See "Official confirms raiding firm over N Korea sales", *Taipei Times*, 8 September 2010.

²⁴ The Democratic People's Republic of Korea reportedly acquired uranium hexafluoride (UF₆) storage equipment from Switzerland at the end of the 1990s.

²⁵ Early in 2003, a German tried to export illegally to the Democratic People's Republic of Korea a quantity of British-manufactured tubing sufficient for 4,000 P-2 centrifuges. In the same period, the Democratic People's Republic of Korea successfully obtained enough tubes for 2,700 P-2 centrifuges from a Russian company. Tubes handed by the Democratic People's Republic of Korea to the United States in 2007 were part of that delivery.

²⁶ This building was called "building 4" and the IAEA inspectors and the United States technical team monitored "disablement steps" done inside the building until April 2009.

People's Republic of Korea has pursued uranium enrichment clandestinely for a long time and that the centrifuge plant shown to Dr. Hecker cannot be the only one existing in the Democratic People's Republic of Korea — it is highly likely that one or more parallel covert facilities capable of LEU or HEU production exist elsewhere. This possibility poses great challenges for the future dismantlement of all the country's nuclear programmes in a complete, verifiable and irreversible manner.

54. The Panel believes that the Democratic People's Republic of Korea must have been developing its uranium enrichment programme for several years or even decades. The historical data suggests that it usually takes 10 to 20 years from the research and development stage for any country to reach an operational level of industrial-scale pilot plant.²⁷ This timeframe would place the beginning of the uranium enrichment programme in the 1990s, which is when the Democratic People's Republic of Korea tried to strike a deal to barter its Nodong missiles.²⁸ In exchange for supplying ballistic missile technologies to Abdul Qadeer Khan of Pakistan, the Democratic People's Republic of Korea might have been provided with a starter kit of centrifuges and other components for a pilot centrifuge infrastructure as well as grounds-on training. A. Q. Khan indicated that Democratic People's Republic of Korea technicians had access to the Khan Research Laboratory as early as 1993 or 1994, where they received grounds-on training about centrifuges. Pervez Musharraf, former President of Pakistan, confirmed that two dozen P-1/P-2 centrifuge, measuring equipment and assistance in centrifuge technology were transferred to the Democratic People's Republic of Korea around the year 2000.

55. Owing to the flat denial by the Democratic People's Republic of Korea and lack of information, a majority of nuclear experts had estimated the current status of the country's uranium enrichment programme to range from a research and development-level facility to a pilot-scale gas centrifuge plant.²⁹ The fact that the actual capacities of the country exceed these analyses suggests that numerous illicit procurement activities of the Democratic People's Republic of Korea over the years

²⁷ See *Global Fissile Material Report 2009*, (International Panel on Fissile Materials, October 2009); available from www.fissilematerials.org/ipfm/site_down/gfmr09.pdf.

²⁸ The Democratic People's Republic of Korea may have explored gas centrifuges in the 1980s, but quickly abandoned its efforts because of technological limitations. Reportedly, in 1992 the Democratic People's Republic of Korea told Hans Blix, then Director General of IAEA, that it had thought about uranium enrichment but did not go further because it was beyond its technical capabilities and that it had no interest in enriching its own uranium as it was then seeking USSR assistance in the construction of light water reactors. During his first trip to the Democratic People's Republic of Korea in June 2004, a Yongbyon official was reported to have told one of Dr. Hecker's colleagues that it had a uranium centrifuge programme in the 1980s, but gave it up in favour of plutonium in the early 1990s. See Siegfried S. Hecker, "Redefining denuclearization in North Korea", *Bulletin of the Atomic Scientists*, 20 December 2010.

²⁹ For example, "The publicly available evidence seems to indicate that North Korea has a very limited capacity for enrichment: Hui Zhang, "Assessing North Korea's uranium enrichment capabilities", *Bulletin of the Atomic Scientists*, 18 June 2009; "We believe that North Korea is not technically prepared to enrich uranium beyond the laboratory scale": Siegfried S. Hecker, Sean C. Lee and Chaim Braun, "DPRK's Choice: Bombs over Electricity", *The Bridge*, vol. 40, No. 10, (Summer 2010), pp. 5-12; "The evidence supports North Korea's assertion about having finished the experimental phase of its centrifuge program. In addition, it is probably moving to enrich uranium on a larger scale. The existence of a pilot scale plant appears possible, but determining its exact operational status or location remains uncertain", David Albright and Paul Brannan, "Taking Stock: North Korea's Uranium Enrichment Program", Institute for Science and International Security (ISIS), 8 October 2010.

probably went undetected. A centrifuge typically contains around 100 separate components, many of which require specialist production techniques. The Democratic People's Republic of Korea may have continued to procure illegally, concealing and diversifying its acquisition of proscribed items by establishing its own far-reaching network. In this regard, the Panel has identified some of the main actors, including those who may have operated as procurement and sales agents for the Democratic People's Republic of Korea. The Panel has also identified some of the methods which could be used by these agents in sanctions evasion and has documented how they were able to exploit loopholes and vulnerabilities in the global transport and trading system.

56. The possibility of exports of weapons-grade fissile material (HEU) or centrifuge design and components to countries of proliferation concern also raises new challenges to international non-proliferation efforts. The Libyan case was a prominent one. Government agencies and independent experts agree that the Democratic People's Republic of Korea was the source of the two tons of UF₆ imported by the Libyan Arab Jamahiriya in the early 2000s³⁰ via the Pakistani Khan network. The Democratic People's Republic of Korea also received many more UF₆ casks than had been seen by IAEA inspectors when they had access to its nuclear sites.³¹ The Panel received information that the Democratic People's Republic of Korea was involved in the clandestine construction of a nuclear reactor in another State. In this regard, the Panel had noted the report of IAEA.³²

57. In terms of the military application of the uranium enrichment workshop, independent experts indicate that the 3-4 per cent LEU which could be produced by that facility is nearly 70 per cent of the effort towards making weapons-grade HEU.³³ The Democratic People's Republic of Korea could at any time further enrich LEU to weapons-grade HEU relatively quickly, either at Yongbyon or at an undisclosed facility. The Panel believes both that, despite the assertions of the Democratic People's Republic of Korea to the contrary, its long pursuit of a uranium enrichment programme was primarily for military purposes, and that the risk that the uranium enrichment workshop could easily be converted for military purposes should be underlined.

58. The Panel of Experts strongly believes that the Democratic People's Republic of Korea should be compelled to abandon its uranium enrichment programme and that all aspects of the programme should then be placed under international monitoring, and suggests steps towards this in its recommendations.

³⁰ See the reports to the IAEA Board of Governors on the implementation of the Safeguards Agreement in the Socialist People's Libyan Arab Jamahiriya dated 1 June 2004 (Gov/2004/33), and 12 September 2008 (Gov/2008/39).

³¹ David Albright and Paul Brannan, "Taking Stock: North Korea's Uranium Enrichment Program" (see footnote 29 above).

³² See section VII.A. of the present report (Nuclear, other weapons of mass destruction and ballistic missile-related exports and imports).

³³ See, for example, David Albright and Paul Brannan, "Disabling North Korea's Uranium Enrichment Program", ISIS, 20 January 2011. They also estimate that, if the claims of the Democratic People's Republic of Korea are true, the revealed uranium enrichment workshop has approximately twice the actual capacity of the Iranian Natanz Fuel Enrichment Plant and that the Democratic People's Republic of Korea could produce enough LEU per year to produce, after further enrichment, sufficient HEU for three nuclear weapons. They also raise the possibility that the Democratic People's Republic of Korea, like the Libyan Arab Jamahiriya, received from the A. Q. Khan network a Pakistani centrifuge plant design for making HEU.

59. The Panel also recalls that the Democratic People's Republic of Korea should return to the Non-Proliferation Treaty and the International Atomic Energy Agency-Democratic People's Republic of Korea Safeguards Agreement (1992). The Panel further believes that the Democratic People's Republic of Korea should sign and ratify the Additional Protocol (INFCIRC/540(Corrected)) at the earliest date. The Panel considers that the Democratic People's Republic of Korea presents complex challenges to IAEA monitoring and verification both because of the number and sophistication of its facilities and because of possible proliferation activities. It is therefore important to define the verification role of IAEA and its cooperation with the Six-Party Talks, and the Panel hopes that IAEA will establish how it might approach future verification work in the Democratic People's Republic of Korea.

60. Experts' views vary as to why the Democratic People's Republic of Korea showed Dr. Hecker its light water reactor and uranium enrichment workshop. A symbolic achievement? An incentive for re-engagement?³⁴ The Panel considers that it is important that intentions of the Democratic People's Republic of Korea be clarified.

2. Light water reactor project

61. Dr. Hecker was also taken to an experimental light water reactor construction site.³⁵ He was able to determine that the reinforced-concrete containment vessel, which was built on a pad roughly 25 by 28 m, will be 22 m in diameter, 0.9 m thick and 40 m high. The engineers asserted that the reactor was designed for a power level of 100 MWt and to serve as a prototype for the construction of a bigger light water reactor. The chief engineer explained that the construction had been started on 31 July 2010 and the target date for operation was set at 2012, which looks unrealistic. Dr. Hecker and many other experts believe that the Democratic People's Republic of Korea uses its new light water reactor aspirations as a justification for the existence of its uranium enrichment programme.

62. Dr. Hecker assesses that the Democratic People's Republic of Korea can produce most of the required key components indigenously with varying degrees of effort. The size of the experimental light water reactor seems reasonable, the drawing simple enough, and safety does not appear to be a primary concern for the Democratic People's Republic of Korea. The country could produce the fuel,³⁶ the pumps and the electronic components. The only uncertainty appears to be the country's capacity to build the reactor vessel indigenously.³⁷ The vessel requires very specific material as well as good welding techniques which the Democratic

³⁴ Or was it because Ambassador Pritchard, who visited Pyongyang days before Dr. Hecker, warned the Democratic People's Republic of Korea that the international community would be sceptical of its claims that its enrichment efforts were for non-military purposes unless international inspectors, or at least Dr. Hecker, were shown the new plant?

³⁵ See annexes A.1 and A.3 for specific location and progress of the construction.

³⁶ The chief engineer acknowledged to Dr. Hecker that they expected to have difficulty fabricating the uranium dioxide fuel (UO₂), which is different from the metal fuel used in the gas-graphite reactor. They had not yet decided whether to use stainless steel or zircaloy cladding, neither of which they have used before.

³⁷ According to the chief engineer, the pressure vessel will be fabricated off site with high-strength steel, possibly with a stainless steel liner. It will be transported by rail and welded on site. He declared that they will produce all the pumps and other components domestically, and have the requisite welding capacities.

People's Republic of Korea may need some time to acquire. The general view is that light water reactors are proliferation-resistant, thus the Democratic People's Republic of Korea is not building this experimental reactor to produce weapons-grade plutonium. As soon as the Democratic People's Republic of Korea engineers gain experience with the experimental light water reactor they plan to move on to build larger light water reactors.

3. Plutonium production programme

63. For more than 20 years the Democratic People's Republic of Korea has run an extensive plutonium-based nuclear programme at Yongbyon, 100 km north of Pyongyang. Through three to four campaigns of spent fuel reprocessing, the country is estimated to have extracted 30 to 50 kg of plutonium, sufficient for six to eight nuclear weapons. Both the exact status of the separated plutonium and the extent of its weaponization are unclear.

64. Dr. Hecker observed that the 5-MWe reactor had not restarted since July 2007 and the 50-MWe reactor under construction was being dismantled with large cranes. As mentioned above, the former uranium metal fuel fabrication building had been converted into the uranium enrichment workshop. There was no apparent activity at the reprocessing plant, but he was told that this would be converted to receive the spent fuel rods from light water reactors. Dr. Hecker still estimates that the Democratic People's Republic of Korea could resume all plutonium-related operations within six months and could make 6 kg of plutonium, roughly one bomb's worth, per year.

65. Both a Member State and Dr. Hecker have expressed concern about safety and contamination levels at the decaying Yongbyon site.³⁸ The dormant 5-MWe reactor, radiochemical laboratory (reprocessing plant), and spent fuel storage sites including two undeclared ones pose a high risk of accident and contamination. The Panel believes that safety issues should be discussed as an integral part of the denuclearization of the Democratic People's Republic of Korea and further notes that reckless decommissioning or dismantlement at Yongbyon could cause an environmental disaster.³⁹

4. Other nuclear activities

66. The Korean Central News Agency announced on 12 May 2010 that "Scientists of the Democratic People's Republic of Korea have worked hard to develop nuclear fusion technology their own way" — "for obtaining safe and environment-friendly new energy" and that "in this course, Korean style thermo-nuclear reaction devices were designed and manufactured". It claimed that the Democratic People's Republic of Korea "made a definite breakthrough toward the development of new energy and opened up a new phase in the nation's development of the latest science and technology."⁴⁰ If this report is correct, this would constitute another violation of Security Council resolutions 1718 (2006) and 1874 (2009).

³⁸ On 29 March 2011, during bilateral ministerial meetings in Beijing, the Minister for Foreign Affairs and Trade of the Republic of Korea raised the safety issues with his Chinese counterpart.

³⁹ Dismantling the Yongbyon nuclear complex will create an enormous volume of radioactive waste in addition to existing inventories of spent fuel and reprocessing wastes.

⁴⁰ Korean Central New Agency, "DPRK succeeds in nuclear fusion", 12 May 2010.

5. Disablement steps under the Six-Party Talks

67. In both resolutions 1718 (2006) and 1874 (2009) the Security Council called upon the Democratic People's Republic of Korea to return immediately to the Six-Party Talks without precondition and to work towards the expeditious implementation of the Joint Statement and other documents as agreed at the Six-Party Talks.⁴¹ In April 2009 the Democratic People's Republic of Korea suspended all implementation of the Six-Party Talks agreements. During the reporting period, despite all the efforts of intensive mediation and the active interactions among the relevant Member States, owing to the Democratic People's Republic of Korea's lack of sincerity and failure substantively to engage, the Six-Party Talks remained stalled.

68. The nuclear disablement process under the Six-Party Talks framework thus has remained unclear. Of the three remaining disablement steps, it is unknown whether the control rod drive mechanism of the 5-MWe reactor has been removed while the Democratic People's Republic of Korea's claim to have removed all 8,000 spent fuel rods from that reactor and completed their reprocessing by August 2009 has yet to be verified. The reported proposal of the Democratic People's Republic of Korea to ship out or sell the 12,000 fresh fuel rods remains unconfirmed. The next and final stage, after disablement, will be the decommissioning and dismantlement of the weapons production facilities, encompassing the nuclear weapons and all existing plutonium and uranium enrichment programmes. The terms of this enormous work still need to be formulated and negotiated. This final stage may include an early return of IAEA monitoring of the stock of weapons-grade fissile material and verification of actual nuclear weapons dismantlement.

B. Ballistic missile programmes

69. Following the launches by the Democratic People's Republic of Korea of seven ballistic missiles, including a long-range ballistic missile, the Security Council adopted resolution 1695 (2006) demanding that the country suspend all activities related to its ballistic missile programmes and re-establish its pre-existing commitments to a moratorium on missile launches. By resolution 1718 (2006) the Council further decided that the Democratic People's Republic of Korea shall abandon its ballistic missile programme in a complete, verifiable and irreversible manner. However, on 5 April 2009, the Democratic People's Republic of Korea launched a multi-stage ballistic missile,⁴² which it claimed was an effort to place an experimental satellite into orbit. Subsequently, the Security Council by resolution 1874 (2009) demanded that the Democratic People's Republic of Korea not conduct any further launch using ballistic missile technology.

70. However, the Democratic People's Republic of Korea has completed or is about to complete the construction of a second launch site for long-range rockets close to Tongchangdong on its west coast.⁴³ The installations appear bigger and more sophisticated than its original site, located on the east coast, used for the 1998,

⁴¹ There have been reports that, since the adoption of those resolutions, both the context of and approaches to the Six-Party Talks have changed.

⁴² Derived from the Taepodong-2 and officially identified by the Democratic People's Republic of Korea as Unha-2.

⁴³ See annex A.4 for specific location and progress of the construction.

2006 and 2009 Taepodong missile launches. Although signs of construction were visible in the early 2000s, the development of that facility accelerated only recently. Owing to its possible contribution to the Democratic People's Republic of Korea's ballistic missile programme, the Panel considers that this facility could constitute a violation of relevant Security Council resolutions. Further, any rocket launch from this or any other facility, independently from its stated purpose, would also constitute a violation of Security Council resolutions.

71. The Democratic People's Republic of Korea embarked on the development of ballistic missiles based on Scud technology in the 1970s. In the mid-1980s, it domestically produced and deployed 300-km-range Scud-Bs and 500-km-range Scud-Cs. In the 1990s, the Democratic People's Republic of Korea succeeded in test-firing a 1,300-km-range Nodong missile. By the end of the 1990s, it began developing new intermediate and long-range missiles. During the military parade celebrating the sixty-fifth anniversary of the Korean Workers' Party on 10 October 2010, it publicly displayed its new Musudan intermediate-range missile. It is generally estimated that the Democratic People's Republic of Korea has deployed 600 Scuds and 300 Nodong missiles. The number of operational or deployed Musudan is not known.

72. The indigenous infrastructure of the Democratic People's Republic of Korea has been supplemented by imports of specialized material and components. In an effort to get hard currency and advance its own programmes, the country has been actively engaged in the export of complete systems, components and technology to numerous customers in the Middle East and South Asia. During a country visit, the Panel received briefings from government officials indicating that the Democratic People's Republic of Korea had been continuing its proscribed ballistic-related cooperation with several countries. According to the briefings, it employs various techniques, including exchange of visits by scientists and technicians, exchange of data, reciprocal participation in tests and analysis of results. Those indications were echoed by observations made during the military parade of 10 October 2010. Alongside the Musudan, the Democratic People's Republic of Korea displayed a new warhead for its Nodong missile, which presented a strong design similarity with the Iranian Shahab-3 triconic warhead.

73. The capacity of the Democratic People's Republic of Korea to develop nuclear weapons small enough to be fitted in its missiles, whose range is increasing, is a subject of uncertainty and concern. Many experts believe that the country has engaged in the development of an intercontinental ballistic missile (> 5,500 km). In doing so the Democratic People's Republic of Korea would certainly have to overcome technological hurdles related to the development of a sophisticated guidance system, warheads able to support extra-atmospheric re-entry and more advanced propulsion systems.

C. Other existing weapons of mass destruction programmes

74. The Democratic People's Republic of Korea has neither signed nor acceded to the Chemical Weapons Convention.⁴⁴ However, it is a party to the Geneva Protocol of 1925⁴⁵ and to the Biological and Toxin Weapons Convention.⁴⁶ Despite its denials, it is suspected to possess a large stockpile of chemical weapons, and of maintaining a biological weapons programme to independently cultivate and produce agents such as the bacteria of anthrax, smallpox and cholera since the 1980s.⁴⁷

75. Unclassified estimates of its chemical arsenal are imprecise, but it is broadly believed that the Democratic People's Republic of Korea possesses 2,500 to 5,000 tons of chemical weapons, including mustard, phosgene, blood agents, sarin, tabun and other persistent nerve agents. Those weapons could be delivered using long-range artillery, rockets, ballistic missiles or aircraft bombs. It is estimated that at least eight production facilities are involved, including the Chungsu Chemical Plant and the Eunduk Chemical Plant.

76. According to information provided to the Panel by a Member State, the Second Economic Committee of the National Defence Commission, through its Fifth Machine Industry Bureau, and the Second Academy of Natural Sciences are believed to play leading roles in activities related to the production, import and export of the Democratic People's Republic of Korea's chemical and biological weapons programmes. Green Pine Associated Company, which replaced KOMID after its designation by the Committee in April 2009, is deeply engaged in the illicit procurement of chemical material and other specialty items abroad.⁴⁸

77. Before the adoption of resolution 1718 (2006), several acquisitions by the Democratic People's Republic of Korea of material and equipment with chemical or biological weapons applications had been widely documented. However, no official allegations have been presented to the Committee concerning the provision of proscribed chemical or biological items to or from the Democratic People's Republic of Korea since the adoption of resolution 1874 (2009). Nevertheless, the Panel notes that in October 2009 the Government of the Republic of Korea informed the Committee that it had seized four containers of working protection garments that were deemed to have military utility for chemical protection. Reportedly, the shipment was en route from the Democratic People's Republic of Korea to the Syrian Arab Republic.⁴⁹

⁴⁴ Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, which entered into force on 29 April 1997.

⁴⁵ Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, which entered into force on 8 February 1928. The Democratic People's Republic of Korea acceded on 4 January 1989.

⁴⁶ Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, which entered into force on 26 March 1975. The Democratic People's Republic of Korea acceded on 13 March 1987.

⁴⁷ See for example the "Defense White Paper" published in 2010 by the Ministry of National Defense of the Republic of Korea.

⁴⁸ The Second Economic Committee of the National Defence Commission, the Second Academy of Natural Sciences and Green Pine Associated Company were designated autonomously by the United States on 30 August 2010 and the European Union on 22 December 2010.

⁴⁹ The Government of the Syrian Arab Republic disavowed the shipment.

VII. Export and import-related measures

78. Trade-related measures adopted by the Security Council in resolutions 1718 (2006) and 1874 (2009) are aimed at convincing the Democratic People's Republic of Korea to comply with its international obligations, as well as inhibiting its ability to acquire equipment, material, technology and financial and other resources which could contribute to its nuclear, other weapons of mass destruction and ballistic missile programmes. These measures include:

- A ban on the provision to or the procurement from the Democratic People's Republic of Korea of all items, materials, equipment, goods and technology as specified in the resolutions, by the Security Council or the Committee, which could contribute to the nuclear-related, other weapons of mass destruction-related, or ballistic missile-related programmes of the Democratic People's Republic of Korea.
- A ban on the provision to or the procurement from the Democratic People's Republic of Korea of all arms and related materiel (with the exception, subject to notification requirements, of the provision to the Democratic People's Republic of Korea of small arms and light weapons and their related materiel).
- A ban on the transfer to and from the Democratic People's Republic of Korea of technical training, advice, services or assistance related to the provision, manufacture, maintenance or use of all the items cited above (except for small arms and light weapons provided to the Democratic People's Republic of Korea).
- A ban on the provision of luxury goods to the Democratic People's Republic of Korea.

A. Nuclear, other weapons of mass destruction and ballistic missile-related exports and imports

79. In June 2010, the Committee was informed of a first case of attempted violation. A Member State reported that the Democratic People's Republic of Korea attempted to acquire items, technology and know-how which could have contributed to its nuclear-related programmes. The report stated that the Democratic People's Republic of Korea Chamber of Commerce proposed a joint venture project to a private company that encompassed several areas of cooperation related to the extraction of graphite and production of graphite-related products. The proposed areas of cooperation encompassed the development of a graphite mine, the construction of a magnesia-graphite brick factory, the construction of a graphite electrode factory, the provision of a complete set of equipment for processing expandable graphite and impalpable graphite powder, and the provision of a complete set of ultrapure graphite concentrate processing equipment. According to a senior representative of the company whom the Panel met, the management of the company considered that ultrapure graphite concentrate could have a utility in Democratic People's Republic of Korea nuclear programmes⁵⁰ and decided, on its

⁵⁰ The supply of nuclear grade graphite to or from the Democratic People's Republic of Korea has been prohibited because of its applications in the functioning of a nuclear reactor (see INFICIRC/254/Rev.9/Part1, annex B, section 2).

own initiative, not to pursue cooperation of any kind with the Democratic People's Republic of Korea in relation to that proposal.⁵¹

80. This is an instructive example of the Democratic People's Republic of Korea's approach to evading sanctions. The country sought to acquire processing equipment to produce ultrapure graphite concentrate with a stated minimum purity level slightly lower than that banned by the Security Council through INFCIRC/254/Rev.9/Part 1. The export might therefore have been legally defensible, even though the company considered that it could be used in nuclear programmes. (Although graphite can be used in industrial applications ranging from furnaces and electrodes to pencils, none of these requires graphite of this purity.) The Panel considers that this case shows again the desirability of a "catch-all" approach to sanctions implementation that would prevent the Democratic People's Republic of Korea from exploiting of such legal niceties.

81. It was also publicly reported that, in mid-2010, the Democratic People's Republic of Korea illegally imported two proscribed computer-controlled machine tools. According to the information available,⁵² the machine tools were acquired from a trading company based in a neighbouring country, through a firm managed by a Democratic People's Republic of Korea national linked to the military. The Panel has not been in a position to confirm this information from relevant authorities.

82. During the reporting period, other probable incidents of prohibited exports by the Democratic People's Republic of Korea came to the attention of the Panel. It was publicly reported in September 2010 that the Greek authorities, acting in accordance with paragraphs 11 and 14 of resolution 1874 (2009), had intercepted and seized a shipment suspected to contain items prohibited by the Security Council. This shipment was reportedly en route from the Democratic People's Republic of Korea to the Syrian Arab Republic. The Greek authorities confirmed to the Panel the inspection and seizure and indicated that they would be reported to the Committee as soon as the analysis and investigations had been concluded.

83. Recently, the Panel also learned of a potential incident of non-compliance which occurred at some time between the adoption of resolution 1718 (2006) and the adoption of resolution 1874 (2009). According to the information available to the Panel, two States inspected and seized a shipment containing propellant for use in Scud-type missiles, en route from the Democratic People's Republic of Korea to a Middle Eastern country.

84. During the reporting period, the Panel obtained other information from various sources which indicates past and ongoing involvement of the Democratic People's Republic of Korea in the nuclear and/or ballistic missile-related programmes of certain countries in violation of resolutions 1718 (2006) and 1874 (2009).

⁵¹ The Panel notes that graphite and graphite components or products could also have applications in other weapons of mass destruction and ballistic missile programmes. The Committee prohibited the supply to or from the Democratic People's Republic of Korea of dual-use chemical equipment made of graphite (see S/2006/853 and Corr.1), as well as other graphite-related products, owing to their potential applications in the production of structural materials and composites for ballistic missiles (see S/2009/205 and S/2009/364).

⁵² See "Official confirms raiding firm over N Korea sales", *Taipei Times*, 8 September 2010.

85. The Panel received information and briefings on the Dair Alzour site in the Syrian Arab Republic. According to the briefings, this installation, destroyed by Israel in September 2007, had been a nuclear reactor and it had been built with the assistance of the Democratic People's Republic of Korea. In this regard, the Panel notes that the Syrian Arab Republic has consistently maintained since May 2008 that the destroyed building was a non-nuclear military installation and that the Syrian Arab Republic had no nuclear-related cooperation with the Democratic People's Republic of Korea. However, the Panel notes also the concerns and other elements presented in the latest IAEA report in that regard.⁵³

86. The Panel held discussions with experts on the possible involvement of the Democratic People's Republic of Korea in Myanmar's alleged nuclear-related activities. It was explained that, although there was no compelling evidence that Myanmar was building secret nuclear reactors or fuel cycle facilities, and although its Government denied the allegations as "merely groundless", extreme caution was required to prevent cooperation with the Democratic People's Republic of Korea from leading to proliferation, including in the ballistic-missile field, especially taking into consideration the strengthening of the military cooperation between the two countries.

87. In this regard, the Panel notes the results of an investigation conducted by a Member State on illicit shipment and attempted shipment to Myanmar between September 2008 and January 2009 of a magnetometer and a cylindrical grinder. Those items may have nuclear and ballistic missile-related applications⁵⁴ and were reportedly shipped upon instruction of an entity controlled by the Second Economic Committee.⁵⁵ While acknowledging the possibility that Myanmar was the end user of this dual-use equipment, several experts also raised the possibility that it was serving as a trans-shipment point for delivery to the Democratic People's Republic of Korea.⁵⁶

⁵³ It is stated in the report that "[w]hile Syria has indicated that its efforts to procure pumping equipment and large quantities of graphite and barite were civilian and non-nuclear in nature, the Agency has assessed that these items could also support the construction of a nuclear reactor". Further, IAEA states that "the involvement of the Syrian Atomic Energy Commission (AECS) in some of the procurement and the inconsistency between end use information provided by the AECS and other information available to the Agency raise further questions regarding Syria's declarations of the civilian and non-nuclear nature of this procurement". Finally, IAEA indicates also that "Syria has not cooperated with the Agency since June 2008 in connection with the unresolved issues related to the Dair Alzour site" and that "[i]t is critical (...) that Syria actively cooperate with the Agency on these unresolved safeguards implementation issues without further delay". (Report to the Board of Governors on the implementation of the Safeguards Agreement in the Syrian Arab Republic (GOV/2011/8, 25 February 2011)).

⁵⁴ These items were not on the Member State's domestic control list, but were subject to licence requirement under a "catch-all" clause.

⁵⁵ The Second Economic Committee of the National Defence Commission plays in the Democratic People's Republic of Korea the largest and most prominent role in nuclear, other weapons of mass destruction and missile-related developments, as well as in arranging and conducting arms-related exports. It was designated autonomously by the United States on 30 August 2010 and by the European Union on 22 December 2010.

⁵⁶ See, for example, Stephanie Lieggi, Robert Shaw and Masako Toki, "Taking control: Stopping North Korean WMD-related procurement", *Bulletin of the Atomic Scientists*, vol. 66, No. 5 (2010).

88. Finally, during a country visit, the Panel was briefed by Government officials of a Member State in the Middle East region, who asserted that the Democratic People's Republic of Korea had been continuing its proscribed cooperation in ballistic missile-related development with several countries in the region. According to the briefings, the Democratic People's Republic of Korea employs various techniques in this regard, including exchange of visits by scientists and technicians, exchange of data and reciprocal participation in tests and analysis of results. These indications are consistent with other information collected by the Panel as well as observations made during the military parade of 10 October 2010. As noted, the Democratic People's Republic of Korea displayed a new warhead for its Nodong missile, which presented a strong design similarity with the Iranian Shahab-3 triconic warhead.⁵⁷

B. Arms exports and imports

89. While calling upon all States to exercise vigilance over the supply, sale or transfer to the Democratic People's Republic of Korea of small arms and light weapons, the Security Council in paragraph 10 of resolution 1874 (2009), prescribes that States shall notify the Committee at least five days prior to selling, supplying or transferring small arms or light weapons to that country. To date, there has been no report from any State to the Committee on the supply, sale or transfer to the Democratic People's Republic of Korea of any small arms and light weapons and their related materiel.

90. Four incidents relating to non-compliance involving exports of arms and related materiel have already been reported to the Committee since the adoption of resolution 1874 (2009). These incidents have been documented to the extent possible with the partial information discovered and received by the Panel, and presented in its final report pursuant to resolution 1874 (2009).⁵⁸

91. The incidents reported to the Committee and the information collected by the Panel of Experts through its investigations and research confirm that the Democratic People's Republic of Korea has been — and remains — actively engaged in illicit trade in arms and related materiel in violation of resolutions 1718 (2006) and 1874 (2009). Although the precise income earned by the Democratic People's Republic of Korea by illicit arms sales is subject to debate, there is no question that the leadership uses it as one of the country's principal sources for obtaining foreign currency.⁵⁹

92. Through its ongoing investigative work, the Panel has gathered additional elements indicating that several of the reported interdicted shipments were, in fact,

⁵⁷ Cooperation between the Islamic Republic of Iran and the Democratic People's Republic of Korea on ballistic missiles after the adoption of resolution 1695 (2006) would be a violation of resolutions 1695 (2006), 1718 (2006) and 1874 (2009).

⁵⁸ See in particular S/2010/571, paras. 61-64 and annex B.

⁵⁹ Reported transactions on the United Nations Commodity Trade Statistics Database (COMTRADE) involving arms exports by the Democratic People's Republic of Korea from 2000 to 2009 amount only to some US\$ 22.9 million. Most experts consider this dramatically underreported. See, for example, "N. Korea Diversifies Export Markets for Weapons", *Dong-A Ilbo*, 17 December 2009; "N. Korea 'Earning \$2 Billion a Year in Arms Deals with Iran'", *Chosun Ilbo*, 16 July 2009.

parts of larger operations.⁶⁰ In its investigation of the shipment interdicted by the Government of South Africa in the port of Durban on 20 October 2009,⁶¹ the Panel learned that several prior shipments from the Democratic People's Republic of Korea containing arms-related material had gone undetected. Those shipments were part of a broad operation conducted by a Democratic People's Republic of Korea company and aimed at the reconditioning of more than 100 pieces of artillery materiel and armoured vehicles in the Republic of the Congo.

93. In a separate incident reported by Thailand of arms and related material seized on 11 December 2009 at Don Mueang Airport, the markings of the crates suggest that the 35 tons of arms were probably part of multiple shipments. There were also multiple disparities in number among rockets, rocket launchers and warhead fuses, as well as disparities between TBG rocket-propelled grenade munitions and head/tail fuses. Similar markings and disparities in numbers were observed in another incident reported by the United Arab Emirates in August 2009. This suggests that these single shipments were part of a larger deliveries scheme. In this regard, information has recently come to light suggesting that Union Top Management, the shell company registered in Hong Kong which chartered the aircraft impounded by Thai authorities, planned five different flights, the impounded flight being the first one.⁶² The Panel is currently trying to ascertain the veracity and meaning of this information.

94. In addition, the Panel collected varied and partial information about other incidents which may be incidents of non-compliance. The Panel notes that considered together these cases confirm that the Democratic People's Republic of Korea had been and remains actively engaged in the marketing of arms and related materiel. For example, the Panel recently learned that weapons which would have been delivered to Burundi in October 2009 by a Ukrainian company, possibly using the same aircraft that was impounded two months later in Thailand, originated from the Democratic People's Republic of Korea. The Panel is also currently trying to ascertain the veracity of this information.

95. During the reporting period, the Panel of Experts made several country visits to investigate the incidents of non-compliance reported to the Committee and to inspect physically the illicit cargo seized. The Panel also requested additional and/or complementary information from several Member States. Because some of these requests have yet to be answered, and owing to particular time constraints during the reporting period, the Panel has so far been able to provide only one specific incident report to the Committee in relation with the working protection garments that were deemed to have military utility for chemical protection and interdicted by the Government of the Republic of Korea in September 2009.

⁶⁰ See annex B to the present report for further details. Annex B is a separate, confidential annex containing supplementary information which is available to the members of the Security Council.

⁶¹ This cargo was trans-shipped through another Member State which has yet to submit a national implementation report.

⁶² Peter Danssaert, Sergio Finardi and Brian Johnson-Thomas, *Mapping the Labyrinth: more on the strange weapons flight of 4L-AWA*, joint report published by International Peace Information Service (IPIS) UZW (Antwerp) and TransArms-Research Center for the Logistics of Arms Transfers (Chicago), October 2010.

96. These illicit transfers of arms and related material by the Democratic People's Republic of Korea could have endangered the civilian aircraft or the shipping vessels. In the case reported to the Committee by the United Arab Emirates, the cargo consisted of ten 20-foot containers packed with a total of 90 tons of explosive ammunition consisting of 11,000 TBG-7 munitions, 120,000 head/tail TBG-7 fuses and approximately 10,000 warhead fuses for 122-mm rockets. Owing to the lack of specific markings, national authorities and cargo handlers at transit or trans-shipment points were not able to take necessary precautionary measures in handling those arms and munitions, including fuses and warheads which are highly sensitive to temperature and impact.⁶³

C. Ban on luxury goods

97. In its 2010 final report the Panel documented six illicit purchases or attempts to purchase luxury goods by the Democratic People's Republic of Korea. Those purchases or attempts included, among other things, luxury vehicles or other transport equipment (2 yachts, 12 Mercedes Benz vehicles), electronic items (high-end electrical/electronic apparatus for recording and reproducing sound and images), musical instruments (37 pianos) and cosmetics.⁶⁴ Most of these luxury goods reached or would have reached the Democratic People's Republic of Korea after transiting through a neighbouring trans-shipment hub.

98. Japanese authorities informed the Panel that they had uncovered during the reporting period additional illicit export of luxury goods. On three occasions, in November 2008 and in February and May 2009, Japanese trading companies had exported luxury goods, namely, pianos and cosmetics, to the Democratic People's Republic of Korea through the same neighbouring trans-shipment hub. As for the previous cases reported and documented by the Panel, legal proceedings have been undertaken against the persons involved.⁶⁵

99. Italy also recently published details about attempts by the Democratic People's Republic of Korea to purchase luxury goods which were successfully interdicted by Customs. In May 2009, a shipment of electronic items, including a projector, some amplifiers and other electronic equipment suitable for a cinema hall seating 1,000 people, of a total value of some €130,000, was blocked at Fiumicino Airport (Rome). In August 2009, 150 bottles of cognac and 270 bottles of whisky with a total value of some €12,000 were confiscated in the Port of Ancona. Finally, in December 2010, a shipment of high-quality tap-dancing shoes was blocked at Orio al Serio Airport (Milan). In these cases, interdictions of the shipments followed inspections prompted by risk criteria generated by the Customs information system.

100. In addition, the Panel collected varied and partial information about other possible incidents of non-compliance involving luxury goods, namely, cars, watches, spirits or food. The Panel also learned that the Democratic People's Republic of Korea circumvented the luxury items ban by exploiting the loopholes in

⁶³ The documents seized in one case together with the cargo indicated that head and tail fuses for TBG-7s should be stored at temperatures between -30° and +50° Celsius. They also indicated that the warhead fuses for 122-mm rockets should be handled carefully and stored separately from explosive materials.

⁶⁴ See S/2010/571, paras. 67-69 and annex B.

⁶⁵ See annex B to the present report.

its application and turning to new suppliers. The Panel is currently trying to ascertain the veracity and meaning of this information. In this investigation the Panel is heavily dependent on the timely and substantive response of Member States.

101. This information and the cases documented above confirm that the Democratic People's Republic of Korea remains actively engaged in the illicit procurement of luxury goods. Some of these luxury goods, such as the acquisition of the two luxury yachts, were facilitated by Office 39 of the Korean Workers' Party and obviously destined for use by senior regime figures.⁶⁶

102. Since the adoption of resolution 1718 (2006), a number of questions have been raised by Member States seeking to clarify precisely which items are to be considered covered by the luxury goods ban. After long-term discussion over this matter, the Chair of the Committee, on behalf of the Committee, sent on 16 April 2007 a letter to the Member States indicating that "any definition of luxury goods as may be necessary for Member States to implement this provision of the resolution would be the national responsibility of individual Member States". He also reaffirmed in the letter that the measure on luxury goods should be implemented in a manner consistent with the objectives of the resolution and that it was not intended that this prohibition would restrict the supply of ordinary goods to the wider population of the country or have a negative humanitarian impact on the Democratic People's Republic of Korea. The letter also referred Member States to national reports submitted pursuant to paragraph 11 of resolution 1718 (2006) as indications of the way this provision was being implemented by Member States.

103. The Panel's review of national implementation reports by Member States reveals three problems that consistently undercut the effectiveness of the luxury goods ban. First, a considerable number of Member States omit any mention of luxury goods in their report. Secondly, many Member States have yet to introduce national control measures over such exports to the Democratic People's Republic of Korea. Thirdly, national definitions of luxury goods differ from country to country⁶⁷ and the measures of national export controls have been implemented in an uneven manner. These potential gaps and inconsistencies, especially in definition and the application of the ban, are aggravated by the fact that most Member States do not exercise any control over the re-export and diversion of luxury goods through third countries.

104. To close these gaps and to resolve these inconsistencies, the Panel recommended in its report submitted to the Security Council in May 2010 a series of principles to be taken into account by Member States in the application of the measures on luxury items. The Panel also proposed that Member States should be encouraged to include in their national implementation reports an indication of the goods considered by them to fall within the category of luxury goods, as well as to engage in consultations, as necessary, with any Member State prohibiting a certain type of luxury goods prior to authorizing the export of essentially identical items to

⁶⁶ Office 39 is responsible for earning foreign currency for the senior leadership of the Korean Workers' Party through illicit activities such as narcotics trafficking. It was autonomously designated by the United States on 30 August 2010.

⁶⁷ See the illustrative list of items designated by the Member States as luxury goods as at 30 April 2011 in annex A.5.

the Democratic People's Republic of Korea.⁶⁸ Subsequently, the Panel submitted for the consideration of the Committee a discussion paper (21 May 2010) and a draft implementation assistance notice (3 December 2010) on the application of the measures on luxury goods. The Panel reaffirms its recommendation that the Committee adopt an implementation assistance notice on the application of the measures on luxury goods.

VIII. Interdiction

105. The Security Council in resolution 1874 (2009) significantly strengthened the tools available to interdict the shipment of proscribed items. It called upon all States to inspect all cargo to and from the Democratic People's Republic of Korea in their territory, including seaports and airports, and on the high seas, with the consent of the flag State, if there are "reasonable grounds" to believe that cargo may contain proscribed items. If the flag State denies that permission, it must direct the vessel to proceed to a port for inspection. Instances where the flag State does not cooperate should be reported to the Committee. Finally, it is specified in resolution 1874 (2009) that Democratic People's Republic of Korea vessels shall be denied bunkering or other services if there are "reasonable grounds" to believe that they are carrying proscribed cargo until it has been inspected, or unless such services are necessary for humanitarian purposes.

A. Trade and transportation infrastructure

106. As previously indicated by the Panel, the Democratic People's Republic of Korea relies on a limited number of shipping means and routes to handle its exports and imports, whether licit or illicit. These include a small number of maritime ports, international air connections, as well as rail and road connections to China and the Russian Federation.⁶⁹

107. Owing to limited land transportation options, the Democratic People's Republic of Korea relies mainly on sea shipping means and routes and to a lesser extent on air shipping. Foreign maritime trade is channelled through eight ports of the Democratic People's Republic of Korea and through the port of Dalian, which serves as an important neighbouring trans-shipment hub. Nampo, located on the west coast, is the largest general port in the country. As indicated in its previous final report, the Panel undertook to examine in more detail sea and air shipping means of the Democratic People's Republic of Korea, as well as the vulnerabilities within the international maritime and air transport system which the country has been able to exploit.

⁶⁸ See S/2010/571, paras. 74 and 75.

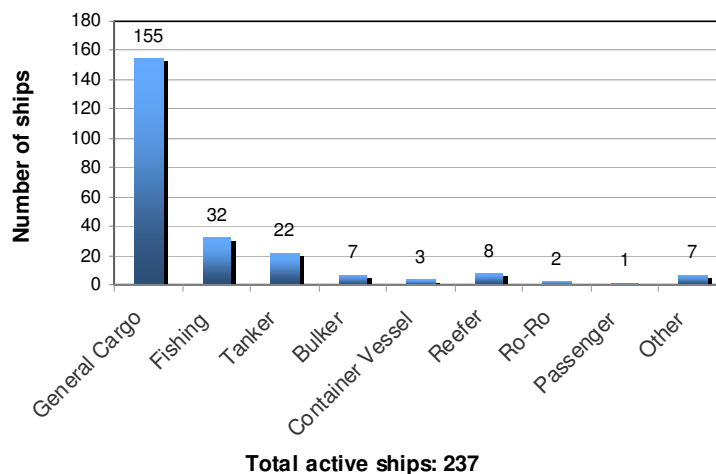
⁶⁹ There are three railway lines connecting the Democratic People's Republic of Korea to China and one to the Russian Federation. There are 11 roads linking the Democratic People's Republic of Korea and China but owing to mountainous and poor road conditions in the Democratic People's Republic of Korea, relatively little cargo is moved along these routes. Road traffic plays a limited role, with road carriage of cargo for export usually accounting for short distances to ports or rail links. The Democratic People's Republic of Korea also has rail links with the Republic of Korea, but little cargo is now moving in this direction. See map in annex A.7 for further details.

Maritime transport infrastructure

108. Over the reporting period, the Panel engaged Lloyd's List Intelligence (LLI), one of the world's largest providers of global maritime data, to develop the Panel's knowledge and analysis of Democratic People's Republic of Korea international sea shipping means and patterns. The Panel concentrated its efforts on merchant vessels involved in international seaborne trade which are owned by and/or sail under the flag of the Democratic People's Republic of Korea.⁷⁰

109. Information provided by LLI indicates that the majority of ships owned by Democratic People's Republic of Korea entities also sail under its flag. Only a limited number of Democratic People's Republic of Korea-owned ships sail under a different flag.⁷¹ At the end of 2010, according to LLI information, the effective number of operating ships of the Democratic People's Republic of Korea stood at 237, comprising 155 cargo vessels (with or without container capacity), 22 tankers, 7 bulk carriers, 3 container vessels, 8 reefers, 2 Ro-Ro, 1 passenger and 7 other.⁷² Historical analysis shows that this fleet grew regularly from 160 vessels in 2000 and reached a number close to its actual level in the mid-2000s.

Figure II
Major categories of active ships in the civilian fleet of the Democratic People's Republic of Korea



110. The ships owned by the Democratic People's Republic of Korea are 30 years old on average and generally poorly maintained. It is not uncommon for vessels that undertake long voyages to require repairs en route. Inspections of Democratic People's Republic of Korea-owned vessels result regularly in the discoveries of numerous deficiencies which lead to detention in port.⁷² This may explain why at

⁷⁰ Lloyd's List Intelligence monitors self-propelled sea-going merchant vessels over 100 gross tons.

⁷¹ The number of Democratic People's Republic of Korea-owned ships sailing under foreign flags remained stable over the last five years (20 to 25). They sail mainly under the flags of China, the Comoros, Mongolia, Panama, the Republic of Korea or Sierra Leone.

⁷² See for example the annual reports on the Port State Control activities of the members of the Indian Ocean Memorandum of Understanding on Port State Control; available from www.iomou.org.

any given time only about a half to two thirds of the cargo vessels owned by the Democratic People's Republic of Korea are observed in operation. However, the possibility also exists that they are engaged in sea shipping activities not easily traceable.

111. These ships are owned or operated by more than 100 different Democratic People's Republic of Korea companies. Presumably most — if not all — of the companies listed as owners or operators are either owned, controlled by or closely affiliated with the Democratic People's Republic of Korea regime. Accordingly, the Panel is trying to ascertain their role in illicit deliveries and the extent to which any of these companies are linked to entities designated by the Committee or by entities or persons acting on their behalf or at their direction.

112. It is not uncommon for the Democratic People's Republic of Korea to rename vessels following cases of interdiction. The *Kuwolsan* which was found by Indian authorities in 1999 to be transporting ballistic missile-related items to the Libyan Arab Jamahiriya was subsequently renamed. Similarly, the *So San*, which was intercepted in 2002 by the Spanish navy with Scud missiles hidden beneath bags of cement and bound for Yemen, was later renamed *Chang Dok*. However, the limited recourse to foreign flags would suggest that the Democratic People's Republic of Korea relies less on its owned vessels for illicit shipments and/or that the flag of the Democratic People's Republic of Korea is seen as offering the best available protection against boarding on the high seas.

113. Information provided by LLI also indicates that a number of foreign companies, most of whom are based in the Syrian Arab Republic, use the flag of the Democratic People's Republic of Korea as a flag of convenience. The numbers of foreign ships using that flag has evolved considerably over the past 10 years. Starting from 43 vessels in 2000, it reached a peak of 309 in 2006, before decreasing constantly since 2007 to 116 vessels. The port call information available indicates that they operate in their greatest majority in the Mediterranean, Red and Black Seas, as well as in the Persian Gulf. The sudden decrease since 2007 indicates that the flag of the Democratic People's Republic of Korea was used mainly by companies preferring to avoid the scrutiny attached to it since the adoption of resolution 1718 (2006). This suggests that foreign ships that use or have used the Democratic People's Republic of Korea flag are likely to be involved in smuggling but are not of concern for the transport of proscribed items to or from that country.

Air transport infrastructure

114. The only commercial airline based in the Democratic People's Republic of Korea is Air Koryo, the State-owned national air carrier. Air Koryo and all airports or airfields within the Democratic People's Republic of Korea are controlled by the Korean People's Air Force through its Civil Aviation Bureau. Reportedly, all personnel are members of the Air Force and all in-country maintenance is conducted by Air Force engineering staff. All civilian aircraft registered in the Democratic People's Republic of Korea are operated by Air Koryo and were purchased from the Soviet Union and later from the Russian Federation. In the 1970s and 1980s, TU-134 and TU-154 jets were added to a small fleet of propeller-driven AN-24s and old IL-18s. More recently, four long-range IL-62, three IL-76 large cargo aircraft and two long-range TU-204 were acquired. According to information from ICAO, Air Koryo currently possesses 23 aircraft, of which 20 are passenger aircrafts and

three are cargo carriers.⁷³ However, it is probable that a limited number of these aircraft are currently operational or in operation.

Table 1
Air Koryo aircraft fleet as at the end of April 2011

<i>Aircraft equipment model</i>	<i>Number</i>	<i>Range</i>
Passenger aircraft		
AN-24	5	750-2,400 km
IL-18	4	4,300-6,500 km
IL-62	4	~ 10,000 km
TU-134	2	1,900-3,000 km
TU-154	3	2,500-3,900 km
TU-204	2	4,300-5,800 km
Cargo aircraft		
IL-76 MD	3	~ 3,650 km with maximum payload (~50 tons)
Total	23	

115. Air Koryo is based at Sunan International Airport, located 24 km north of Pyongyang. As at 30 April 2011, Air Koryo operates weekly scheduled flights from Sunan to Beijing, Shenyang, Vladivostok, Bangkok and Kuala Lumpur.⁷⁴ Recently Air Koryo had two TU-204 aircraft removed from the European blacklist. However, it has not recommenced regular scheduled flights to Europe.⁷⁵ Air China is the only foreign airline operating weekly scheduled flights from Beijing to Pyongyang.

116. Air Koryo also operates occasional non-scheduled or charter passenger flights, mainly to Central European countries, the Middle East, South-East Asia and Africa. In some instances, on the basis of concerns that such flights might be carrying Democratic People's Republic of Korea personnel involved in ongoing ballistic or other proscribed cooperation, overflight rights were denied.

117. In the absence of information on scheduled flights by the three IL-76 large cargo aircraft (tail numbers P-912, P-913 and P-914), it can only be assumed at this stage that they are used exclusively for chartered flight or not in operation. In addition to Air Koryo's involvement in sanctions evasion, the interdiction in December 2009 of an aircraft carrying 35 tons of arms demonstrated that the Democratic People's Republic of Korea relies also on chartered aircraft owned and operated by foreign airlines for proscribed exports and activities. Accordingly, enhanced vigilance is required to monitor and prevent illicit activities by Air Koryo and other foreign chartered aircraft to or from the Democratic People's Republic of Korea.

⁷³ Other sources, such as AeroTransport Data Bank, indicate an equivalent number of owned aircraft, but with slightly different distribution between the different categories (AN-24 and TU-154).

⁷⁴ Previous scheduled services to Dalian, Moscow, Khabarovsk, Macau, Shenzhen and other destinations have been terminated.

⁷⁵ Owing to safety requirements, all operations of Air Koryo had been subjected to a ban within the European Union in March 2006. Under the new Commission Regulation No. 791/2010 of 6 September 2010, all of the Air Koryo fleet remains subject to a ban, except the two recently purchased modern TU-204 (tail numbers P-632 and P-633).

118. The Panel has not yet been able to gather reliable statistics on the number of passenger or cargo chartered flights to or from the Democratic People's Republic of Korea operated by Air Koryo or any other foreign companies. The Panel intends to further explore that issue in collaboration with authorities controlling air traffic in the flight information regions neighbouring the Democratic People's Republic of Korea.⁷⁶

B. Patterns of sanctions evasion

119. In analysing incidents of non-compliance reported to the Committee, the Panel made complementary findings of the techniques used by the Democratic People's Republic of Korea to circumvent sanctions measures imposed by resolutions 1718 (2006) and 1874 (2009). Some of them confirm the extensive and systematic uses of previously reported techniques, others show adaptation and new sophistication on the part of the Democratic People's Republic of Korea in sanctions evasion.

General patterns

120. In these incidents, the cargo was falsely described in the bill of lading as either "oil-boring equipment", "oil industry spare parts", "mechanical parts" or "spare parts for bulldozer". The extensive use of false labelling is further demonstrated by the recent discoveries in the Libyan Arab Jamahiriya of rockets packed in crates labelled as containing "bulldozer parts" or by other past cases.⁷⁷ The manifests and packing lists covering seized shipments were also falsified to reflect the false cargo description, while matching the correct number, weight and dimensions of the crates. Information on the original consignor and ultimate consignee were also obscured, altered or falsified. The true origin of the cargo was further blurred by subsequent changes of documentation as the containers passed through key trans-shipment hubs in North-East Asia.

121. During its physical inspections of impounded cargo, the Panel also established that in most cases concealment measures were taken to deceive cursory physical inspections of the goods by Customs or other officials. In one case, where the weapons were placed in standard maritime containers, the weapons crates were placed in larger, innocent-looking crates or hidden behind false walls. In another case, of transport by air, the most sensitive items, such as a rocket launcher and rocket tubes, were placed in metallic crates which were totally enclosed. Those crates, as well as the wooden crates containing other items, lacked any specific markings which could reveal the true nature of the goods enclosed.

122. The Democratic People's Republic of Korea uses various additional evasion methods to circumvent Security Council sanctions measures. These include dispatching engineers and technicians to transfer sensitive technology and know-how to illicit trading partners and the establishment of assembly lines abroad to produce conventional arms locally. This latter method also includes the transfer of "knock-down kits" which can be delivered to foreign assembly plants, for production completion by Democratic People's Republic of Korea technicians and specialists or local staff. The Panel already reported that such an operation,

⁷⁶ The Shanghai, Shenyang, Vladivostok, Fukuoka and Incheon flight information regions.

⁷⁷ The ballistic missile-related items carried by the *Kuwolsan* were declared as "water-refining equipment".

including the participation of technicians and specialists of the Democratic People's Republic of Korea, was used in the reconditioning of artillery materiel and armoured vehicles in the Republic of the Congo, as well as with regard to the ballistic missile cooperation of the Democratic People's Republic of Korea with the Islamic Republic of Iran and in the alleged nuclear reactor at Dair Alzour in the Syrian Arab Republic.

123. The Panel also found that a number of front and offshore companies had been involved. Those companies are used to carry out the procurement of proscribed items with the real operators hidden. Investigations related to the aircraft impounded in Thailand confirm that nine distinct entities, including several front companies, were involved. In other cases, they are used to give the impression to suppliers that they are engaged in a domestic transaction. Once the item has been procured it is transferred by the offshore entity to one or more middlemen overseas. These same front and offshore entities could also be used to handle financial transactions to support such procurement activities, as well as illicit sales activities. In many cases, the funds are deposited and held in overseas accounts in the name of the offshore entity. The entity then receives directions from the original financial controller to disperse the funds.

124. Through its investigation of recent nuclear programme developments in the Democratic People's Republic of Korea, the Panel also learned that the illicit re-exportation of prohibited goods has been occurring as purchasing companies in a number of countries sign end-use certificates, only to later send the unused items to the Democratic People's Republic of Korea, with no bill of sale recorded. There are also indications that illicit sensitive nuclear items can be bought over the counter and shipped to the Democratic People's Republic of Korea by various means, including diplomatic cargo.⁷⁸ The Panel of Experts also learned that the Democratic People's Republic of Korea has tried to evade sanctions by using foreign local suppliers of sensitive items. In most cases, these local suppliers are small and medium-sized companies which have insufficient knowledge and expertise about export control. In the long process of developing technologies related to uranium enrichment and the light water reactor, it seems very likely that the Democratic People's Republic of Korea has acquired advanced technology from both public and private laboratories and universities in the industrialized countries. In this age of the information communications technology revolution, it becomes more and more difficult to control the intangible transfer of technical data.

Patterns of sea shipment

125. Several incidents involving inspection and seizure of proscribed items in ports were reported to the Committee. In all these cases, the illicit cargo was found packed into standard-size maritime shipping containers carried by foreign-owned and -flagged ships. Further analysis indicated that, in all these cases, the consignor or the entities or persons acting on its behalf or direction took charge of the loading of the containers before clearing them through Customs in the Democratic People's Republic of Korea. The containers were presumably rented under Full Container Load contracts, as opposed to Less than Container Load contracts under which the items are loaded in containers with extraneous items by the carrier or the freight forwarder.

⁷⁸ David Albright and Paul Brannan, "Taking Stock: North Korea's Uranium Enrichment Program" (see footnote 29).

126. After Customs clearance, the containers were shipped to a neighbouring trans-shipment hub on board Democratic People's Republic of Korea-owned ships for onward transport on foreign-owned and -flagged vessels all the way to their final destination.⁷⁹ The multiple layers of intermediaries involved in onward operations (shipper, freight forwarder and/or Non-Vessel Operating Common Carrier), and the numerous changes in documentation further blurred the true origin of the cargo beyond the first trans-shipment point.

127. Since the adoption of resolution 1874 (2009), no cases of interdiction on the high seas have been reported to the Committee. This would indicate that the Democratic People's Republic of Korea relies only to a very limited extent on its own vessels to deliver illicit shipments to a recipient country. Indications gathered by the Panel suggest that this option is considered only when routes are short enough to avoid port calls in foreign countries during which the vessel could be subjected to inspection resulting in seizure of the illicit cargo.

128. So far, the information available on cases of direct delivery by Democratic People's Republic of Korea-owned ships does not suggest that there is a pool of merchant vessels owned by the Democratic People's Republic of Korea reserved for transporting prohibited cargo. On the contrary, they appear to be chosen on an ad hoc basis. As such, there is a large number of vessels owned by the Democratic People's Republic of Korea which could potentially be used to deliver prohibited cargo. Democratic People's Republic of Korea merchant vessels which were interdicted were rarely fully laden, and generally do not carry commercial cargo to the same destination or to a destination on the way so as to reduce as much as possible the number of port calls and risks of inspection. However, such vessels do engage in commercial activity on their way back to the Democratic People's Republic of Korea, once they have delivered their cargo, in order to generate hard currency.

Patterns of air shipment

129. For the air shipment of cargo whose illicit nature could resist the level of monitoring and scrutiny attached to passenger flights, such as certain dual-use items, the Democratic People's Republic of Korea is reported to use regular Air Koryo scheduled passenger flights. Considering the limited number of foreign international airports served by regular Air Koryo passenger flights, such cargo would in most cases pass through those airports and be trans-shipped on to other regular scheduled passenger flights all the way through to their final destination. Prohibited ballistic missile-related items are suspected to have been transferred between the Democratic People's Republic of Korea and the Islamic Republic of Iran on regular scheduled flights of Air Koryo and Iran Air, with trans-shipment through a neighbouring third country.

130. For the shipment of cargo, like arms and related materiel, whose illicit nature would become apparent on any cursory physical inspection, the Democratic People's Republic of Korea seems to prefer chartered cargo flights. Cargo aircraft fly generally from or to air cargo hubs which lack the kind of monitoring and security to which passenger terminals and flights are now subject. Air Koryo having only a very limited number of aircraft capable of operating intercontinental flights and those aircraft being subject to particular scrutiny, the Democratic People's

⁷⁹ See in particular S/2010/571, paras. 61-64 and annex B.

Republic of Korea relies also on foreign-owned chartered aircraft, such as the one impounded in Bangkok in December 2009.

131. In addition, to avoid the level of scrutiny which would be attached to chartered cargo aircraft operating ostensibly between the Democratic People's Republic of Korea and other countries of concern, the Democratic People's Republic of Korea seems to resort to well-known and documented diversion tactics such as point of departure diversion or post-delivery onward diversion.⁸⁰ In the first case, the aircraft divert, en route, to a destination other than that stated in the filed flight plan. In post-delivery onward diversion, the aircraft may either (a) play no role in the diversion process and simply deliver the shipment to the destination named in the transportation documentation, from where the shipment will be picked up and redelivered, or (b) follow the intended flight plan, land in the ostensible delivery State but then depart that State in order to transfer the shipment to a destination not stated in the transportation documentation. The inconsistencies regarding the final destination of the shipment impounded in Bangkok in December 2009 strongly suggest that the cargo would have been diverted to the Islamic Republic of Iran after delivery to its stated destination.

132. The Democratic People's Republic of Korea seems also to have resorted to chartered passenger flights to transport personnel known or suspected to be involved in ongoing illicit cooperation with other countries of concern lacking direct regular international air connections with Sunan International. Chartered passenger flights, like chartered cargo flights, are subject to less scrutiny than scheduled flights and thus are often used to transport individuals who prefer to avoid such scrutiny. The Panel notes that the aircraft whose overflight permission was revoked by the Indian authorities early in August 2008 was an Air Koryo IL-62 passenger aircraft operating a chartered round-trip flight between the Democratic People's Republic of Korea and the Islamic Republic of Iran.

C. Interdiction actions

133. Since the adoption of resolution 1874 (2009), several incidents involving inspection and seizure of proscribed items in ports or airports have been reported to the Committee. In addition, during the reporting period, other interdiction cases of proscribed exports by the Democratic People's Republic of Korea which have yet to be reported to the Committee came to the attention of the Panel. As the lack of timely and substantive reporting by Member States can hamper the work of the Committee and the investigations of the Panel, the Panel recommends to the Security Council to consider the adoption of a mechanism similar to the one specified in paragraph 17 of resolution 1929 (2010).⁸¹

⁸⁰ See, for example Hugh Griffiths and Mark Bromley, "Air transport and destabilizing commodity flows", SIPRI policy paper, 24 May 2009.

⁸¹ By paragraph 17 of resolution 1929 (2010), the Security Council requires any State, when it undertakes an inspection, to submit to the Committee established pursuant to resolution 1737 (2006) within five working days an initial written report containing, in particular, an explanation of the grounds for the inspection, the results of such inspection and whether or not cooperation was provided, and, if items prohibited for transfer are found, further requires such States to submit to the Committee, at a later stage, a subsequent written report containing relevant details on the inspection, seizure and disposal, and relevant details of the transfer, including a description of the items, their origin and intended destination, if this information is not in the initial report.

134. An analysis of the cases reported to the Committee continues to indicate that interdiction of proscribed shipments originating from the Democratic People's Republic of Korea once they have entered the flow of international commerce is heavily reliant on (a) intelligence, (b) information-sharing, (c) the cooperation of the ship or aircraft owner/operator and/or the flag State or State of registry and of shipping and/or forwarding companies and (d) inspection by relevant authorities in subsequent ports of call. In each of the cases reported to date, the countries undertaking the inspection of the cargoes were advised in advance of concerns that proscribed cargoes had been secreted on board using false labelling and documentation.

135. Moreover, the prevention of proscribed exports destined for the Democratic People's Republic of Korea remains heavily dependent on the establishment of regulatory export control regimes, and effective national monitoring and export and Customs controls. As demonstrated by the illicit attempted acquisition of graphite, this is most effective when principles of due diligence, "catch-all rule", and "know your customer" rules are applied and when local suppliers of sensitive dual-use items consult with export licensing authorities as early as possible with regard to non-repetitive export transactions that may raise "red flags" because of their novelty or circumstance.

136. The Panel of Experts followed up on its recommendations that procedures be adopted, in accordance with local norms, to exercise extra vigilance at the first overseas maritime port handling shipments originating from the Democratic People's Republic of Korea and to study what steps might be taken to ensure that onward trans-shipment ports are aware of the cargo's origin in the Democratic People's Republic of Korea. The Panel has been examining numerous instruments, existing or in development, such as the International Ship and Port Facility Security (ISPS) Code, the Container Security Initiative (CSI), the Safe Framework of Standards (SAFE) and the Approved Economic Actors programme of the World Customs Organization. Their primary purpose is counter-terrorism (use of ships as target or means of delivery) or illicit trafficking activities (drug, human or weapons traffic) by non-State actors. These instruments work on the assumption that effective Customs controls are applied at the point of origin and delivery. Accordingly, how to facilitate the capacity of these and other instruments to counter illicit shipments between the Democratic People's Republic of Korea and other countries of concern needs further exploration.

137. The Panel followed up also on its recommendations to develop monitoring and inspection methodologies for air cargo. During its study of the incident reported by Thailand, the Panel learned that only limited information on the aircraft cargo is provided to the transit airports and/or the relevant authorities of the countries whose airspace is used. These lacunae result in insufficient control on cargo transported by air and could be used by the Democratic People's Republic of Korea in its attempt to circumvent the Security Council measures. The Panel of Experts reiterates its recommendation that vigilance should be exercised to monitor and prevent illicit activities being conducted by Air Koryo and other foreign aircraft engaged on non-scheduled flights into and out of the Democratic People's Republic of Korea by countries over whose territory such aircraft may fly, stop or transit, and that cargo to and from the Democratic People's Republic of Korea be declared before overflight clearance is provided.

138. During the reporting period the Panel gathered information from international organizations, Member States, research institutions and at international conferences regarding their findings and experience of patterns of sanctions evasion by the Democratic People's Republic of Korea and actions taken to combat it. From those meetings, the Panel has noted a steady and somewhat significant strengthening of the resolve of a number of Member States, both in the East Asia region, and at major trans-shipment hubs, which has in turn led to an increase in their capacity for goods inspection and in regional and international cooperation with the highest standards of safety and control. This will provide the necessary infrastructure for a more robust system of sanctions implementation than has been available to date. The further strengthening of these measures, and especially by a greater number of Member States, would help to stifle the masking techniques and evasive practices that have been used by the Democratic People's Republic of Korea to subvert the sanctions regime.

IX. Financial measures

139. In paragraph 8 (d) of resolution 1718 (2006) the Security Council called upon all Member States to freeze the funds, other financial assets and economic resources of "persons or entities" designated by the Committee or the Council as being engaged in the nuclear-related, other existing weapons of mass destruction-related and ballistic missile-related programmes of the Democratic People's Republic of Korea. In paragraph 18 of resolution 1874 (2009) the Council called upon all Member States to prevent and freeze all financial transfers, assets or related monetary transactions by the Democratic People's Republic of Korea that might contribute to nuclear, other weapons of mass destruction or ballistic missile-related programmes. Further, in paragraph 19 of the resolution, the Council called upon Member States and relevant financial institutions not to enter into new commitments, and reduce current commitments, for grants, financial assistance or loans except for humanitarian and denuclearization purposes. Finally, in paragraph 20 of the resolution, the Council called upon Member States to refrain from engaging in financial servicing of trade that might be related to such proscribed programmes.

140. The Democratic People's Republic of Korea does not make publicly available statistical information concerning its trade, international financial dealings and banking accounts held outside its own boundaries. Thus, it is difficult to ascertain the contribution of trade — whether legal or illicit — to the country's financial flows or liquidity, or to assess how it finances trade that is permitted under resolutions 1718 (2006) and 1874 (2009). As previously indicated by the Panel of Experts, during the past 10 years the Democratic People's Republic of Korea has needed to raise anywhere from half a billion to a full one billion dollars per year to fund its merchandise trade deficit.⁸²

141. Beyond earning foreign currency via legitimate trade — which has declined significantly in the past year — there are only two essential methods whereby the Democratic People's Republic of Korea can accumulate much-needed hard currency. The first is to engage in profitable illicit trade, while the second is to secure an

⁸² See S/2010/571, para. 43.

influx of direct foreign assistance, loans or investment.⁸³ As regards the former, analysis of recent cases reveals that the country continues to develop adaptive and inventive practices to circumvent the financial measures imposed. As regards the latter, balance of payments assistance from China has been of particular importance to the Democratic People's Republic of Korea.

A. Illicit financial transactions

142. From information provided by Member States and research studies, the Panel has learned that the Democratic People's Republic of Korea maintains a wide network of trade offices which work in close conjunction with its diplomatic missions overseas. These offices are charged with both procurement and developing select trade opportunities of interest to the leadership of the Democratic People's Republic of Korea, including arranging and handling the country's illicit trade and covert acquisitions. Of special concern is the number of registered "business merchants" who hold diplomatic passports and work in banking centres in Asia which do not have or enforce strict banking rules. Some of the activities of these "merchants" have been aimed principally at identifying opportunistic markets for both licit and illicit exports. While much of the country's illicit or covert acquisition activities are handled by these offices, the Democratic People's Republic of Korea has also established links with overseas criminal networks to carry out these activities, including the transportation and distribution of illicit and smuggled cargo. These merchants — and the companies for which they work — appear connected to Office 39 and other suspicious Democratic People's Republic of Korea entities. This increases the likelihood that the illicit trade run through these entities also includes sensitive goods as well as arms and related materiel smuggling.

143. On the basis of its first-hand investigations of successful interdictions, the Panel has concluded that this extensive enterprise for earning foreign exchange, for instance through the export of arms, continues to exist and may be only partly constrained by the sanctions. This is particularly true in the area known as the "second economy" of the Democratic People's Republic of Korea, in which the military sector must be self-sustaining and raises an important part of its revenues from foreign trade. Similarly, interdictions of attempted importation of luxury goods reveal a network of Democratic People's Republic of Korea procurement agents with substantial financial resources. Sanctions have raised the cost of conducting illicit business to the Democratic People's Republic of Korea, but they have not halted that business.

144. In its previous reports, the Panel described various cases that demonstrated the creativity of the Democratic People's Republic of Korea in generating financial resources via illicit trade by creating a web of multiple-stop transactions, facilitated most often by resort to existing or newly created shell companies, falsified financial agents for some transactions, and at some point to the use of major banks to facilitate the appearance of legality. Here again, loose enforcement of banking regulations in certain places is exploited by the Democratic People's Republic of Korea.

⁸³ Because in resolution 1874 (2009) the Security Council called upon Member States not to enter into new commitments, and to reduce current commitments, for grants, financial assistance or concessional loans to the Democratic People's Republic of Korea, except for humanitarian and denuclearization purposes, within the second option only direct foreign investment remains.

145. Through its investigations of the shipment which was seized on landing at Bangkok Airport in December 2009, the Panel learned that (a) the financial transaction between Air West Ltd. (the lessor) and SP Trading Ltd. (the lessee)⁸⁴ was priced in United States dollars; (b) JP Morgan Chase Bank of New York was listed as the intermediary Bank for Air West Ltd; and (c) SP Trading Ltd. claimed at the time to hold a bank account with the Estonian branch of Sampo Bank, which is a wholly owned subsidiary of Danske Bank. In turn, Sampo Bank used its correspondent relationship with Deutsche Bank to clear the transaction. The Panel continues to investigate to what extent the financial transactions between the parties involved in the illicit transfer of cargo were executed, in whole or in part.⁸⁵ But because the leasing transaction was listed in United States dollars, the full force of the United States Office of Foreign Asset Control requirements applied to all parties engaged in the transaction, including the clearing banks in the United States and the banks located outside the United States.

146. Recent indications suggest also that, to further subvert detection in the international banking sector, the Democratic People's Republic of Korea engages increasingly in direct barter trade and also requests that payments be made in cash (usually in United States dollars or euros) the exact source of which is unknown. These transactions are believed to involve a small number of "executive managers" working under the overall direction of several designated entities such as KOMID,⁸⁶ which are well placed in several countries across different regions to receive the cash payments and arrange for their transfer. Funds from various transfers are accumulated and then transferred by courier in bulk amounts to previously indicated banks. Many of these funds are ultimately channelled into deposits held for the benefit of Tanchon Commercial Bank, which was designated by the Committee as an entity subject to the Security Council measures. A variety of cases illustrates this continuing pattern which is difficult to discern and which has been pieced together by Panel investigation.

147. The lack of transparency on the part of the Democratic People's Republic of Korea and its projected financial needs pose a major dilemma regarding one of its most lucrative export commodities — conventional arms and missiles and missile technology — which are prohibited as trading items by the sanctions. In reaction to recent interdictions, it would seem that the country has adapted its masking techniques and shipping methods. More problematic is the expansion of the number of Democratic People's Republic of Korea front companies involved in such transactions. The recognition of this trend and the absence of new designations by the Council and the Committee have led numerous Member States to designate autonomously an increasing number of entities and individuals.

148. The Panel has continued to follow developments that were reported to the Committee late in 2009 and in 2010 for which further details have emerged. In one case, a luxury goods transaction had been arranged by an Austrian businessman on behalf of a client in the Democratic People's Republic of Korea. The sale and export

⁸⁴ See S/2010/571, para. 64.

⁸⁵ According to the information uncovered by IPIS/TransArms, Union Top Management had arranged to pay the freight forwarder in cash, which should also have raised suspicions, with a down payment sufficient to cover the cost of chartering the IL-76 aircraft used to carry the shipment.

⁸⁶ KOMID was designated by the Committee on 24 April 2009 and is subject to the measures imposed by paragraph 8 (d) of resolution 1718 (2006).

of two luxury yachts destined for an ultimate buyer in the Democratic People's Republic of Korea were blocked. Investigations revealed that the transaction was channelled through an Austrian intermediary who made the original contact with the yacht builder for the purchase. The Austrian national initially received an amount of €3.3 million in multiple transfers (the smallest amount transferred being €50,000) from various companies located in different countries, over a period of approximately three months. Considering that the transfers were from multiple sources and that the initial payment was made more than two months prior to the signature of any contract, the bank filed a suspicious transaction report. During the investigation that followed, the Austrian national confessed that he had been in contact with several nationals of the Democratic People's Republic of Korea and that the country of final destination for the yachts was the Democratic People's Republic of Korea.

149. Early in March 2011, the Panel was made aware of an interdiction case by a Member State which froze US\$ 170,000 in funds that had been remitted to it in October 2010 by the "Myohyang Bureau", an entity presumably linked to Office 39 of the Korean Workers' Party. The asset freeze was occasioned by the recognition that the money was originally transferred via a secret account held under a false name in Latvia; and the monies were — in part — to purchase "special gifts", thus raising the likelihood that a luxury good transaction may have been involved. The Panel is making a number of inquiries and undertaking further research into this case.

150. A recent research report documents that Myanmar and the Democratic People's Republic of Korea have engaged in both barter trade and cash transactions. Democratic People's Republic of Korea-owned ships, as was recently the case of the *Du Man Gang*, asked to pay port fees of US\$ 30,994 in cash rather than make a bank transfer. Evidently other Democratic People's Republic of Korea ships have made similar requests. This practice has developed as one of mutual utility owing to the two countries' shared ostracism from international financial institutions that result from sanctions. These barter and cash transactions are not traceable and thus become an effective method of sanctions evasion.

151. The Panel notes and continues to express concern that the Democratic People's Republic of Korea has not accepted standards embraced by other Member States as set by the Financial Action Task Force (FATF) regarding anti-money-laundering and combating the financing of terrorism and proliferation financing. FATF has recently promoted more explicit guidelines for proliferation financing that the Panel believes may be used to draft an implementation assistance notice to Member States to strengthen the deterrence and capture of illicit financing. The Panel has also noted with interest the increased banking designations by various Member States and the European Union.

B. Foreign investment in the Democratic People's Republic of Korea

152. The planned economy of the Democratic People's Republic of Korea is suffering from a number of setbacks due to inappropriate prioritization in economic planning, disproportionate distribution of national income, and the recent currency revaluation. To redress the economic difficulties facing it, the country is again actively seeking direct foreign investment to bolster its ailing economy. Earlier this year, the Democratic People's Republic of Korea established the State Development Bank to serve as a comprehensive financial institution making investment in major

economic development projects. It also established the Korea Taepung International Investment Group, which is intended to be an economic complex to attract investment and finances to the State Development Bank.⁸⁷

153. The Panel notes with concern that the National Defence Commission of the Democratic People's Republic of Korea⁸⁸ plays a central role in each institution.⁸⁹ In the Panel's final report of May 2010, it was noted that agencies under the National Defence Commission were most active in the acquisition, marketing and sale of nuclear, other weapons of mass destruction and ballistic missile-related equipment, as well as arms and related materiel. Because the Democratic People's Republic of Korea is a highly centralized State-owned economy and its leadership has developed other sanctions evasion tools, the prospect of diversion of investment revenue for illicit ends is extremely likely. The Panel believes that special attention is warranted by the Committee and Member States to ensure that all investments in the Democratic People's Republic of Korea do not contribute to its nuclear, other weapons of mass destruction or ballistic missile-related programmes.

154. Two of the most significant investment relationships which sustain the economy of the Democratic People's Republic of Korea are with the Republic of Korea and China. The former exists mainly in the Kaesong Industrial Zone⁹⁰ while the latter's investment activities are substantial and diversified but concentrated in mineral resource development.⁹¹

155. In response to the second nuclear test conducted by the Democratic People's Republic of Korea in 2009 and the subsequent adoption of Security Council

⁸⁷ In this regard, the Panel of Experts notes that Pak Chol-su, Chairman of Taepung International Investment Group, revealed during an interview on 17 April 2010 that the Democratic People's Republic of Korea had launched a new economic revival project. The 10-year plan has a US\$ 120-billion investment plan and aims to rebuild infrastructure in eight of the country's major cities.

⁸⁸ The National Defence Commission is the highest guiding organ of the military and the managing organ of military matters in the Democratic People's Republic of Korea. Currently, chairmanship of the National Defence Commission is held by Kim Jong-il, the leader of the country.

⁸⁹ The board of directors of the State Development Bank is made up of representatives of the National Defence Commission, the Korea Asia-Pacific Peace Committee, the Ministry of Finance, the Korea Taepung International Investment Group and two independent directors. In the case of the Korea Taepung International Investment Group, the board of directors consists of representatives of the National Defence Commission, the Cabinet, the Ministry of Finance, the Korea Asia-Pacific Peace Committee and the Korea Taepung International Investment Group.

⁹⁰ In its sixth year of operation, the Kaesong Industrial Zone is a vast joint venture industrial park located within the Democratic People's Republic of Korea that was intentionally developed to model what economic reunification would produce. The complex contains about 120 small to medium-sized Republic of Korea companies, which employ approximately 47,000 citizens of the Democratic People's Republic of Korea. Its output nears US\$ 325 million.

⁹¹ For historical and geographical reasons, China has extensive trade exchanges with the Democratic People's Republic of Korea in order to stabilize the border region and lessen pressure on migration from the Democratic People's Republic of Korea. Chinese companies have made major investments aimed at developing mineral resources located in the northern region of the Democratic People's Republic of Korea. By November 2010, trade between the two countries had reached US\$ 3.06 billion, an increase of 9.6 per cent from 2008. Experts indicate that about 30 per cent of exports to China from the Democratic People's Republic of Korea are mineral resources. The largest single non-Chinese investment in the Democratic People's Republic of Korea came in 2008, when the Egyptian firm Orascom Telecom made a US\$ 400 million investment for a four-year exclusive right to develop a high-speed cell phone network, servicing mostly Pyongyang. The agreement grants Orascom a 25-year licence.

resolution 1874 (2009), compounded by the Democratic People's Republic of Korea military actions taken against the Republic of Korea during 2010, virtually all direct loans, development assistance and related exchanges to the Democratic People's Republic of Korea from Japan and the Republic of Korea came to a halt during the reporting period.

X. Designation of goods, entities and individuals

156. In resolutions 1718 (2006) and 1874 (2009), the Security Council placed special emphasis on several targeted measures intending to maximize the effect of sanctions by focusing coercive pressure on those responsible for wrongdoing, or by restricting the measures to selected items or activities, while minimizing unintended negative impacts on innocent and vulnerable populations.⁹²

157. By paragraph 8 (d) of resolution 1718 (2006) all Member States are directed to freeze the funds, other financial assets and economic resources on their territories that are owned or controlled by the "persons or entities" designated by the Committee or by the Council as being engaged in the nuclear-related, other existing weapons of mass destruction-related and ballistic missile-related programmes of the Democratic People's Republic of Korea. Under paragraph 8 (e) all Member States are requested to take the necessary steps to prevent the entry into or transit through their territories of the "persons" designated by the Committee or the Council as being responsible for such activities. Furthermore, the Council and the Committee are expected under paragraph 8 (a) (ii) of resolution 1718 (2006) to designate additional items, materials, equipment, goods and technology which could contribute to the nuclear, other weapons of mass destruction and ballistic missile-related programmes of the Democratic People's Republic of Korea.

A. Designation of entities and individuals

158. As emphasized by the Panel, designation remains one of the most effective tools to impede illicit activities. Since 2009, eight entities of the Democratic People's Republic of Korea⁹³ and five individuals⁹⁴ have been designated by the Committee and subject to travel ban and/or assets freeze. This limited number of designations understates the number of known entities and individuals engaged in proscribed activities.

159. The Panel believes that the list of designated entities and individuals should be considered on a regular basis and updated as necessary to include the names of those involved in proscribed activities, particularly those implicated in incidents of non-compliance reported to the Committee, as well as to prevent designated entities

⁹² Member States should be invited to regularly check with the website of the Committee for newly designated goods, entities and individuals. (www.un.org/sc/committees/1718/index.shtml).

⁹³ Designated entities: Korea Mining Development Trading Corporation; Korea Ryonbong General Corporation and Tanchon Commercial Bank; Namchongang Trading Corporation; Hong Kong Electronics; Korea Hyoksin Trading Corporation; General Bureau of Atomic Energy; and Korea Tangun Trading Corporation.

⁹⁴ Designated individuals: Yun Ho-jin, Director of Namchongang Trading Corporation; Ri Je-son, Director of the General Bureau of Atomic Energy; Hwang Sok-hwa, Director in the General Bureau of Atomic Energy; Ri Hong-sop, former Director of the Yongbyon Nuclear Research Centre; and Han Yu-ro, Director of Korea Ryongaksan General Trading Corporation.

from circumventing the sanctions by the use of aliases, intermediaries, affiliates or substitutes. The Panel has information on these entities and individuals and remains ready to assist the Committee in that regard.

160. On the basis of recent developments, the Panel believes that the designation of entities and individuals engaged in the development of the Democratic People's Republic of Korea's nuclear programmes or in related procurement activities should be considered a priority. Even though the country has admitted advanced development of its uranium enrichment programme, the Panel believes that it still has to resolve various technical problems. In this context, there must be a group of high-ranking officials and experts who are entrusted with resolving such problems. These individuals should be closely monitored and, if necessary, should be subject to Security Council measures.

161. As indicated earlier by the Panel, the Second Economic Committee of the National Defence Commission (headed by Paek Se-bong) plays the largest and most prominent role, in nuclear, other weapons of mass destruction and missile-related developments, as well as in arranging and conducting arms-related exports.⁹⁵ The Military Arms Production Department of the Korean Workers' Party (headed by Pak Do-chun, the successor of Jun Byung-ho),⁹⁶ also plays a central role in both the nuclear and missile programmes, as well as in weapons sales and procurement.⁹⁷ The General Bureau of Atomic Energy (headed by Ri Je-son)⁹⁸ and the Yongbyon Nuclear Research Centre (headed by Ri Sang-kun),⁹⁹ one of the Bureau's centres where the new Uranium Enrichment Workshop is located, are the key organizations implementing the nuclear development programmes. The Second Academy of Natural Sciences is in charge of research and development, and exports of missiles and parts, services and assistance related to maintenance and use of such missiles.¹⁰⁰ Considering that some of the mechanical engineering and metallurgy applied to missile development have utility in the installation and operation of gas centrifuges, it is also possible that the Second Academy of Natural Sciences participates in the Democratic People's Republic of Korea's uranium enrichment programme. It is also suspected to play a leading role in activities related to the production, import and export of the country's chemical and biological weapons programmes. The General Bureau of Surveillance of the Korean People's Army¹⁰¹ is involved in production and sales of conventional arms.

⁹⁵ The Second Economic Committee of the National Defence Commission was autonomously designated by the United States on 30 August 2010 and by the European Union on 22 December 2010. Paek Se-bong was autonomously designated by the European Union on 22 December 2009.

⁹⁶ Jun Byung-ho was autonomously designated by the European Union on 22 December 2009.

⁹⁷ The Military Arms Production Department of the Korean Workers' Party is also known as the Munitions Industry Department, the Defense Industry Department or the Military Supplies Industry Department. It was autonomously designated by the United States on 30 August 2010.

⁹⁸ The General Bureau of Atomic Energy, its Director-General (Ri Je-son) and one of its Directors (Hwang Sok-hwa) were designated by the Committee on 16 July 2009.

⁹⁹ Its former Director, Ri Hong-sop, was designated by the Committee on 16 July 2009. The Yongbyon Nuclear Research Centre was autonomously designated by the European Union on 22 December 2009.

¹⁰⁰ The Second Academy of Natural Sciences was autonomously designated by the United States on 30 August 2010 and by the European Union on 22 December 2010.

¹⁰¹ The General Bureau of Surveillance of the Korean People's Army, which is also known as the Reconnaissance General Bureau, is commanded by General Kim Yong-chol. They were both autonomously designated by the United States on 30 August 2010.

162. The Democratic People's Republic of Korea will need various materials and components for maintenance and expansion of its existing uranium enrichment facilities. It relies on front and offshore companies, particularly those affiliated with the Namchongang Trading Corporation, the Korea Mining Development Trading Corporation (also known as KOMID and Changgwang Trading Corporation) and the Korea Tangun Trading Corporation.¹⁰² These companies have procured nuclear-related items, concealing the original purchasers. They could also be used to handle financial transactions to support such procurement activities, as well as illicit sales activities. These and other companies, such as Green Pine Associated Company (headed by Jun Hak-bum), are also key players in the arms trade. Over the reporting period, the Democratic People's Republic of Korea seems to have moved further to circumvent the Security Council measures by substituting other companies to assume their activities and/or to act on their behalf or through the use of aliases. The Panel is concerned by widespread reports that the Democratic People's Republic of Korea's diplomatic missions are also brokering arms trade and other illicit transactions in the countries where no trade office is established. Some of these aforementioned companies have been designated by the Committee or are publicly known to be engaged in proscribed transactions. Below is a partial list of the recent aliases and substitutes used by some of these companies indicated by several Member States.

Table 2
Partial list of aliases used by designated companies

<i>Name of the entity</i>	<i>Aliases included in the designation list of the Committee</i>	<i>Aliases not included in the designation list of the Committee^a</i>
Korea Mining Development Trading Corporation	Changgwang Sinyong Corporation	Changgwang Trading Corporation
	Democratic People's Republic of Korea Mining Development Trading Cooperation	Gap Mun Trading
		Gapmun Trading
	External Technology General Corporation	Green Pine Associated Company
	KOMID	Hesong Trading
		Heungjin Trading
		Hung Jin Trading
		Kapmun Tosong
		Kapmun Trading
		North Korea Mining Development Trading Corporation
		Taesong Trading
		Tosong Trading

¹⁰² These three entities were designated by the Committee on 24 April or 16 July 2009.

<i>Name of the entity</i>	<i>Aliases included in the designation list of the Committee</i>	<i>Aliases not included in the designation list of the Committee^a</i>
Green Pine Associated Company		Ch'o'ngsong Yo'nhap Cho'ngsong United Trading Company Chongsong Yonhap Chosun Chawo'n Kaebal T'uja Hoesa General Precious Metal Complex Green Pine Associated Corporation Green Pine International Greenpine International Jindallae Ku'nhaeryong Company Ltd. Myong Dae Co. Natural Resources Development and Investment Corporation Paeksan Associated Corporation Saeingp'Il Company Saeng Pil Trading Company

^a Some of the entries cited in this column could be intermediaries or affiliates acting for or on behalf of the Korea Mining Development Trading Corporation or the Green Pine Associated Company.

163. The Panel of Experts also notes that a number of Member States and the European Union have designated additional entities and individuals of the Democratic People's Republic of Korea to supplement those designated by the Committee.¹⁰³ As indicated by the Panel, some of these entities and individuals play an important role in nuclear, other weapons of mass destruction and ballistic missile or arms transfers to or from the Democratic People's Republic of Korea and could be considered as potential candidates for designation by the Committee.

164. In this context, the Panel reiterates its recommendation that Member States should be invited to provide to the Committee for its consideration all names and other identities of entities and individuals of concern. In this regard, the Panel draws the attention of all Member States to the guidelines of the Committee, adopted on 20 June 2007 and available on the Committee's website,¹⁰⁴ on how to present a request for designation.

¹⁰³ As at 30 April 2011, at least 32 entities and 19 individuals had been autonomously designated by one or several Member States. For an updated list of autonomous designations see annex A.6.

¹⁰⁴ www.un.org/sc/committees/1718/pdf/guidelines_20_jun_07.pdf.

B. Designation of goods

165. Resolutions 1718 (2006) and 1874 (2009) place special emphasis on inhibiting the ability of the Democratic People's Republic of Korea to acquire and to provide to others nuclear, other weapons of mass destruction and ballistic missile items, technology and know-how. In this regard, the Security Council and the Committee have banned numerous items through extensive lists such as that in INFCIRC/254/Rev.9/Part 1, INFCIRC/254/Rev.7/Part 2, S/2006/853 and Corr.1, as well as S/2009/205 and S/2009/364. However, no updates or additions have been made by the Committee since 16 July 2009.

166. Taking into consideration the recent development regarding the uranium enrichment programme of the Democratic People's Republic of Korea, the Panel believes that it is critical to identify and control more vigorously priority goods, materials and technologies required by the country to support and expand its uranium enrichment programme. Such "choke point" items which could be considered for restriction under paragraph 8 (a) (ii) of resolution 1718 (2006) might include the following, with specific parameters: flow-forming machines; maraging steel; high-strength aluminium alloy; frequency changers (converters or inverters); bellows-sealed valves, fibrous or filamentary materials, and prepregs; filament winding machines and related equipment; perfluorinated lubricants; ring magnets; and semi-hard magnetic alloys in thin strip form.¹⁰⁵ The Panel also hopes to highlight specific items on the present proscribed lists (INFCIRC/254/Rev.9/Part 1, INFCIRC/254/Rev.7/Part 2) which could directly support the centrifuges facility of the Democratic People's Republic of Korea.

167. In view of recent indications that the Democratic People's Republic of Korea has completed or is about to complete the construction of a second launch site for long-range rockets, the Panel believes also that additional ballistic missile items should be considered for restriction under paragraph 8 (a) (ii) of resolution 1718 (2006) in addition to those listed in document S/2009/205 and those designated by the Committee on 16 July 2009 through S/2009/364.¹⁰⁶ Such items could be, for example, the following with specific parameters: nitrogen stabilized duplex stainless steel (N-DSS); austenitic stainless steel; 5-mm or thinner stainless steel sheets; aerospace-grade aluminium in bar and sheet form. All those non-listed items could have direct applications in the Democratic People's Republic of Korea's missile programmes, particularly in the production of liquid propelled ballistic missiles.

168. In addition, taking into consideration that the Democratic People's Republic of Korea could continue its nuclear and ballistic missile-related programmes by acquiring proscribed materials and components, or materials and components which are below the required precision parameters, and especially because the Democratic People's Republic of Korea established a small industrial-scale enrichment facility in this way, strengthened export and Customs controls that include dual-use items which are below required precision parameters ("catch-all" control) are required.

169. Since the adoption of resolution 1874 (2009), some of the lists of items adopted by the Security Council and the Committee for restriction have been

¹⁰⁵ One of these items (flow-forming machines) is already included in INFCIRC/254/Rev.7/Part 2. Others are partially or not included in INFCIRC/254/Rev.7/Part 2.

¹⁰⁶ The Committee prohibited the supply to or from the Democratic People's Republic of Korea of "graphite designed or specified for use in Electrical Discharge Machining (EDM) machines" and of "para-aramid fibre (Kevlar and other Kevlar-like), filament and tape".

updated.¹⁰⁷ The Panel also noted that different versions of the same list were used by different sanctions Committees.¹⁰⁸ The Panel believes that further consideration should be given by the Council and the Committee to adopting updated lists taking into consideration the experience of other control regimes, as well as adopting standardized lists across different sanctions regimes.

XI. Unintended impact

A. Unintended impact on the humanitarian situation

170. In the preamble to resolution 1874 (2009) it is stated that measures imposed by the resolution are not intended to have adverse humanitarian consequences for the civilian population of the Democratic People's Republic of Korea. In addition, paragraphs 9 and 10 of resolution 1718 (2006) and paragraphs 17 and 19 of resolution 1874 (2009) provide detailed guidelines to Member States to eliminate the unintended impact of the sanctions measures, including that exceptions could be applied for humanitarian purposes when implementing certain measures. In its final report submitted to the Security Council on 12 May 2010, the Panel recommended that effective implementation of the Security Council measures should take into consideration the impact such measures may unintentionally have on the overall humanitarian situation prevailing in the Democratic People's Republic of Korea.¹⁰⁹

171. At several meetings of the Committee, Member States expressed their concerns about the possible adverse impacts of the sanctions measures imposed by the relevant resolutions and tasked the Panel to investigate this issue. The deteriorating food situation in the Democratic People's Republic of Korea has increased this concern.

172. Accordingly the Panel engaged in research to assess if Security Council sanctions have had adverse humanitarian consequences for the civilian population in the Democratic People's Republic of Korea specifically in the current food crisis. The standard methodology for assessing sanctions impact has been codified in the *Sanctions Assessment Handbook* developed by the Office for the Coordination of Humanitarian Affairs of the United Nations Secretariat.¹¹⁰ The proposed methodology for assessing the humanitarian implications of sanctions consists of several steps which require the availability of a wide array of data, including on the situation prior to the imposition of sanctions. In applying its template for assessing humanitarian impact it demands two necessary conditions: (a) site visits to the region or State under sanctions; and (b) a detailed assessment of socio-economic data provided by the targeted region or State and analysis of data in the socio-economic area as available from international agencies. Unfortunately, neither of these data collection methods so essential for humanitarian assessment and impact

¹⁰⁷ For example, INFCIRC/254/Rev.7/Part 2 was updated to INFCIRC/254/Rev.8/Part 2 in June 2010.

¹⁰⁸ The Committee established pursuant to resolution 1737 (2006) adopted in May 2010 a new list of items related to ballistic missile programmes referred to in resolution 1929 (2010), which is an updated version of S/2009/205.

¹⁰⁹ S/2010/571, recommendation 6.

¹¹⁰ Produced by the Office for the Coordination of Humanitarian Affairs in collaboration with members of the Inter-Agency Standing Committee; available from www.humanitarianinfo.org/sanctions/handbook/index.htm.

measurement is available to the Panel at this time. Thus the Panel is able neither to determine the current status of humanitarian conditions in the Democratic People's Republic of Korea nor to distinguish between the effects of sanctions and the effects of other factors that influence the humanitarian situation in the country as described in the background section above. Consequently, the Panel is not yet able to provide the kind of detailed sanctions impact analysis which the Committee and the Panel itself would desire, but hopes to take this forward over the next year through interviews with relevant parties.

B. Unintended impact on diplomatic missions

173. The Committee and the Panel of Experts received information from certain Member States that their missions in the Democratic People's Republic of Korea were facing operational difficulties, which they attributed to the lack of access to required financial and other services and supplies from abroad. This has been attributed, in part, to the reluctance of a number of foreign private sector financial and other entities to engage with individuals or entities located in the Democratic People's Republic of Korea.

174. On 21 May 2010, the Panel submitted for the consideration of the Committee a discussion paper with a view to determining what steps might be taken to alleviate such unintended difficulties without jeopardizing the application and integrity of the Security Council measures. Among other things, the Panel recommended sending a questionnaire to interested Member States in order to obtain further specific information concerning the problems encountered by diplomatic missions and their staff members in the Democratic People's Republic of Korea. During the reporting period, the Panel remained available to the Committee and its members to provide any further assistance.

XII. Recommendations

175. In resolution 1874 (2009) the Security Council mandated the Panel of Experts to make recommendations on actions the Council, or the Committee or Member States, may consider to improve implementation of the measures imposed in resolutions 1718 (2006) and 1874 (2009). On the basis of the work of the Panel, its findings and conclusions reflected in this report, the Panel of Experts presents the following recommendations to the Security Council, the Committee and Member States for their consideration:

Monitoring and oversight

Recommendation 1

The Committee should call upon all Member States, relevant United Nations bodies and other interested parties to increase their cooperation and communication both with the Committee and with the Panel of Experts regarding existing or potential sanctions violations in a timely and full manner.

The importance of the cooperation of all States, relevant United Nations bodies and other interested parties with regard to sanctions on the Democratic

People's Republic of Korea, in particular the sharing of intelligence and information, cannot be overemphasized.

Recommendation 2

The Security Council should consider the adoption of a mechanism of timely submission regarding initial reporting of inspections conducted in accordance with paragraphs 11 and 12 of resolution 1718 (2006)

The Committee has experienced delayed reporting from Member States regarding inspections, which can hamper its work and the investigations of the Panel.

Recommendation 3

The Committee should refine and expand the reporting mechanisms specified by resolution 1874 (2009) to require the provision of information on illicit movements of goods and related financial transactions whether these are (i) accomplished (when proscribed items are known to have been supplied to the Democratic People's Republic of Korea); (ii) attempted (when the export of proscribed items to the Democratic People's Republic of Korea is stopped before the items actually enter into international commerce); or (iii) denied (when acquisition or export permission is sought but immediately denied by private companies or the relevant authorities).

The ability to detect and then deter illicit activity is directly related to full documentation of all existing cases of non-compliance, including those which do not fall into the categories defined by paragraphs 15 and 16 of resolution 1874 (2009).

Recommendation 4

The Committee should continue to request national implementation reports from all countries that have not yet provided such reports, and to remind them regularly to submit these.

Outreach activities undertaken by the Committee, or the Panel at its request, would prove useful. Such outreach could include briefings by the Committee and participation in or organization of regional or subregional seminars and conferences. Coordinated outreach activities with other committees of the Security Council and their Experts might also prove beneficial. The Committee might also consider asking the Panel of Experts to enter into a dialogue with, or provide assistance to, non-reporting/late-reporting Member States.

Recommendation 5

The Committee should monitor the effective implementation of sanctions to confirm that they do not worsen the humanitarian situation in the Democratic People's Republic of Korea. To assess the unintended impact of sanctions on the diplomatic missions, the Committee should consider inviting relevant Member States to complete the available questionnaire to obtain further specific information concerning the problems encountered by diplomatic missions and their staff members in the Democratic People's Republic of Korea.

To achieve the goal of targeted sanctions, the effect of the Security Council measures both on the common population in the Democratic People's Republic of Korea and on diplomatic missions should be continuously monitored and, if unintended impact is found, this should be remedied to its maximum extent.

Nuclear, other weapons of mass destruction and ballistic missiles programmes

Recommendation 6

The Panel recommends that the Security Council consider calling on the DPRK to cease immediately any uranium enrichment programmes and any other related activities, and to halt the construction of the experimental light water reactor. The Panel believes that these are violations of Security Council resolutions 1718 (2006) and 1874 (2009).

Recommendation 7

The Democratic People's Republic of Korea should be required to place all aspects of its nuclear programmes, including its uranium enrichment programme, under IAEA monitoring and to provide IAEA with immediate and full access to all nuclear-related facilities, sites and other locations.

The Democratic People's Republic of Korea is obligated under Security Council resolutions 1718 (2006) and 1874 (2009) to provide IAEA transparency measures extending beyond the requirements of the terms and conditions of its IAEA Safeguards Agreement, including such access to individuals, documentation, equipment and facilities as may be required and deemed necessary by IAEA. The Panel further believes that the Democratic People's Republic of Korea should sign and ratify the Additional Protocol (INFCIRC/540 (Corrected)) at the earliest date. In this regard, the Panel considers it urgent that the Democratic People's Republic of Korea submit a complete and correct declaration on all its nuclear programmes, including its uranium enrichment programme. The Panel hopes that IAEA will establish its potential approach on future verification work in the Democratic People's Republic of Korea.

Recommendation 8

Safety issues should be discussed as an integral part of the denuclearization of the Democratic People's Republic of Korea

The Panel is concerned about the decaying Yongbyon nuclear complex, which poses a high risk of accident and contamination. The Panel further notes that reckless decommissioning or dismantlement at Yongbyon could cause an environmental disaster.

Export and import-related measures

Recommendation 9

Member States should strengthen their national export-import control systems as well as Customs control systems in order to block illicit trade by the Democratic People's Republic of Korea, with special attention to dual-use goods and technologies of critical importance in the production of nuclear and other weapons of mass destruction and missile systems.

The interdiction of proscribed exports destined for the Democratic People's Republic of Korea remains heavily dependent on the establishment of regulatory export control regimes, on effective national monitoring and Customs controls, and on capacity-building in this regard. Member States, including the neighbouring countries, should continue their efforts to apply stringent export controls.

The Panel of Experts learned that the Democratic People's Republic of Korea has tried to evade sanctions by using local suppliers of sensitive items that had insufficient knowledge and expertise about export control. Therefore, Member States should establish consultation mechanisms between these local suppliers and licensing authorities as early as possible.

Recommendation 10

Member States that have not yet introduced the system of “catch-all” export control should strengthen their domestic mechanisms, including re-export and diversion controls.

Considering the possibility that the Democratic People's Republic of Korea could use not only proscribed materials and components but also materials and components which are below the precision parameters specified in the Security Council resolutions, strengthened export and Customs controls are required to effect “catch-all” control.

Recommendation 11

Private companies in relevant industries, as the first line of defence in export controls, should also be encouraged to engage with the enforcement authorities of Member States to ensure the early detection of potential intended proliferation.

The private sector has an important role in the prevention of illicit exports to the Democratic People's Republic of Korea. For this purpose, internal compliance programmes within private companies should be well-established and exercised. The provision of the necessary information to the relevant governmental agencies when a suspicious procurement inquiry occurs is important.

Recommendation 12

Member States should cut off assistance, and particularly exchanges of personnel, related to technology, technical know-how, training and maintenance for all entities and individuals associated with the uranium enrichment activities of the Democratic People's Republic of Korea

During its investigation, the Panel learned that the Democratic People's Republic of Korea exchanged scientists and key technical personnel for the transfer of sensitive technology related to proscribed items. This measure will be effective because the scientists and engineers of the Democratic People's Republic of Korea lack know-how not only in uranium dioxide fuel (UO₂) production but also in various other processes related to uranium enrichment. As part of this measure, more broadly, intangible technology transfer that can assist the Democratic People's Republic of Korea's nuclear programme should be closely examined and strictly controlled. In paragraph 28 of resolution 1874 (2009) the Security Council called upon all Member States to exercise vigilance and to prevent specialized teaching or training of nationals of the Democratic People's Republic of Korea within their territories or by their nationals, in disciplines which could contribute to the proliferation-sensitive nuclear activities of the Democratic People's Republic of Korea.

Luxury goods

Recommendation 13

Member States should include in their reports pursuant to paragraphs 11 of resolution 1718 (2006) and 22 of resolution 1874 (2009) a list of the goods considered by them to fall within the category of luxury goods and engage in consultations as necessary with any Member States prohibiting such items prior to authorizing the export of essentially identical items.

Recommendation 14

The Committee should provide to Member States more detailed guidelines concerning the definition of luxury goods in order to foster a more uniform application of these measures. Such guidelines could be based on the principles proposed by the Panel.

Interdiction**Recommendation 15**

All Member States should strengthen efforts to block the illicit flow of proscribed items through maritime transit and/or trans-shipment to and from the Democratic People's Republic of Korea. All Member States are requested, in accordance with resolutions 1718 (2006) and 1874 (2009), to inspect all cargo if there are reasonable grounds to believe that the cargo contains the proscribed items.

Extra vigilance should be exercised in accordance with local norms at the first and subsequent overseas maritime port handling Democratic People's Republic of Korea shipments or trans-shipments with regard to containers carrying cargo originating from the Democratic People's Republic of Korea. Each Member State in the region should strengthen its regulations on ground, maritime and air transportation and actively engage in regional cooperation to constrain sanctions evasion by the Democratic People's Republic of Korea.

Recommendation 16

All Member States should exercise enhanced Customs vigilance at all airports where Democratic People's Republic of Korea-chartered or flagged aircraft land.

Recommendation 17

Vigilance should be exercised to monitor and prevent illicit activities from being conducted by Air Koryo and other foreign aircraft engaged on non-scheduled flights into and out of the Democratic People's Republic of Korea by countries over whose territory such aircraft may fly.

Recommendation 18

The Committee should prepare an implementation assistance notice for Member States regarding the disposal of goods seized in an interdiction.

Several government officials have requested guidelines or information on the disposal of the seized proscribed items. It was frequently mentioned that the lack of relevant guidelines caused enormous inconvenience to the Member States and the parties concerned.

Designation of goods, entities and individuals

Recommendation 19

The Security Council and the Committee should consider updating lists of sensitive items by taking into consideration the experience of other control regimes, as well as by adopting standardized lists across different sanctions regimes.

Recommendation 20

The Committee should identify and Member States should control more vigorously priority goods, materials and technologies required by the Democratic People's Republic of Korea to support and expand its uranium enrichment programme.

Items which could be considered for restriction under paragraph 8 (a) (ii) of resolution 1718 (2006) might, with specific parameters, include flow-forming machines; maraging steel; high-strength aluminium alloy; frequency changers (converters or inverters); bellows-sealed valves, fibrous or filamentary materials, and prepregs; filament winding machines and related equipment; perfluorinated lubricants; ring magnets; and semi-hard magnetic alloys in thin strip form.

Recommendation 21

Additional ballistic missile items should be considered by the Committee for restriction under paragraph 8 (a) (ii) of resolution 1718 (2006).

Such items could be, for example, the following with specific parameters: nitrogen stabilized duplex stainless steel (N-DSS); austenitic stainless steel; 5-mm or thinner stainless steel sheets; aerospace-grade aluminium in bar and sheet form.

Recommendation 22

The Committee should update regularly the sanctions designation list so as to prevent entities and individuals already listed by the Committee from circumventing the Security Council measures through the use of aliases, intermediaries, affiliates or substitutes.

In order to counter the use of aliases by designated entities, Member States should be invited to provide as much information as possible to assist in the identification of the designated entities and individuals, or of those substituting for, or acting for or on behalf of those designated entities and individuals. The Panel has provided in this report an updated partial list of aliases that might assist the Committee and Member States.

Recommendation 23

Member States should be invited to provide to the Committee the names and other identities of those entities and individuals that have not yet been designated but have been involved in the development of prohibited nuclear and missile-related programmes of the Democratic People's Republic of Korea. After due diligence, the Committee should designate the entities and individuals it deems to be violating Security Council resolutions 1718 (2006) and 1874 (2009).

The Democratic People's Republic of Korea's long pursuit of its clandestine uranium enrichment programme highlights the importance of incapacitating main actors. The Panel has information on these entities and individuals and remains

ready to assist the Committee in that regard. For example, Member States should consider the following names: the Second Economic Committee of the National Defence Commission headed by Paek Se-bong, the Military Arms Production Department of the Korean Workers' Party headed by Pak Do-chun, the General Bureau of Atomic Energy headed by Ri Je-son, and the Yongbyon Nuclear Research Centre headed by Ri Sang-kun, play central roles in the nuclear, chemical and biological programmes of the Democratic People's Republic of Korea as well as in the ballistic missile programme. Among these key organizations and individuals, the Committee has designated only the General Bureau of Atomic Energy and its Director-General (Ri Je-son), one of the directors of the General Bureau of Atomic Energy (Hwang Sok-hwa) and the former director of the Yongbyon Nuclear Research Centre (Ri Hong-sop).

Recommendation 24

Member States should also be invited to provide to the Committee the names and other identities of those entities and individuals that have been engaged in the illicit procurement and sales activities of the Democratic People's Republic of Korea over the years or otherwise implicated in incidents of non-compliance reported to the Committee.

Establishing industrial-scale centrifuge facilities would have required the Democratic People's Republic of Korea to procure a variety of specialized goods abroad. Initial procurement for this project was assigned to the Namchongang Trading Corporation. Since the Namchongang Trading Corporation and its director (Yun Ho-jin) have been designated by the Committee, other entities and individuals might be engaged in procurement and sales of proscribed goods and technology. In this regard, the Panel draws special attention to the Green Pine Associated Company (headed by Jun Hak-bum), which is now responsible for about half of the arms and related materiel exports of the Democratic People's Republic of Korea, because it is deeply engaged in illicit procurement of chemical material and other specialized items abroad.

Annex A.1

Imagery of the Yongbyon Nuclear Research Centre



Annex A.2

Imagery of the fuel fabrication complex

