

NON-PROLIFERATION – THE DPRK CHALLENGE

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Abstract

The DPRK (Democratic People's Republic of Korea) nuclear situation serves to illustrate a number of fundamental non-proliferation issues. First and foremost—and this might seem self-evident—the non-proliferation regime, and IAEA safeguards, are most effective in the case of states that are committed to non-proliferation principles. While both incentives and sanctions have a place in reinforcing commitments, the situation is clearly unsatisfactory if sanctions become the dominant factor. What is most important is to convince the state concerned that its own interests are best served by adherence to non-proliferation.

The DPRK situation also demonstrates the importance of complementary non-proliferation measures, including restraining the spread of sensitive technology, and establishing proliferation-resistant technologies.

The overwhelming majority of states have reached the conclusion that pursuit of nuclear weapons would be contrary to their national interest, and have joined the NPT as non-nuclear-weapon states. It appears that in 1985, when it joined the NPT at the urging of the former Soviet Union, the DPRK had reached no such conclusion—which explains why the safeguards agreement required under the NPT took six years to conclude, and why the IAEA experienced a lack of cooperation almost from the outset.

It is a challenge to the entire international community to retrieve this situation. With the benefit of hindsight, perhaps more could have been done to persuade the DPRK of the value of the NPT in terms of its own security concerns. While incentives and sanctions—“carrots and sticks”—will be part of any solution, unless the DPRK becomes genuinely committed to non-proliferation principles the non-proliferation regime—and the IAEA's vital verification role—will continue to encounter difficulties. We can design a stronger safeguards approach—e.g. to counter the possibility of undeclared enrichment activities—but both initial acceptance and ongoing cooperation by the DPRK will depend on an appreciation that its interests are best served by non-proliferation. Constructive engagement is an essential aspect of progress—Australia has been actively involved at the practical level, through dialogue and training on safeguards issues, as well as in diplomatic efforts to resolve the situation.

This paper reflects the views of the author and does not necessarily represent Australian Government policy.

1. INTRODUCTION

At the time of writing this paper (mid-June 2003) the situation with the DPRK remains very much a fluid one—further developments are possible between writing and presentation.

The DPRK situation can be used to illustrate a number of generic issues. First, it is clear the greatest problem facing the non-proliferation regime today is how to deal effectively with determined

proliferators—whether those who have repudiated their non-proliferation commitments, as the DPRK has by notice of withdrawal from the NPT, or those who remain in the NPT but either have undeclared nuclear activities, or, under the guise of safeguarded civil programs, are establishing the capability to break out of NPT commitments in the future.

A specific question—a common factor in all three recent or current proliferation challenges (Iraq, DPRK and Iran)—is how to deal with the challenge presented by the spread of centrifuge enrichment technologies and know-how: how to effectively safeguard declared facilities, how to detect undeclared facilities, and how to limit the further spread of this technology.

An issue of fundamental importance raised by the DPRK situation is, can states evade their non-proliferation commitments by withdrawing from the NPT?

If an eventual agreed resolution of the DPRK situation is possible, it is clear that particularly rigorous verification measures will have to be an essential element. This conclusion would also seem to follow in the case of other states with significant safeguards violations. This raises an obvious question as to the adequacy of current safeguards—adequacy to meet known proliferation challenges, but also adequacy to counter as yet undetected proliferation challenges.

Finally, there are major political issues—how to reinforce non-proliferation commitments, and convince states that non-proliferation is in their best interest, and how to enforce non-proliferation commitments?

2. BACKGROUND TO THE DPRK NUCLEAR CRISIS

The DPRK situation is complex, but can be very briefly outlined as follows.

- DPRK has operated two reactors, the Soviet-supplied IRT (commenced operation 1965, 2 MWt, subsequently upgraded to 8 MWt) and an indigenous gas-graphite reactor nominally of 25 MWt (usually termed the “5 MWe” reactor—commenced operation 1986). Both of these reactors are at Yongbyon. Also at Yongbyon are two facilities used for plutonium separation—the Isotope Production Laboratory and the large “Radiochemical Laboratory”. DPRK also has two larger partially constructed gas-graphite reactors—50 MWe at Yongbyon and 200 MWe at Taechon.
- DPRK concluded a facility-specific safeguards agreement (INFCIRC/66) for the IRT reactor in 1977. It acceded to the NPT in 1985, but delayed bringing its NPT safeguards agreement (INFCIRC/153) into effect until 1992.
- The IAEA commenced NPT safeguards inspections in 1992. DPRK declared separation of small quantities of plutonium from both the IRT and 5 MWe reactors. The IAEA’s analysis of separated plutonium declared by DPRK revealed discrepancies—indicating larger, undeclared, quantities had been separated. DPRK refused to allow special inspections of suspected waste sites that could throw light on its plutonium separation history—and the IAEA reported DPRK to the Security Council for non-compliance with its safeguards agreement. It is suspected DPRK may have separated sufficient plutonium for 1-2 nuclear weapons from pre-1992 activities.
- In 1993 DPRK announced but subsequently “suspended” withdrawal from NPT. In 1994 the core of the 5 MWe reactor was unloaded—DPRK refused to allow the IAEA to take spent fuel measurements, and jumbled the fuel to impede any subsequent efforts to reconstruct the history of the core (a major question being how much of the fuel dated back to 1986, as declared by DPRK, or dated from a refuelling campaign suspected to have occurred in 1989). There are estimates that the spent fuel unloaded in 1994 could contain around 30 kg plutonium, sufficient for 5-6 weapons.

- In 1994 DPRK and US concluded the Agreed Framework (AF), under which, in exchange for provision of two light water reactors, and the supply of 500,000 tonnes of heavy fuel oil (HFO) annually until the first LWR was operational, the DPRK agreed to “freeze” its nuclear program, to allow the IAEA to monitor the freeze, and by a specified stage in the LWR project to come into compliance with its safeguards agreement, cooperating with the IAEA to properly establish the “initial safeguards inventory”. The AF also contained provisions on normalisation of political and economic relations, and on a “nuclear free” Korean Peninsula—confirming the 1991 DPRK/ROK Joint Declaration on the Denuclearisation of the Korean Peninsula, which proscribed enrichment and reprocessing.
- An international organisation, KEDO (Korean Energy Development Organisation) was established to carry out the LWR project. For various reasons the commencement of the project was delayed—construction did not commence until 1997. Limited progress was made on the “political” aspects of the AF.
- During DPRK/US officials talks in October 2002, DPRK reportedly admitted to having a uranium enrichment program—confirming suspicions, based on intelligence information, that DPRK is developing an enrichment program based on centrifuge technology. DPRK has since claimed it made no such admission, only asserted the “right” to such a program. Subsequently KEDO suspended HFO shipments—and the US has indicated it regards the AF as having been broken.
- In December 2002 DPRK expelled IAEA inspectors, and in January 2003 announced it was reactivating its withdrawal from the NPT. In February the IAEA reported DPRK’s non-compliance with its safeguards agreement to the Security Council, which in April expressed concern and urged all parties to work towards a peaceful solution.
- DPRK claims its security was under threat by the US, and seeks bilateral discussions with the US on a security guarantee to resolve the situation. US and many other states maintain DPRK’s breach of NPT commitments is of concern to the international community, and needs to be resolved multilaterally or regionally, not bilaterally. In April talks were held between US, DPRK and China in Beijing. US has proposed further talks involving China, Japan, and ROK, but so far DPRK has refused to participate.
- In various announcements DPRK has said it already has nuclear weapons, has reprocessed all the spent fuel at Yongbyon, proposes to develop further nuclear weapons both as a deterrent and to enable reductions in its conventional forces, and that it may supply fissile material to others. At the same time, DPRK implies that if its security concerns are resolved by the US it would not proceed with a nuclear weapons program.
- The US has said it is not prepared to pay for cessation of the DPRK nuclear program, but has indicated a preparedness to discuss a substantial program of economic assistance once the nuclear program is irreversibly terminated. At the time of writing this paper the situation remains at an impasse.

3. RESOLVING THE NUCLEAR CRISIS

At this stage it is not known if any agreed resolution is achievable. Amongst observers, opinion is divided whether the DPRK nuclear weapon program is “negotiable”, or whether DPRK is determined to proceed with nuclear weapons regardless of any resolution that might be reached. It seems clear that the following elements would be essential to any agreed resolution:

Irreversible termination of DPRK's known nuclear program

The fatal weakness in the 1994 AF was that it left the DPRK with the option of break-out—having an operational reactor and fresh fuel to reload it, an operational reprocessing plant (the “Radiochemical Laboratory”) and the 50 tonnes of spent fuel discharged in 1994.

The DPRK has restarted the 5 MWe reactor—but that is not the immediate problem, it would take at least a year of operation at full power to produce sufficient plutonium for one weapon. Of greater concern is the spent fuel, which may contain sufficient plutonium for 6 weapons—in theory this could be reprocessed in as little as 2 months, though in practice it is more likely to take several months. Even this longer timeframe, however, could give the DPRK separated plutonium for 6 weapons by the end of 2003. It is reported there is no evidence to support DPRK claims that reprocessing has already been completed—but it is not known what proportion of the fuel may have been reprocessed by now.

In any resolution it will be essential to ensure this situation cannot be repeated. The DPRK would have to agree to freeze activities at Yongbyon (well ahead of completing reprocessing, otherwise accounting for and recovering the separated plutonium will possibly be an insurmountable difficulty), and then agree to dismantlement or disabling of the 5 MWe reactor and the Radiochemical Laboratory, and the immediate removal of spent fuel from Yongbyon. It would also be necessary to devise an approach for dealing with the recently-loaded core in the 5 MWe reactor. In addition, consideration would need to be given to dismantlement or disabling of the IRT reactor and the Isotope Production Laboratory.

Other activities to be terminated would include any fuel fabrication, uranium mining/milling, and uranium conversion (production of uranium metal, UF₆ and other compounds).

Disclosure and termination of the centrifuge enrichment program

As noted earlier, DPRK now denies the existence of this program. Despite this denial, reportedly there is evidence indicating such a program does exist. The DPRK will have to be prepared to explain such evidence, and agree to intrusive verification measures to satisfy concerns about the program. Realistically, continued denial will not be convincing—the onus will be on the DPRK to reveal what it has. This would encompass not only the enrichment facility, but the facility used for producing UF₆ feedstock, and plants used for production of centrifuge components.

Ongoing verification against possible undeclared nuclear activities

The difficulty with centrifuge enrichment technology is that, even if the DPRK declares a particular facility, there is no guarantee it would not simply build another facility elsewhere (and may already have done so). Hence there will be a need for ongoing and rigorous verification measures—encompassing the full range of measures available under the Additional Protocol, and maybe more. Necessary measures would include unannounced inspections of any remaining nuclear activities (including shut-down facilities) and an extensive program of complementary access—and as well, measures such as wide-area environmental sampling.

Ensuring all nuclear material is brought under safeguards

Verification of the DPRK's initial safeguards inventory remains a long-outstanding issue. This involves resolving the history of pre-INFCIRC/153 nuclear activities, especially plutonium separation, which became such a major issue in 1992. The issue goes to the heart of the question whether—as believed by analysts and recently asserted by the DPRK itself—the DPRK already has nuclear weapons. Clearly, satisfactorily resolving this issue is fundamental to any resolution of the nuclear crisis.

In addition, there is the need to declare and satisfactorily account for any as yet undeclared nuclear material produced since the INFCIRC/153 agreement came into force—including any further plutonium separation, and any enriched uranium.

Remaining in NPT, cooperation with IAEA

The DPRK gave notice of withdrawal from the NPT on 10 January 2003, in principle (according to the provisions of NPT Article X) taking effect 3 months later—though there is a legal issue whether this notice met the requirements of Article X. Putting this to one side, however, it is difficult to imagine any resolution which did not involve the DPRK remaining in the NPT. The NPT is the appropriate instrument by which to give a formal commitment against the proliferation of nuclear weapons—as the whole basis of any resolution is that the DPRK would forswear nuclear weapons, the obvious question is, why wouldn't it be prepared to do this through the NPT.

A vital element of the NPT is the acceptance of IAEA safeguards to verify compliance with the non-proliferation commitment. Rigorous verification arrangements will be an essential part of any resolution. While the DPRK has suggested it would accept verification by the US, it is hard to imagine that the US would be prepared to replicate the work of the IAEA in implementing an ongoing verification regime—and there is a question of whether this would satisfy the expectations of the international community. There seems little doubt that the IAEA is the most appropriate body to undertake at least the routine verification tasks required further to any resolution. Of course, the US and DPRK could reach agreement on additional measures, to be undertaken by US personnel, that would complement the work of the IAEA.

Constructive engagement—Australian involvement

Australia has put some effort into discussing safeguards issues with DPRK officials, and into providing training for DPRK safeguards personnel. To the extent that incomplete understanding of safeguards requirements and the underlying reasons for those requirements may have contributed to the current situation, we believe this effort is worthwhile. If a resolution to the crisis is found, we believe there is a body of DPRK officials who are well equipped to help ensure the resolution works—and may even be in a position to contribute to the policy processes needed to reach a resolution.

4. SOME GENERIC ISSUES

How to deal with determined proliferators?

The biggest single challenge facing the non-proliferation regime—exemplified by the DPRK situation—is how the international community can deal with determined proliferators.

Strengthening the safeguards system, particularly universalising the Additional Protocol, and enhancing the capability to detect undeclared nuclear activities, is an essential part of the response. This is discussed further below. It must be recognised, however, that reliance on detection is a next-best outcome—no verification system can guarantee to be 100% effective.

The first line of defence for non-proliferation has to be at the political, rather than technical, level—influencing the behaviour of states through incentives to encourage compliance, and sanctions to make the cost of non-compliance unacceptably high. The state must be persuaded that pursuit of nuclear weapons is not in its best interests:

- that the costs are too high in terms of distortion of its own economy (diverting scarce resources from productive activity);

- that nuclear weapons do not enhance its security but (through raising threat perceptions on the part of others, possibly triggering further proliferation) actually endanger it; and
- that external costs (sanctions) are too high.

On the incentive side of the equation, action could include addressing the concerns that prompt the state to consider proliferation—for example, development of security assurances or regional security arrangements.

Another important line of defence for non-proliferation is ensuring effective control over nuclear and nuclear-related exports. This requires not only full cooperation by members of relevant arrangements—NSG, Zangger, MTCR—but developing ways of dealing with suppliers who are outside these arrangements. For comprehensive safeguards states, an Additional Protocol should be firmly established as the “full scope” safeguards condition of supply.

However, the Additional Protocol is not necessarily sufficient. Along with many other governments, Australia urges the need for restraint in the supply, and the acquisition, of proliferation-sensitive technologies—enrichment and reprocessing—in regions of tension. In such regions, the existence of capabilities for rapid break-out from non-proliferation commitments will be inherently destabilising, risking the development of “virtual” arms races. The importance of restraint was acknowledged by the DPRK when it agreed with the ROK on the 1991 Joint Declaration on the Denuclearisation of the Korean Peninsula, which proscribed enrichment and reprocessing by either country. Regrettably this Declaration has now been repudiated by the DPRK.

Both these areas—establishing incentives and sanctions, and effective controls against the spread of sensitive technologies—require a firm commitment by states to collaborate in the furtherance of non-proliferation objectives. Without such commitment, it is unrealistic to expect IAEA safeguards to be sufficient.

Can states evade their non-proliferation commitments by withdrawing from the NPT?

The NPT is almost universal: only three states, which happen to be states with declared or suspected nuclear weapons programs—India, Israel and Pakistan—are outside the Treaty. None of these states has ever been in the Treaty. The DPRK is unique as being a Party to the NPT that has sought to withdraw from the Treaty (as noted earlier, there are legal grounds for questioning the effect of this withdrawal).

It is notable that recent proliferation challenges—Iraq, DPRK and Iran—have all come from within the NPT—and given that virtually every state is a Party, any future challenges will also come from within the Treaty.

It should be a matter of the highest priority for the international community to ensure there is no increase in the number of nuclear-armed states. Indeed, in 1992 the Security Council declared that:

“The proliferation of all weapons of mass destruction constitutes a threat to international peace and security”.¹

It follows that there should be zero tolerance of additional states attempting to develop nuclear weapons—the non-proliferation commitment of NPT Parties, even if they purport to withdraw from the Treaty, must be inviolable.

Is more rigorous verification required for actual or suspected safeguards violators?

The NPT system is built on the maxim, “trust but verify”. Trust is of fundamental importance—but because of the importance of non-proliferation to national security, trust is not sufficient. Hence the requirement in the NPT to accept IAEA safeguards to verify compliance.

Effective verification—verification measures that provide a high level of confidence they will detect undeclared nuclear activities (and diversion)—are an essential element in NPT compliance. If verification is perceived as ineffective, the NPT will fail to provide the required assurance. Detection of undeclared nuclear activities—particularly the operation of centrifuge enrichment plants—is a challenging task, requiring full cooperation between the IAEA and states (providing technical assistance, sharing of intelligence, and so on). Some of these issues are discussed further in the parallel paper, “Strengthening the Non-Proliferation Regime”².

In circumstances where the existence of undeclared nuclear activities has come to light, trust will be very difficult to restore. If verification is required even when trust is present, how much more rigorous does verification have to be where trust is absent?

The direction of safeguards development now is to apply more rigorous safeguards where these are warranted—though in current safeguards thinking the potential for adjusting safeguards effort depends on an Additional Protocol being in place. In this case, if the state qualifies for *integrated safeguards* certain routine safeguards activities will be reduced, but if it does not qualify both INFCIRC/153 and the Additional Protocol will apply in full. In addition, state-specific circumstances will be reflected in the number of complementary accesses undertaken. The author considers more can, and should, be done to develop safeguards approaches that are calibrated to state-specific circumstances—see the paper “Back to Basics—Re-thinking Safeguards Principles”². It follows that in the case of states that have been found in non-compliance with safeguards, additional measures will have to be considered, e.g. (as mentioned in section 3 above) wide-area environmental sampling.

5. CONCLUSIONS

The proliferation of nuclear weapons represents a major threat to international peace and security, and it is vital for the international community to act accordingly. Since the NPT is almost universal, it follows that challenges to the non-proliferation regime come from inside, rather than outside, the Treaty. A state cannot be permitted to evade non-proliferation commitments simply by withdrawing from the Treaty—the commitment to non-proliferation must be inviolate.

Effective safeguards are essential to the success of the non-proliferation regime. This requires universalisation of the Additional Protocol, assisting the IAEA in the development of detection capabilities (especially for centrifuge enrichment plants), information-sharing with the IAEA, and application of more rigorous verification measures in states that have been found in violation of safeguards or are suspected of being in violation. Other essential elements include effective controls over the spread of proliferation-sensitive technologies—including states in regions of tension foregoing the pursuit of such technologies.

Ultimately, the success of the non-proliferation regime will depend on political support—adherence by states to their non-proliferation commitments, and where necessary a preparedness by states to take action in support of compliance.

Where there are proliferation concerns, every opportunity should be taken for constructive engagement, to address the reasons behind the actions of the state concerned, and to assist such states appreciate that their interests are best served by adherence to non-proliferation. This may include identification of incentives to reinforce non-proliferation commitments—a sound approach is based on carrots as well as sticks. For example, if a state is genuinely concerned about its national security—and this is the predominant concern advanced by the DPRK—there may be ways the international community can meet these concerns.

On this last point, an interesting precedent comes from the time of the collapse of the Soviet Union. Three Newly Independent States—Belarus, Kazakhstan and Ukraine—found themselves with

Soviet nuclear warheads on their territories. A major diplomatic focus was to bring these states into the NPT as non-nuclear-weapon states. The NPT depositary states—US, UK and Russia (as the successor to the Soviet Union)—agreed to give these states formal negative security assurances against the use or threat of nuclear weapons. Perhaps something along these lines could be helpful in resolving the DPRK situation.

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1. Statement by President of the Security Council, 31 January 1992, UNSC document S/23500.
 2. Presented at INMM 2003 Annual Meeting.