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*Author(s):* Joseph F. Pilat

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TRANSPARENCY, VERIFICATION AND THE FUTURE OF NUCLEAR NONPROLIFERATION  
AND ARMS CONTROL

Joseph F. Pilat

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**Abstract**

In the future, if the nuclear nonproliferation and arms control agendas are to advance, they will likely become increasingly seen as parallel undertakings with the objective of cradle-to-grave controls over nuclear warheads and/or materials. The pursuit of such an agenda was difficult enough at the outset of the nuclear age; it will be more difficult in the future with relatively widespread military and civil nuclear programs. This agenda will require both verification and transparency. To address emerging nuclear dangers, we may expect hybrid verification-transparency regimes to be seen as acceptable. Such regimes would have intrusive but much more limited verification provisions than Cold War accords, and have extensive transparency provisions designed in part to augment the verification measures, to fill in the "gaps" of the verification regime, and the like.

**Introduction**

In the future, if the nuclear nonproliferation and arms control agendas are to advance, they will likely become increasingly seen as parallel undertakings with the objective of cradle-to-grave controls over nuclear warheads and/or materials. This "back to the future" prospect was what was envisioned in the Acheson-Lillienthal Report and the Baruch Plan, and in the Atoms-for-Peace Proposal, before the nuclear control agenda split into nonproliferation and arms control. The pursuit of the original agenda was difficult enough at the outset of the nuclear age; it will be more difficult in the future with relatively widespread military and civil nuclear programs. This agenda will require both verification and transparency.

Verification is seen by some as a Cold War relic, but it will continue to exert great influence over the

arms control agenda. Transparency and openness will undoubtedly become more significant for nuclear nonproliferation and arms control in the future. Clearly, such measures have in recent years been widely perceived as increasingly critical. Moreover, transparency will become more and more important as one element of hybrid verification-transparency regimes adapted to the new challenges of nuclear nonproliferation and arms control. Clearly, this is already occurring.

**Verification after the Cold War**

Even before the end of the Cold War, verification was changing in response to (or, in some cases, anticipation of) changes in politics or technology. With the end of the Cold War and the collapse of the Soviet Union, nuclear arms control flourished and new, more challenging, avenues for arms control opened. Accordingly, agreements of recent vintage, especially the nuclear agreements of the late 1980s and early 1990s, and prospective agreements like the CTBT and the FMCT, pose different challenges than agreements like the Limited Test Ban Treaty or the two treaties produced by the Strategic Arms Limitations Talks (SALT I and II). The verification of these early arms accords was done primarily by national technical means, especially overhead surveillance. The new agreements have been seen to require more intrusive verification measures going well beyond NTM and usually involving managed on-site access to sensitive facilities and activities.

Verification efforts will for the foreseeable future be defined by recent agreements—agreements on which negotiations began, or scope and objectives were decided, during the Cold War. These agreements, especially the two Strategic Arms Reduction Talks (START I and II) treaties, have elaborate verification systems that largely reflect

Cold War concerns. Given post-Cold War uncertainties about Russia, intrusive verification provisions remain important to the United States and the West at present. But already these agreements and their verification provisions seem marginal to what are now seen as higher-priority concerns, including the fate of the old Soviet nuclear arsenal and special nuclear material stockpiles. These new concerns can at best be only marginally affected by existing arms accords and are being dealt with at present through ad hoc measures such as the Cooperative Threat Reduction (CTR) program (although the framework for START III agreed in Helsinki would, if followed, bring such issues into formal negotiations).

However these issues evolve, it is likely that verification mechanisms of the existing agreements will be carried out, and they will be particularly important if Russia veers toward an authoritarianism of the left or right. But unless the strategic environment deteriorates dramatically, elaborate verification regimes can be expected to decline in significance over time and are not likely to be recreated in full in future efforts to restrain or reduce arms.

As we look to the future, it is important to recall that progress in technologies, especially those deployed on satellites, over the last decades allowed security and other concerns to be addressed and helped make possible far-reaching arms control agreements. We may expect technology to improve in the future. However, even the evolutionary advances in verification technologies have not been and are unlikely to be able fully to meet the new challenges of arms control. As a consequence, transparency, confidence building, and other cooperative measures have been and will increasingly be used to augment verification and are likely to have an even greater prominence in the future.

### **Post-Cold War Transparency's Prospects**

The development of transparency measures, or confidence-building measures designed to promote openness, has long been held as desirable. Although pursued in the Cold War, and modestly

furthered by such provisions in nuclear arms accords relating to data exchanges, noninterference with national technical means, and the like, the secrecy of the Soviet Union did not allow major breakthroughs until the mid 1980s. Since that time, amid the political convulsions of the former Soviet Union, the scope and prospects of transparency have broadened.

At the same time, in recent years the interest in and debate over transparency appear to be moving from a bilateral (and Europe-centered) matter to one with global dimensions, in part because of growing concerns about the security implications of the proliferation of nuclear and other weapons of mass destruction. Such developments could affect the future of nonproliferation efforts.

At present, the widening transparency agenda has focused on such conventional measures and activities as pre-notification and observations of military exercises, troop movements, and the like; and data exchanges on military forces, personnel, and budgets.<sup>1</sup> Facilitating openness, such efforts are designed to make military behavior more open and predictable, to build confidence and to reassure states, and to lessen tensions. They can also provide early warning of the proliferation of nuclear and other arms. For nuclear arms control, the transparency agenda of the past decade have broader—albeit vaguer—goals, including the following:

- to foster more formal arms control by breaking down barriers and obstacles;
- to avoid more formal arms control measures and verification procedures, especially in areas where the items/activities to be controlled were not readily dealt with by traditional verification approaches; and
- to reduce costs, difficulties, and intrusiveness of monitoring compliance.<sup>2</sup>

These and related objectives of transparency measures are more attractive at present primarily because of the new strategic environment.

Transparency also has risks and limits, which are not always given their due in the literature. Among the risks are the prospect that classified,

sensitive, or proprietary information will be compromised or released (with an adverse impact on national security and international obligations); the possibility of the information channels being used for misinformation from the other party or parties (asymmetries in openness); the creation of a false sense of confidence; the questionable value of information obtained compared to intrusive verification; and the like. But opportunities to increase transparency do exist and any benefits offered must be balanced with the risks.

The future transparency and verification agenda is in many respects expansive, as it becomes a more utilized and highly valued tool for states interested in pursuing nuclear nonproliferation and arms control. The bilateral, as well as the regional and global, transparency agendas will be a critical aspect of nonproliferation and arms control in the future, and in some fashion define the bounds of what is possible. The future transparency agendas as they now appear to be emerging are outlined below.

**1. The Bilateral Transparency Agenda.** In the strategic nuclear realm, there has been an historic decision to address warheads in the START process. For the last year or two, there has been a discussion in the United States Government and in the arms control community about the desirability of addressing warheads in a START III agreement. In the 1997 Helsinki Summit joint statement on future nuclear force reductions, the two Presidents to begin negotiations on a START III agreement. START III will include, among other things:

Establishment, by Dec. 31, 2007, of lower aggregate levels of 2,000–2,500 strategic nuclear warheads for each of the parties...

Measures related to the transparency of strategic nuclear warhead inventories and the destruction of strategic nuclear warhead inventories and any other jointly agreed technical and organizational measures, to promote the irreversibility of deep reductions including prevention of a rapid increase in the number of warheads.<sup>3</sup>

There was also a commitment to consider confidence- and security-building measures related to the warheads of nonstrategic nuclear forces.<sup>4</sup>

The Helsinki language suggests that START III is bound to, and will essentially be an extension of, START II. Accordingly, warheads apparently will not be the units of account for START III. However, they will be addressed in unprecedented ways in the agreement if the Helsinki framework is followed. The Helsinki language reflects a growing sense that warheads need to be controlled. Apparently, it arises out of the urgent requirements of the Cooperative Threat Reduction program, Lab-to-Lab programs on material protection control and accounting (MPC&A), and other activities between the United States and Russia to enhance the security of the warheads and materials from the old Soviet arsenal, along with the logic of the START process, which could not ultimately avoid warheads as numbers of delivery systems are reduced dramatically.

Reflecting the difficulties of verifying warheads, perhaps, the Helsinki language refers to *transparency measures*. But transparency is as yet undefined in this context. Undoubtedly there will also be reviews and reassessments of traditional verification approaches for warhead arms control. In addition to warheads, there is also a reference in the Helsinki joint statements to considering transparency on materials (presumably of weapon-origin) in the START III context.<sup>5</sup> This would likely occur in addition to a host of bilateral and multilateral initiatives in materials verification or transparency. The challenges are formidable, but there is even reason to believe they can be met. Transparency will be critical if this is in fact achieved.

**2. The Regional and Global Transparency Agenda.** In addition to the U.S.-Russian arena, transparency initiatives are likely to figure in the regional and global levels.

Regional nuclear energy cooperation, as embodied in proposals for an ASIATOM or PACATOM, may also be influenced by European

developments, in this case EURATOM. Although the declared objectives of such proposals are not always clear, many seem designed primarily to promote transparency in nuclear-fuel cycles, particularly those that involve direct-use nuclear-weapon materials.

There have been other regional nuclear initiatives. For example, initiatives such as non-attack on nuclear facilities or the declaratory renunciation of nuclear weapons have been put forward. While such measures might, if realized, break impasses and lead to more formal and comprehensive measures when peace is on the horizon, they may be ill-suited to tense regions because of fears that they may be misused for the advantage of one or other of the participants.

In the global treaty realm, the next item on the multilateral agenda is likely to be the Fissile Material Cutoff Treaty (FMCT), as specified in the final declaration of the 2000 NPT Review Conference. Transparency will likely be a key feature of such ban on the production of nuclear materials for weapons purposes.

Beyond the FMCT, global transparency initiatives in the United Nations (including proposals for a register of nuclear arms) and elsewhere have not been particularly promising. They do have a constituency and, where pursued, will need to be assessed in light of their costs, utility, and impact on regions. In similar fashion, efforts to use transparency measures to improve confidence in compliance with global treaties like the Treaty on the Nonproliferation of Nuclear Weapons (NPT) via International Atomic Energy Agency (IAEA) safeguards will need to be carefully assessed.

### **Conclusions**

The verification and transparency agendas of tomorrow will be driven, first and foremost, by current and future verification challenges. These challenges are formidable, and becoming more so to the extent that the nuclear nonproliferation and arms control agenda expands. Verification, of course, will need to change in response to the more demanding requirements of cradle-to-grave

regimes for nuclear weapons and materials. Political possibilities for verification that had never before existed opened up during the last decade, although they may be ebbing. Technical monitoring capabilities have grown. But further evolutionary improvements are necessary, and transparency will have an increasing role in augmenting verification capabilities, improving their effectiveness, and reducing their costs. If societies continue to become more open, and international relations continue to improve, this may not pose problems. Yet, it is not possible to be assured of such positive developments and, in any case, asymmetries among regions and states will remain a problem for the foreseeable future.

In the same vein, there is a sense that old-style formal agreements—bilateral and multilateral—have not always gotten to the heart of the most pressing dangers and concerns. For example, the relationship of U.S.-Russian post-Cold War bilaterals addressed at the legacy of the Soviet nuclear arsenal on the one hand, and continuing formal arms control negotiations on the other, offers an illustrative case where the latter was deemed insufficient by both sides. Even the best agreements need to be nurtured over time, however, and one possibility of addressing new developments without renegotiating treaties is through transparency and related initiatives. Also, there is interest in nonnegotiated, politically-binding nuclear-related agreements or arrangements, with which transparency measures, perhaps those wholly outside of the security realm may be associated.

To address emerging nuclear dangers, we may expect hybrid verification-transparency regimes to be seen as acceptable. Such regimes would have intrusive but much more limited verification provisions than Cold War accords, and have extensive transparency provisions designed in part to augment the verification measures, to fill in the “gaps” of the verification regime, and the like. These hybrid regimes will likely appear to meet security concerns, to be cost effective, and to be in line with developing U.S.-Russian, and international, relations. However, if international political rela-

tions, and especially ties between the United States and Russia, take a down turn, such regimes may prove to be very limited, "hollow" instruments.

#### References

1. See, for example, Michael Krepon, ed., *A Handbook of Confidence-Building Measures for Regional Security*, 2nd ed. (Washington, D.C.: The Henry L. Stimson Center, January 1995).
2. See Lewis A. Dunn and Patricia McFate, *Transparency Aspects, Prospects, and Implications*, briefing at Lawrence Livermore National Laboratory, Livermore, Calif., 24 September 1992; and Krepon, ed., *A Handbook of Confidence-Building Measures for Regional Security*, op. cit.
3. "Joint Statement on Parameters on Future Reductions in Nuclear Forces," The White House, Office of the Press Secretary, Helsinki, Finland, March 21, 1997.
4. See *ibid.*
5. See *ibid.*