

**Testimony of Olli Heinonen, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, on 10 June 2010, before the Committee on Foreign Affairs**

Chairman Royce, Ranking Member Engel, distinguished members of the Committee, thank you for inviting me to address this hearing on “Verifying Iran’s Nuclear Compliance”.

In my testimony today, I will focus on the verification aspects of elements needed in a comprehensive nuclear deal with Iran, which is being negotiated as a next stage to the Joint Plan of Action concluded in Geneva on 24 November 2013<sup>1</sup>. I base my remarks on the implementation of the comprehensive safeguards agreement and relevant UN Security Council resolutions in Iran, and complemented with experiences drawn, in particular from the IAEA verification activities in South Africa after its dismantlement of its nuclear weapons program, Syria and North Korea.

Timely detection and prevention of the development and acquisition of nuclear weapons or a state’s capability to produce them is a complex task. Development of weapons of mass destruction is one of the closest kept secrets of a state. There are things, which we know, and there are aspects of such programs which we can perhaps to certain degree deduce, but also features which we do not know.

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<sup>1</sup> Communication dated 27 November 2013 received from the EU High Representative concerning the text of the Joint Plan of Action, IAEA, INFCIRC/855, 27 November 2013.

When we look at the nuclear proliferation cases of the last couple of decades, states have chosen to use undeclared nuclear materials at undeclared locations. In order to achieve their objectives, states often, in addition to secrecy, stalled, misled or obfuscated to buy time and delay the IAEA in its verification mission. We have experienced many of these adverse actions taken by Iran. Due to the fact that Iran has been running parts of its nuclear first clandestinely and then without satisfactorily fulfilling its reporting obligations to the IAEA and disregarding UN Security Council resolutions, the onus of proof bears heavily on Iran to show that its nuclear program is entirely peaceful.

I have recently published with David Albright and Andrea Stricker<sup>2</sup> a comprehensive analysis on compromises, which the negotiators crafting the comprehensive final agreement envisioned in the JPA should avoid. In the following I will highlight some verification details which should be included to a final agreement negotiated. I will note a need for possible additional UN Security Council resolutions, and I also touch on future reporting of the IAEA on safeguards implementation in Iran.

The strength of the IAEA verification system is access to nuclear material, facilities, equipment and people. To this end, the IAEA has, under its Comprehensive Safeguards Agreement (CSA) and Additional Protocol (AP), significant tools available when fully implemented and utilized. The vast majority of states comply with their safeguards undertaking in good faith. At the same time, the safeguards is not a miracle pill that once taken, cures everything. No verification system can provide absolute assurances that a treaty partner fully complies with its undertakings. This is especially the case when applied to problematic states that are non-compliant, such as Iran.

Throughout the long history of discussions on the scope and content of its nuclear program, Iran has often offered ‘transparency’ to build international confidence on its nuclear program. Recently President Rouhani has again publicly stated Iran’s readiness for greater **transparency**. More importantly, such transparency should be understood and implemented in a meaningful and systematic way. Even in the name of ‘transparency,’ where Iran decides

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<sup>2</sup> D. Albright, O. Heinonen, and A. Stricker, Five Compromises to Avoid in a Comprehensive Agreement with Iran, ISIS, 3 June, 2014.

to ‘show’ a place previously off limits (imposed by Iran), such inspection visits can have meaning only if substantially new information and discussions take place, and explanations are provided on the scope and content of the nuclear program. Hence openness should be clearly defined and become a legally binding undertaking, and not treated as good will visits to be granted when problems arise.

Going further, according to the provisions of the CSA a state has to declare all nuclear material in its territory. Thus military sites do not form sanctuaries, but the IAEA has right to conduct inspections under a CSA and complementary access under an AP, when appropriate.

### **1. Verification undertakings by Iran**

- Consistent with the obligations of all members of the Nuclear Nonproliferation Treaty (NPT), Iran will implement fully its obligations under the IAEA Statutes, Iran’s Safeguards Agreement with the IAEA [INFCIRC/214], and adheres to the modified Code 3.1. of the Subsidiary Arrangements<sup>3</sup>.
- Iran ratifies and implements expeditiously the Additional Protocol.
- Iran implements fully the verification and clarification requirements of the relevant resolutions of the IAEA Board of Governors and the UN Security Council.
- Iran will provide an expanded declaration on all aspects of its past and current nuclear program.
- Iran will provide information on the production source material, which has not yet reached the composition and purity suitable for fuel fabrication or for being isotopically enriched, including imports of such material.

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<sup>3</sup> Code 3.1 is part of the Subsidiary Arrangements to the safeguards agreement, which specifies when an IAEA state must report a new facility to the Agency. In 2003, Iran agreed to implement the modified Code 3.1, which requires the submission of design information to the IAEA as soon as a new facility is planned. Iran unilaterally revoked its implementation of the modified code in February 2006. Iran is the only country with a substantial nuclear program that does not adhere to the modified code.

- Iran will provide information on imports and domestic production of single and dual-use items listed in the guidelines of the Nuclear Suppliers Group<sup>4 5</sup>.
- Iran will provide the IAEA with unconditional and unrestricted access to any and all areas, facilities, equipment, records, people, materials including source materials, which are deemed necessary by the IAEA to fulfill its requirements under the safeguards agreement, and to verify Iran's declarations made under the items above. These are needed both to understand the scope of the nuclear program as well as address the possible military dimensions (or PMD) aspects. The purpose of these measures would be to re-establish Iran's non-proliferation records, and not to lay the basis for further punitive measures.
- Iran will support proactively the initiative to establish a Middle Eastern Zone that is free of Weapons of Mass Destruction and their Delivery Vehicles.

## **2. Additional remarks on the verification measures**

Over the last two decades, to take advantage of weaknesses at the front end of the nuclear fuel cycle, proliferating states have exploited the use of yellow cake for uranium conversion at undeclared facilities that in turn served as feed material for the R&D on uranium enrichment.

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<sup>4</sup> INFCIRC/254/Rev.12/ Part 1, Communication Received from the Permanent Mission of the Czech Republic to the International Atomic Energy Agency Regarding Certain Member States' Guidelines for the Export of Nuclear Material, Equipment and Technology, IAEA, 13 November 2013.

<sup>5</sup> INFCIRC/254/Rev.9/Part 2, Communication Received from the Permanent Mission of the Czech Republic to the International Atomic Energy Agency Regarding Certain Member States' Guidelines for Transfers of Nuclear-Related Dual-use, Equipment, Material, Software and Related Technology, IAEA, 13 November 2013.

For a complex case like Iran, much more needs to be tightened along the entire process of verification work. Iran's declarations and the IAEA access and verification rights need to be extended beyond those under the CSA and the AP.

The IAEA has a well-established safeguards approach at Iran's uranium conversion and enrichment plants provided for under the CSA. To further effectiveness and improve timeliness of detection, **remote monitoring** should be established at Natanz, Fordow and Isfahan. For the same reasons, uranium stockpiles - natural and low enriched uranium hexafluoride and oxides - should also be subject to remote monitoring. This approach should also be extended to cover yellow cake and its production facilities. It is necessary to add these measures as they do not fall under the AP.

Iran should permit the IAEA to verify **the production or import of key centrifuge components and materials** in addition to routine access provisions of the Additional Protocol. During the period of confidence-building until the IAEA has reached the conclusion that all nuclear material in Iran is in peaceful use, Iran will declare at agreed intervals the numbers and locations of centrifuges and key components and materials that it has and those newly produced. The IAEA will have the right to short-notice visits to centrifuge component and key material production sites to verify the number of centrifuges and major components and materials produced and that they are being shipped only to declared sites.

Under the AP, the IAEA has the right to ask for information about imports of single use items. An arrangement should be made to seek automatic reporting to the IAEA. The reporting should follow the guidelines established by the Nuclear Suppliers Group mentioned above. As indicated in my paper with Mr. Albright and Ms. Stricker, it is important also to monitor **imports of dual use items and technologies**, noting at the same time that Iran has been building its own indigenous equipment production capabilities. To limit the supply of sensitive nuclear and nuclear-related exports to Iran, a list of goods that includes additional items not found on typical dual-use lists but critical to Iran's nuclear program, would also be necessary for duration of time.

A comprehensive agreement should also take the opportunity to assess the usefulness of strengthening certain linkages. For instance, the Sanctions Committee on Iran that was established under UNSC's resolution 1737<sup>6</sup> is a separately run mechanism from the IAEA verification process. At a minimum, these two bodies could be allowed to share information. It might also be reasonable to consider whether monitoring the implementation of sanctions should be assigned to a special unit to be established within the IAEA.

To minimize further the effects of the unknowns, it is important to understand the historical production and acquisition of uranium and its compounds by Iran. As part of the information obtained from the Iranian mines and milling facilities under the Framework for Cooperation<sup>7</sup>, Iran has provided information on uranium production of mines in Gochine and Ardakan. It is important that the IAEA shares those actual numbers, and whereabouts of those materials with its member states, which may have additional information to complement the statements made by Iran. This would also provide the Member States indications on Iran's compliance with its undertakings. Releasing of such information by the IAEA will not jeopardize its independent assessment of Iran's declarations, but will complement information available.

From a practical point of view, the quarterly reporting on progress and findings by the IAEA should be sufficient. However, the IAEA should release factual information as it becomes available without waiting the final conclusion by the IAEA conclusions. Timeliness of conclusions depends on several parameters. This would entail the detection of the event, asking the clarification, additional sampling. Much of that depends on the cooperation of the inspected party, but also on the event itself. While diversion of declared material is easily detectable, some more sophisticated events may take longer to detect. The IAEA's practice is to review each finding and claim meticulously, spending a fair amount of time and resources to refute or

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<sup>6</sup> Resolution 1737 (2006), Adopted by the Security Council at its 5612<sup>th</sup> meeting, on 23 December 2006. S/RES/1737(2006).

<sup>7</sup> Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council Resolutions in the Islamic Republic Iran, GOV/2014/28, paras 7-8, IAEA, 23 May 2014.

confirm any claim. Revised explanations provided by the inspected state also slow down the IAEA. This process needs to be re-thought. The IAEA work process needs to be factored into an overall understanding of timeliness of response.

One of the tools the IAEA uses is environmental sampling, which has resulted in long in-between lead times. The latest IAEA report to its Board of Governors indicated that the environmental sample analysis results for Natanz FPEP, FEP, and Fordow were 28 January, 2014, 5 February 2014, and 28 January, 2014, respectively<sup>8</sup>. If additional samples and clarifications are required, the results will in practice take 6 months.

### **3.Possible military dimension (PMD)**

Why are questions raised by the IAEA related to the military dimension of Iran's nuclear program matter pertinent and should be considered a requirement for a comprehensive deal. There are reports that much of this military related s came to halt in 2003. On the other hand, the IAEA has assessed in its reports that some of this work has continued since. It is important to understand the status of Iran's PMD efforts, noting that one of the last duties of people and organizations involved was to document work done. One plausible reason for such effort could have been to save information for further use. Unless properly addressed, it would be difficult to create a meaningful and robust verifications regime for Iran. It would also render difficult for the IAEA to determine with confidence that any nuclear weapons activities are not ongoing – a necessary ingredient for a long term deal.

Under the CSA, the Agency is required to provide assurances regarding the absence of undeclared nuclear material and activities in Iran. In other words: to certify that all nuclear material in Iran is in peaceful use.

In order for the IAEA to be able to do so, Iran needs to, *inter alia*, cooperate with the Agency to resolve questions related to the design of:

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<sup>8</sup> IAEA, "Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran," GOV/2014/28, 22 May 2014.

- the Shahab-3 missile re-entry vehicle to accommodate a new spherical payload;
- design of the new payload;
- high-explosive studies;
- hydrodynamic studies including experiments at test chamber at Parchin;
- nuclear material acquisition plans including Iran's alleged green salt project and a foreign offer for uranium reconversion and casting equipment;
- acquisition of the uranium metal document describing production of high enriched uranium components for a nuclear explosive device;
- procurement and R&D activities of military related institutes and companies that could be nuclear related; and
- manufacture of nuclear equipment and components by companies belonging to defense industries.

Without addressing those questions, the IAEA Secretariat will not be able to come to a conclusion that all nuclear material in Iran is in peaceful use, which is essential in building confidence of the international community over Iran's nuclear program. The preamble of the JPA concluded in Geneva on November 24 between Iran and P5+1 refers to additional steps to be undertaken between initial measures in the JPA and the final step. A comprehensive deal – that would include uranium enrichment -- can only be reached if uncertainties over Iran's military nuclear capability are credibly addressed.

The list of IAEA questions is long. Questions such as those related to the Exploding Bridge Wires (EBWs) only constitute one sub-item. While the recent Framework for Cooperation agreements between Iran and the IAEA are welcome, the process is far from over. Many of the issues on the list above are interconnected, and they cannot be solved in isolation and not through the step-by-step process. In other words, there should be an understanding and actions provided by Iran that allows the IAEA to address the whole picture of the military dimension concerns. That should be an unambiguous condition to achieving a final accord that is meaningful in safeguards terms.

The agreement should also have provisions to ensure that Iran will decommission, dismantle or convert to non-nuclear or peaceful use in a

verifiable and irreversible manner nuclear related equipment, materials, facilities and sites that contradict the provisions of the safeguards agreement or the spirit of Article III of the NPT. Such installations will be subject to a long-term monitoring by the IAEA.

### **In summary**

The actual verification process will be time consuming and will stretch over many years, especially more so for a nuclear program in Iran that had been largely clandestine in nature, broad and complex. Forthcoming and proper cooperation from Iran could set the tone for the country to have in place a limited nuclear program. A meaningful and robust verification system is needed to support a long term deal.

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