2 January 2017

Dear President-Elect Trump;

On August 9, 2015 a group of scientists and engineers with understanding of the physics and technology of nuclear power and of nuclear weapons sent an open letter to President Obama about the Iran Deal, formally known as the Joint Comprehensive Plan of Action (JCPOA). We characterized the JCPOA as "an innovative agreement, with much more stringent constraints than any previously negotiated non-proliferation framework."

Eleven months after "implementation day" we write to provide our assessment of the current status of the JCPOA. As agreed, Iran has deactivated and put into storage under International Atomic Energy Agency (IAEA) seal about 2/3 of its centrifuges, and it has exported more than 95% of its stockpile of low-enriched uranium—a springboard to weapon-usable highly enriched uranium. Iran no longer produces uranium with enrichment near 20%, as it did before the interim Joint Plan of Action (JPOA), but is restricted to 3.67% enrichment. As a result of the reduced centrifuge capacity and the elimination of the large stock of partially enriched uranium, the breakout time for Iran to produce enough highly enriched uranium for a nuclear weapon has increased to many months, from just a few weeks during the time that the JPOA was under negotiation. IAEA inspectors now have the right to daily access at Iran's enrichment plant at Natanz, and monitoring devices there make continuous on-line enrichment measurements. We are confident that no surprise breakout at this facility is possible.

The large "calandria" or reactor vessel for Iran's heavy-water reactor has been rendered inoperable, and Iran's stockpile of heavy water has been reduced to 130 metric tons and capped at that level. The overage of 0.1 tons recently reported by the IAEA, of no strategic significance, was remedied by export of 11 tons as verified by the IAEA. The redesign of the reactor will ensure that its plutonium production will be about 10% of that from the original design, and, when construction is complete and the reactor has begun operation, the fuel that has generated plutonium will be removed from Iran. These steps eliminate the means for Iran to produce plutonium, the alternative material for nuclear weapons.

Furthermore, Iran has agreed to an enhanced version of the procedures of the "Additional Protocol" to the Nuclear Non-Proliferation Treaty, which gives IAEA inspectors access to, inter alia, centrifuge manufacturing, R&D and storage sites, and uranium mines, as well as any suspect potential clandestine uranium enrichment facilities.

In sum, the JCPOA has dramatically reduced the risk that Iran could suddenly produce significant quantities of nuclear-weapon materials. This has lowered the pressure felt by Iran's neighbors to develop their own nuclear weapons options and none has announced a new dual-use nuclear program of its own.

In the near term it will be necessary to maintain vigilance using the verification procedures in place. As we noted in our previous letter, if Iran decides to increase its enrichment capacity as allowed by the

JCPOA after about ten years, enhanced verification measures would be desirable and consistent with Iran's commitment in the JCPOA to implement certified modern verification procedures in line with internationally accepted IAEA practice. Multinational participation in what is currently a purely national program for producing power reactor fuel may also be a desirable means to enhance transparency.

The JCPOA does not take any options off the table for you or any future president. Indeed it makes it much easier for you to know if and when Iran heads for a bomb. It provides both time and legitimacy for an effective response.

Our technical judgment is that the multilateral JCPOA provides a strong bulwark against an Iranian nuclear-weapons program. We urge you to preserve this critical U.S. strategic asset.

Sincerely,
Richard L. Garwin, IBM Fellow Emeritus
Robert J. Goldston, Princeton University
Siegfried S. Hecker, Stanford University
Martin Hellman, Stanford University
Rush D. Holt, American Association for the Advancement of Science
R. Scott Kemp, Massachusetts Institute of Technology
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Also signed by:

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