

From Mistrust to Verification: JCPOA

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1. Introduction

At its core, the Iranian nuclear weapons program is about mistrust. Iran developed a nuclear weapons program due to factors such as existential threat from regional adversaries and double standards in the nonproliferation institution. Similarly, US withdrawal from the Joint Comprehensive Plan of Action(JCPOA) is also about mistrust. The US argued for a JCPOA without the sunset clause as it did not trust Iran to comply with the IAEA, NPT and Additional Protocol once the JCPOA was terminated. How can states overcome mistrust? This paper argues that the JCPOA must continue to resolve the issue of mistrust.

2. Methods and Results

This section will briefly define key concepts such as mistrust, confidence and control. Secondly it will enumerate findings in the IAEA's final assessment report of Iran's nuclear program. [1] The report is a useful tool to measure transparency and confidence building since it assesses whether Iran kept its obligation to the IAEA. Finally, it categorizes the report into three sections and will explain how continuing the JCPOA will negate the effects of mistrust.

2.1 Mistrust and Control

Trust is a source of confidence. [3] It is the foundation of cooperation between states. On the other hand, mistrust can be defined as the belief that others disregard one's interests and will take advantage should one be in a vulnerable position. [2] In other words, mistrust is a state where one cannot be confident of the other's motives. To decrease sense of mistrust and ultimately build confidence, states need to be predictable. This means states should be able to reasonably predict that the other will pursue mutually common interests instead of acting opportunistically.

To "manage mistrust and prevent conflict" between highly mistrustful states, transparency and assurance mechanisms are required. [2] These tools provide control, or a "regulatory process where the elements of a system are made more predictable through the establishment of standards in pursuit of some desired objective or state." [3] Once fully implemented, JCPOA can function as a control to display Iranian nuclear use

transparency and serve as a confidence-building mechanism.

Should it continue, its process will show that (a) Iran will not pursue nuclear arms as soon as the JCPOA is terminated and (b) P5+1 will not arbitrarily withhold relief or refuse to lift the sanctions. To determine whether JCPOA can effectively function as a control, this paper analyzes Iran's implementation of NPT safeguard agreement by examining the IAEA's assessment on the 2015 'Roadmap for the Clarification of Past and Present Outstanding Issues regarding Iran's Nuclear Programme.'

2.2 Mistrust to Confidence: 2015 Roadmap

In the annex of its report on implementing NPT safeguards agreement in Iran, the IAEA outlined 12 areas for investigation. These 12 areas became known as the 'possible military dimension(PMD).' There was little progress until November 2013 when Iran and the IAEA announced a Joint Framework for Cooperation where Iran would address the IAEA's concerns. Before Iran could complete its reply, the 2013 Cooperation was superseded by the 2015 'Roadmap for the Clarification of Past and Present Outstanding Issues regarding Iran's Nuclear Programme.' This roadmap was announced concurrently with the conclusion of the JCPOA which meant lifting sanctions and providing relief became contingent upon Iran's cooperation with the IAEA. The following is a summary of the IAEA's "Final Assessment on Past and Present Outstanding Issues regarding Iran's Nuclear Programme" published in December 2015.

[1] **Program management structure:** The IAEA assessed that prior to 2003, there was a possibility of military dimension to the Iranian nuclear program. Although there was some activity, *there was no coordinated program after 2003.*

[2] **Procurement activities:** The IAEA had indications Iran was seeking illicit procurement through a disguised buyer prior to 2007. Iran admitted to enquiring after a specific high-speed camera for conventional purposes but *denied purchasing it.*

[3] **Nuclear material acquisition:** Gchine mine was linked with warhead development but found it would not have produced substantial amounts of nuclear material prior to 2006. Iran declared Gchine mine during its voluntary implementation of the Additional Protocol in 2004 and provided access in 2014. The

IAEA found missing amounts but it was “*within uncertainties associated with nuclear material accountancy and related measurements.*”

[4] **Nuclear components for explosive device:** The IAEA received evidence that Iran had documentation of nuclear explosive device design information and was working to create uranium components for it. Iran denied working on metallurgical work for nuclear devices. Ultimately the IAEA found *no indication of Iran conducting activities related to the document.*

[5] **Detonator development:** The IAEA assessed Iran’s development of explosive bridgewire detonators(EBW) as having characteristics similar to nuclear explosive devices. While Iran argued it was for preventative measures, the *explanations were inconsistent with the timeframe and unrelated to the activity.*

[6] **Initiation of high explosives & associated experiments:** The IAEA received information that Iran had design information of multipoint initiation(MPI) and had used this to develop a hemispherical MPI system as well as conducted at least 1 experiment in 2003. In 2015, Iran admitted to working with MPI technology in relation to conventional military application. The IAEA assessed it had *characteristics relevant to nuclear explosive devices.*

[7] **Hydrodynamic experiments:** The IAEA received satellite imagery of a cylindrical structure at the Parchin military complex that matched parameters to an explosives fire chamber. Under the Road-map, the IAEA was able to visit the site and conduct environmental sampling. The IAEA assessed the *satellite imagery and environmental sampling did not support Iran’s statements concerning the building’s purpose.* It also found the building had undergone internal refurbishment which impeded their investigation.

[8] **Modelling and calculations:** Prior to 2004 and between 2005 to 2009, Iran conducted computer modelling studies of various component arrangements specific to nuclear explosive configurations on implosion technology. Iran argued the *hydrodynamic modelling was for conventional military application and had no relevance to the IAEA.*

[9] **Neutron initiator:** Around 2004, Iran considered measures to ensure neutron initiation of implosion-type nuclear explosive device by generating neutrons under shock compression. Iran argued *the information was on general neutron generation studies and allowed a visit to the facility.*

[10] **Conducting a test:** Iran may have planned a preparatory experimentation on testing a nuclear explosive device and may possess a document relevant to explosive safety arrangements. *IAEA has not received additional information since the 2011.*

[11] **Integration into a missile delivery vehicle:** IAEA had information that in 2002-2003, Iran examined how to integrate a new spherical payload into an existing payload chamber of the Shahab-3 missile. IAEA asked to visit workshops where the components and mock-up models were made and were *shown videos inside 2 workshops in operation and outside 1 workshop no longer in business.*

[12] **Fuzing, arming, and firing system:** IAEA had documents of Iran’s alleged studies on prototype firing system for the Shahab-3 missile. It was to develop payload that either explodes in air above the target or explodes upon impact to ground. *IAEA has not received additional information since the 2011.*

2.3 Analysis of the 2015 Roadmap

Assessment	Area
Nuclear weapons program development	[1], [5], [6], [8]
Consistent w/ declaration	[3]
No new information	[10], [12]

[Table 1] Iran Assessment

IAEA’s assessment can be categorized into three parts: (1) part of a nuclear weapons development program prior to 2003, (2) consistent with declaration to the IAEA, and (3) no new information (Table1). [4]

Iran’s program management structure, computer modelling of a nuclear explosive device, and certain types of experiments concerning detonators fall under the first category: part of a nuclear weapons program development before 2003. The IAEA could not disprove or prove that these areas were utilized for the Iranian nuclear weapons program development so it indicated a possibility. This category provides the highest source of mistrust because of this possibility.

Nuclear material acquisition at the Gchine mine falls under the second category—information consistent with declaration. Initially there were trace amounts missing from the site, but the IAEA declared that these were within the scope of nuclear accountancy. This category provides the least source of mistrust since IAEA has formally declared the information provided by Iran matches the tests conducted by the IAEA.

Finally, conducting tests and fuzing, arming and firing system falls under the no new information category. While this category does not invoke severe mistrust as the ones concerning a nuclear explosive device, it is still unconfirmed information. This can cause mistrust as the information has not been updated since 2011.

States that do not trust Iran would be wary of the first, the third, lastly the second category. Areas concerning nuclear weapons development program prior to 2003 has been a source of contention,

especially with the US because it directly touches upon mistrust of Iran's declaration. To clarify whether Iran is still continuing such activities can only be verified through continued and persistent inspection from the IAEA.

Iran providing no new information since 2011 can be understood in two ways. First, it can mean that it is part of Iran's national security, thus falling outside of the IAEA authority. Second, it can also mean that Iran has deliberately chosen not to provide information because it is part of a nuclear explosives device experiment. Verification of either explanation ultimately requires IAEA inspections.

3. Conclusions

Continuing the JCPOA may contain the risk of Iran restarting its nuclear ambition once the sunset clause expires. However, having no deterrence to stop such ambition is even more dangerous. Thus, withdrawing from the JCPOA and continuing the mistrust Iran is riskier than monitoring Iran under the JCPOA. This is because Iran has to allow the IAEA access to its facilities as well as implement the Additional Protocol on a provisional basis in return for incentives. Thus JCPOA will serve as a regulatory control regardless of states' mistrust. Fostering trust and building confidence will only come once Iran displays results of implementation.

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