

Cutting Through the Fog on 'Possible Military Dimensions' to Iran's Nuclear Programme: Roof Activity at Parchin

by Robert Kelley

On 14 July 2015, the Joint Comprehensive Plan of Action (JCPOA) was agreed after more than two years of intensive negotiations between France, Germany and the United Kingdom (E3), the European Union (EU), China, Russian federation and the United States of America (+3), E3/EU+3 and Iran, on ensuring the exclusively peaceful nature of Iran's nuclear activities. On the same day, the International Atomic Energy Agency (IAEA) and Iran agreed on a work plan called the Road-map for the Clarification of Past and Present Outstanding Issues regarding Iran's Nuclear Programme. Under the Road Map, the IAEA and Iran also concluded separate arrangements to address the issues of: (1) possible military dimensions to Iran's nuclear programme as set out in the Annex to the November 2011 IAEA report; and (2) of activities at Parchin, a large military-industrial factory in Iran.

Over past years, since November 2011, the issues of PMD and Parchin have been the subject of many analyses in the public domain, some which instead of clarifying the underlying issues have muddied waters. In a series of assessment, Robert Kelley, Associated Senior Research Fellow with the Disarmament, Arms Control and Non-Proliferation Programme at SIPRI, who has experience in nuclear intelligence and remote sensing, respectively at the U.S. Los Alamos National Laboratory and the U.S. Department of Energy, discusses some of the key issues and misperceptions concerning PMD and Parchin. **These assessments are designed to acquaint the public with the truth and the application of the scientific method to information analysis in the service of peace and security. While some are trying to make the problem seem difficult, competent and experienced intelligence analysts use many tools to understand information and paint a clear picture. These tools include measurements of objects, categorization of objects, historical imagery over a relevant period of time, and, of course, common sense plus experience.**

The first of these assessments looks at allegations of recent activities at Parchin with regard to purported activities on the roofs of certain buildings.

Roof Activity

Recent imagery taken on 26 July 2015 of roofs of certain structures at Parchin has been interpreted in the public domain as showing "activity" on the roofs. The first question to ask is "what is roof activity?" Roofs tend to be passively inanimate. If there is activity on the roof of a significant building at Parchin, and it is not at all clear what is being alluded to in the recent public domain analysis, the logical question to be asked is whether the purported activity is significant and if so does it jeopardize the Road-map? The apparent intent of the recent public domain analysis is that in some images the roofs of two structures at Parchin, located in the parking lot 25 metres and more from the building that has been the subject of intense interest since the IAEA PMD annex of 2011, appear as plain white and in others they have blotches. Is this a new discovery of "activities" taking place on the roofs? Not really!

Satellites collect imagery through electro-optical sensors much like in a digital camera. If the object is bright and reflects light well it can badly blind the sensor as we see in many images at Parchin, such as this one.

Roof Reflection on 14 February 2013



On that day in February this year, the majority of all buildings at Parchin were reflecting the sunlight into the satellite camera and all roofs apparently showed up as stark white. Compare this to imagery of 20 October 2013 (and there are many other images on other dates that are similar). The sun angle for this satellite pass is not blinding the satellite sensor and roof blotches are apparent in the buildings at the compound of interest and most other buildings at Parchin, especially those with flat roofs.



20 October 2013

Conclusion: There in fact is no “roof activity” observed in the public assessment of the images of 26 July 2015 noted above. In reality, it is just a difference in contrast, resolution and reflection. And, to complete the assessment, if indeed there were “roof activity” might one not expect to see supporting activities such as trucks, ladders, construction materials and related “ground activity”? But none is observable in the imagery because in fact there is no activity taking place on the roofs in question. The roofs remain peaceful and inanimate and there is no activity and certainly nothing to hinder the Road-map or JCPOA!