



April 11, 2008

Briefing notes from February 2008 IAEA meeting regarding Iran's nuclear program

The Institute for Science and International Security (ISIS)

ISIS obtained the document below from several sources. It summarizes a briefing given in Vienna by Olli Heinonen, the IAEA's Deputy Director General of Safeguards in February 2008 to member states, including Iran. The notes describe the technical basis for the IAEA's outstanding questions about the scope and direction of Iran's alleged nuclear weaponization studies. Specifically, it describes some of the information contained on a laptop obtained in Iran by an intelligence operation in 2004, as well as additional information provided by IAEA member states to the IAEA more recently. The information presented, which included multimedia files, describes several aspects of what could be nuclear weapons development-instructions on how to communicate internally using first names only, missile re-entry vehicle research including the chronology of events-separation of the missile, loss-of-tracking, switching on of altitude detectors, timing of firing devices-leading to an explosion at an altitude of about 600 meters. The IAEA notes that the altitude described in the documents excludes the possibility that the warhead was designed to accommodate conventional explosives or chemical and biological charges.

The briefing notes also summarize the reactions of Iranian diplomats at the meeting. They insist repeatedly that the allegations are groundless and the documents fabricated.

The news media have discussed the laptop documents extensively. In particular, the [Washington Post](#), [Wall Street Journal](#) and [The New York Times](#) have provided extensive coverage. But the IAEA briefing is the most detailed public information on these documents and Iran's alleged weaponization studies. As such, its release allows a more informed public debate about Iran's nuclear program and the IAEA's actions to understand that program.

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The notes were prepared by one of the diplomats attending the briefing and checked among other delegations. The IAEA has not reviewed these notes and has not supported their dissemination. As a result, they represent an unofficial record of the meeting and may contain inaccuracies.

February 25, 2008 Technical Briefing by the Deputy Director General for Safeguards

Alleged Studies on Weaponization

[Part of a larger briefing on the Director General's report on Iran]

The main points of the briefing on the alleged studies on weaponization are re-transcribed below. [NB: this is not the integral text of the briefing but notes taken during the session.]

Mr. Heinonen said during the briefing that the Agency had used documents from three sources:

- **its own information,**
- **documents relating to procurement,**
- **and information from several member states.**

Reminder of outstanding questions:

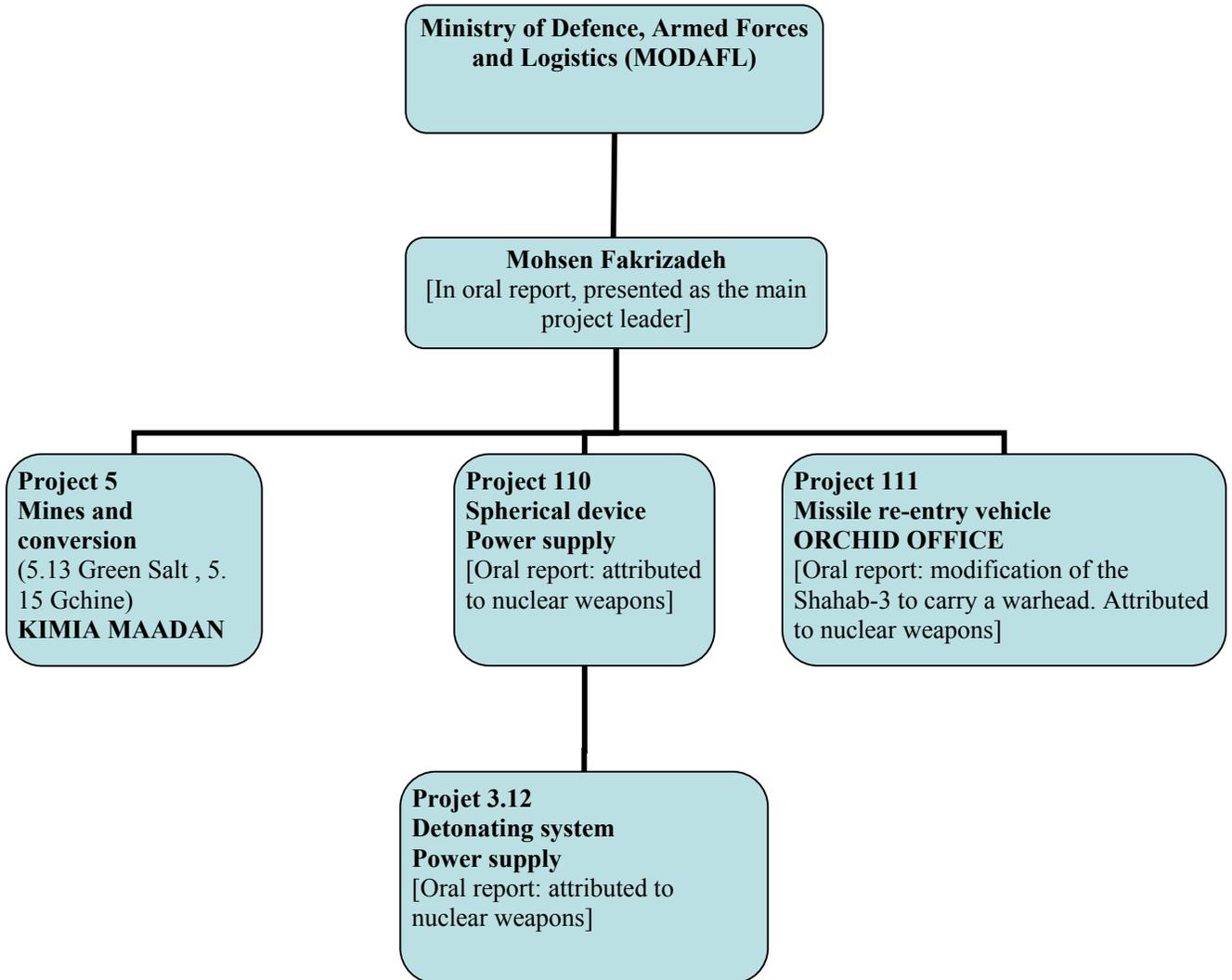
- Explaining the information known to the Agency about the attempted procurement by the PHRC in connection with the site at Lavizan-Shian
- Explaining the administrative connection between projects and links with projects involving nuclear materials

Mr. Heinonen recalled the mandate given to the Agency Secretariat by the Security Council and the Board of Governors to answer these questions.

Projects Concerned:

- Project Green Salt for converting UO₂ into UF₄: project 5 (or GS)
- Testing of high power explosives: project 3.12 (or HET)
- Design of a device and re-entry vehicle for a missile: projects 110 and 111, also at times known as 3.10 and 3.11 (or MRV)

1. Organization of projects



In reply to a question; Mr. Heinonen said that the Agency had not been able to meet Mr. Fakrizadeh.

Administrative connections: all the projects reported to the same office, that of Mr. Fakrizadeh. A document on organization includes 10 to 15 pages of instructions on how to communicate, setting out in particular rules for correspondence excluding the use of people's names.

Examples of exchanges of correspondence:

-letter from Project 5 to Project 111 (Orchid Office): sends plans of equipment corresponding to the diagram for a pilot facility for converting UO₂ to UF₄ and requests a technical opinion

- response from Orchid Office requesting people's names not be cited in the correspondence and saying that cooperation is possible
- letter from Mr. Fakrizadeh to Project 111 on budget allocations and the distribution of resources
- correspondence from Mr. Yaghouti to Mr. Nasiri.

2. Project Green Salt

Mr. Heinonen showed a process flow chart for the Green Salt process on a bench scale: conversion of UO₂ to UF₄, production on the order of 1 T a year. This project was identified as being Project 5.13 in a document from Kimia Maadan from May 2003.

Another diagram on which there were handwritten notes dealt with an installation based on a similar process but for a capacity of 50 T a year of UF₄.

A document from May 2003 addressed to Kimia Maadan dealt with the delivery of equipment.

Certain documents included a lot of handwritten notes. Information establishing the existence of other projects, for example, Project 5.11 whose existence Iran has denied though it acknowledges the existence of a project 5.15.

Iran's statements reported by Mr. Heinonen:

- These allegations are groundless and the documents are fakes.
- There are technical errors in the outline process.
- The only project ever led by Kimia Maadan is Project 5.15 (Gchine).
- On some documents the rubber stamp acknowledging receipt was missing.
- The document on the delivery of equipment is authentic—it is part of Project 5.15.

Agency Evaluation

- It is definitely a process flow chart for production of UF₄.
- It is credible—it's a preliminary design plan.
- The process is different from that used at UCF.
- There are technical inconsistencies in the diagram.
- Some of the correspondence is identical to that provided by Iran, with the addition of handwritten notes.
- It is not yet possible to reach a conclusion; the Agency needs far more information to make an evaluation.

3. Tests of high power explosives

Reminder of outstanding questions: several types of experiments must be clarified:

- the development and manufacture of high tension EBW (Electrical Bridge Wire) detonators;
- design and fabrication of firing devices tested under simultaneous conditions, synchronized at 130 nanoseconds.
- development and testing of a remote firing system (10 km) and a similar system for firing in a well 400 m deep.

Regarding this last point, Mr. Heinonen showed a diagram in principle, presumed to be of Iranian origin, on which there is a space for measuring instruments.

Iran's statements reported by Mr. Heinonen:

- These allegations are groundless;
- Iran has developed the EBW as a safe and reliable alternative to spark gap detonators and has produced them for conventional uses.
- Iran has acknowledged carrying out tests for the simultaneous detonation of two or three systems but with far less precise temporal synchronization than that cited by Olli Heinonen and indicated in the documents (130 nanoseconds). Iran has refused to show the sites of these conventional tests.
- Iran has provided open publications on the firing of spherical and hemispherical systems but did not want to provide additional information on its experiments.

Agency Evaluation

- The high-tension firing systems and multiple EBW detonators fired simultaneously are key components of nuclear weapons.
- There are a limited number of non-nuclear applications (high performance technique for exploratory drilling).
- The elements available to the Agency are not consistent with any application other than the development of a nuclear weapon.
- The Agency does not have sufficient information at this stage to conclude whether the allegations are groundless or the data fabricated.

4. Documents and films shown

In the second part of the briefing, Mr. Heinonen wanted to present “some of the information that the Agency had wanted to show Iran but that they’d not been in a position to see.” These elements were therefore presented for the first time to Iran and member states.

The Agency has a large number of other documents from several countries, including elements specific to Project 111.

4.1 During the briefing the Agency showed a report presented at a P111 status meeting, prepared by its project leader. This is the fourth P111 meeting and covers all the activities of the project during the period from July 9, 2003, to January 14, 2004.

The first slide of the report, in Farsi, was headed with a motto, “Fate changes no man unless he changes fate.” Several slides showing the tasks of the project were then presented, from which the following elements were noted:

- development of a chamber capable of accommodating a warhead
- the chamber within the head must be simple to install
- the internal part must be replaceable
- the chamber must be sealed
- the dimensions and the mass of the head must not be changed.

Several sketches for a missile head integrating the chamber described above were shown, indicating the electronic mechanism and the spherical warhead. They do not however give an explicit indication that it's a nuclear weapon.

The following stages of the project are mentioned in the slides: configuration of the structure, design of material, connections, tightness of chamber seal, test of design, tolerance of surface states, etc.

Mathematical simulations appear to have been done to define the centers of mass, the equilibrium of the charges, the whole coinciding with the parameters for a Shahab-3 warhead.

Other calculations were listed, attributed to conventional studies for a program to develop a missile re-entry vehicle: acoustic, modal, static analysis; thermo-elasticity, dynamic fluid analysis, etc.

The presentation also refers to an initial period of Project 111, between July 23, 2002 and March 20, 2003, during which seven reports and manufacturing plans were drawn up. The companies and institutes involved in the program are allegedly described in them, as is the classification of P111.

4.2 The Head of Safeguards described the elements he had concerning the fabrication of the chamber.

A section known as the "plasma section" describes the cutting of aluminum pieces, the machining and related surface work--milling, drilling, boring, reaming and welding.

The manufacture of the nose (TIG?) of the re-entry vehicle is also documented. Mr. Heinonen presented a good many photos of lead bars and diagrams on which one can see points for stabilization, screws, nuts, discs, etc.

The presentation continues with a description of mechanisms to support the warhead so as to install the internal elements of the weapon. Fixed and mobile mechanisms are presented with detailed diagrams.

4.3 Pictures representing missile functioning were shown. They describe the chronology of events (separation of the missile, loss of tracking, switching on of altitude detectors, timing of firing device) leading to an explosion at an altitude of about 600 meters. Mr. Heinonen says here that this altitude excludes the hypothesis of conventional explosives as well as chemical or biological charges.

Other slides describe with the help of many photographs, the placement in the missile of an electrical firing system. On the photo of an electronic circuit, one can read the inscription (in reverse) "Universal Microelectronics."

The second phase of the project was accompanied by 18 known reports, several detailed diagrams and encoded digital files.

4.4 To conclude the briefing, O. Heinonen showed a film in which one could see from all angles the elements of the warhead as documented in the preceding presentation, together with their assembly and preparation for laboratory testing.