NEW INFORMATION ABOUT IRAN’S NUCLEAR PROGRAM AND INFRASTRUCTURE

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PRESENTATION RESOURCES
IAEA reports on the implementation of the comprehensive safeguards agreement and relevant UN Security Council resolutions on Iran, and following assessments made by the ISIS and FDD:


- Anatomy of Iran’s Deception and How Iran Benefited: Iran’s Nuclear Archive Confirms Gchine Uranium and Yellowcake Production Plant were Originally Part of a Clandestine Nuclear Weapons Fuel Cycle. Yet, Gchine never stopped operating, David Albright, Olli Heinonen, Frank Pabian, and Andrea Stricker, December 19, 2018.


- The Plan: Iran’s Nuclear Archive Shows it Planned to Build Five Nuclear Weapons by mid-2003, David Albright, Olli Heinonen, and Andrea Stricker, November 20, 2018.

- Breaking Up and Reorienting Iran’s Nuclear Weapons Program: Iran’s Nuclear Archive Shows the 2003 Restructuring of its Nuclear Weapons Program, then called the AMAD Program, into Covert and Overt Parts, David Albright, Olli Heinonen, and Andrea Stricker, October 29, 2018.

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ASSESSMENT BASED ON THE RIGHTS AND OBLIGATIONS
The International Atomic Energy Agency, The Joint Commission, and Iran

UNDER

- The Comprehensive Safeguards Agreement and the Additional Protocol
- UN Security Council Resolution 2231 (2015) and the Joint Comprehensive Plan of Action (JCPOA)
- Nuclear Nonproliferation Treaty (NPT)
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WHAT WE HAVE FOUND
Material from the nuclear archives seized by Israel a year ago combined together with information available from official IAEA reports provide strong indications that Iran’s nuclear weapon’s program had proceeded substantially further than what was stated by Iran and concluded by the IAEA in its latest assessment in December 2015:

- IAEA has assessed that Iran conducted feasibility and scientific studies to acquire technical competencies and capabilities, but the goal of the AMAD plan was to manufacture five weapons and be prepared to test one.

- There was a cohesive plan to manufacture nuclear weapons, and when and after the plan was halted, the IAEA was not provided with a full disclosure of the past nuclear program.

- To achieve the goal Iran started to build a parallel military front end fuel cycle in breach with its obligations under the comprehensive safeguards agreement and additional protocol.
Iran’s Civilian and Nuclear Weapons Program

Imports:
High Enriched uranium

Natural uranium
Low enriched uranium

Uranium mining and milling
Ghine

Conversion
UF₆
Green Salt Project

Uranium enrichment plant
AI Ghadir Project, renamed Fordow later

Conversion from uranium hexafluoride to uranium tetrafluoride

Production of uranium metal
Shahid Boroujerdi, Parchin

Manufacturing of uranium components
Parchin

High explosives manufacturing plant

Warhead assembly plant

Shahab-3 missile

High explosives fabrication plant

Electronics fabrication plant

Missile re-entry vehicle
SHIG

Underground nuclear test

Uranium metal

Fuel manufacturing plant (FMP)
Esfahan

Uranium enrichment R&D and pilot plants
Kalaye Electric, Natanz

3% enriched uranium
<8% and <20% enriched uranium

Fuel enrichment plant (FEP)
Najanz

U₂O₅ imports

UF₆ imports

3% enriched uranium

U₄O₉

U₄O₆

U₂O₄

Fresh fuel

Heavy water production plant (HWPP)
Arak

Heavy water research reactor
Arak

Heavy Water

Tehran research reactor (TRR)
Tehran

Spent fuel

Interim storage
Arak

Hot cell facility
Arak

Plutonium

Co-60, Cs-137

Key
- MILITARY FUEL CYCLE
- CIVILIAN FUEL CYCLE
- LOCATION
- RESOURCES
Iran designed and built installations suitable for processing and experimenting nuclear materials for nuclear weapons, but altered designs and removed equipment when installations were revealed. Those capabilities to produce and process weapons suitable fissile material can be restored in a short period of time.

*Example: Al Ghadir Project – Fordow*

Iran designed, constructed, used with nuclear material and dismantled facilities dedicated for nuclear weapon R&D.

*Example: Parchin High Explosives Testing Chamber*

Iran designed and started construction for installations for processing fissile materials for nuclear weapons without disclosing them to the IAEA.

*Example: Shahid Boroujerdi at Parchin*

Iran acquired advanced uranium enrichment centrifuge technology, which was aimed for the military program, but is now being developed further under a civilian umbrella.

*Example: 1996 deal with AQK network*

Iran constructed a uranium mine for the military program, which is now used in the civilian program.

*Example: Gchine mine*
WHAT WE HAVE FOUND

- Plan to produce weapons grade fissile material is not compatible with Iran’s statements on the peaceful scope and purpose of its nuclear program.

- Iran has deceived the IAEA in answers to long outstanding questions raised, which led to a premature implementation of the JCPOA.

- Iran has detained documents on design of nuclear weapons and processes, and associated equipment produce fissile material for weapons, which is a breach in its obligations under Article II of the NPT and not compatible with its undertaking under the preamble of the JCPOA.

- Iran designed and constructed a mock-up nuclear warhead for Shahab-3 missile. Any further work on this or other warheads designed and suitable to carry nuclear warheads for other types of missiles have not been fully disclosed by Iran.
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BREACH OF OBLIGATIONS
There are strong indications that Iran is in breach of its obligations:

- Under its Comprehensive Safeguards Agreement and Additional Protocol.

- Under Article 82 Section T of the JCPOA when it has not asked permission to use certain equipment for non-nuclear use.

- The Joint Commission has, at least, not in public, asked Iran to comply with provisions of Article 82 Section T.

- Iran has detained nuclear weapon design documents and associated equipment, which is a breach in its obligations under Article II of the NPT and not compatible with its undertaking under the preamble of the JCPOA.
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IRAN’S SUPPORTING NUCLEAR INFRASTRUCTURE REMAINS INTACT
Iran’s Nuclear Infrastructure Remains Intact

**KEY**
- **Operational before Implementation Day of the JCPOA**
- **Operational after Implementation Day of the JCPOA**
- **Planned/approved to be completed by 2025**
- **Resource**
- **Location**

**Diagram Description**
- **Mining and milling**
  - Gchine
- **Uranium mining**
  - Saghand-1
  - Saghand-2
- **Additional uranium mining and milling facilities**
- **Uranium conversion facility (UCF)**
  - Esfahan
- **Additional uranium conversion plant**
- **Fuel manufacturing plant (FMP)**
  - Esfahan
- **Khondab heavy water research reactor**
  - Khondab
- **Heavy water production plant (HWPP)**
  - Khondab
- **Interim spent fuel storage**
  - Khondab
- **Bushehr nuclear power plant: Unit 1**
  - Unit 2
  - Unit 3
- **Heavy water**
- **Spent fuel**
- **Fresh fuel import**
- **Export**
- **Heavy water**
- **Fresh fuel**
- **Spent fuel**
- **Targets**
- **Uranium oxide (UO₂)**
  - U₃O₈
- **UF₆**
- **Plans for five enrichment plants: Approved**
- **Enriched UO₂ powder plant (EUPP)**
  - Esfahan
- **Excess material exported**
- **Fuel plate manufacturing plant (FPMP)**
  - Esfahan
- **Excess material exported**
- **Maritime research reactor**
  - Shiraz
- **Research reactor (IR-10)**
- **Tehran research reactor (TRR)**
  - Tehran

**Process Flow**
1. Mining and milling → Gchine
2. Uranium mining → Saghand-1, Saghand-2
3. Additional uranium mining and milling facilities
4. Uranium oxide (UO₂) → Uranium conversion facility (UCF) → Additional uranium conversion plant → Fuel manufacturing plant (FMP) → Khondab heavy water research reactor → Heavy water production plant (HWPP) → Heavy water → Fresh fuel
5. Heavy water → Fresh fuel
6. Spent fuel → Returned to origin
7. Export → Heavy water → Fresh fuel
8. Plans for five enrichment plants: Approved
9. Enriched UO₂ powder plant (EUPP) → Esfahan
10. Excess material exported
11. Fuel plate manufacturing plant (FPMP) → Esfahan
12. Excess material exported
13. Maritime research reactor
14. Research reactor (IR-10)
15. Tehran research reactor (TRR) → Tehran

**Notes**
- Resource Location
- Operational before Implementation Day of the JCPOA
- Operational after Implementation Day of the JCPOA
- Planned/approved to be completed by 2025
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HEAVY WATER REACTOR
Especially designed or prepared equipment and components of a nuclear reactor:

- Reactor vessels
- Reactor fuel charging and discharging machines
- Reactor control rods and equipment
- Reactor pressure tubes
- Fuel cladding (zirconium metal or alloy tubes)
- Primary coolant pumps or circulators
- Reactor internals
- Nuclear reactor internals, for example, support columns for the core, fuel channels, calandria tubes, thermal shields etc,
- Heat exchangers
- Nuclear fuel
- Fuel irradiation tests
- Heavy water
Especially designed or prepared equipment and components of a nuclear reactor:

- Reactor vessels: Steel industry and workshops
- Reactor fuel charging and discharging machines: Military and oil industry workshops
- Reactor control rods and equipment: Military and oil industry workshops
- Reactor pressure tubes: Zirconium Production Plant (ZPP) – Isfahan, Steel industry and workshops
- Fuel cladding (zirconium metal or alloy tubes): Zirconium Production Plant (ZPP) – Isfahan
- Primary coolant pumps or circulators: Oil industry workshops
- Reactor internals: Zirconium Production Plant (ZPP) – Isfahan, Steel industry and workshops
- Nuclear reactor internals, for example, support columns for the core, fuel channels, calandria tubes, thermal shields etc.,: Zirconium Production Plant (ZPP) – Isfahan, Steel industry and workshops
- Heat exchangers: Oil industry workshops
- Nuclear fuel: Fuel Manufacturing Plant (FMP), Esfahan – a full core manufactured?
- Fuel irradiation tests: Heavy water zero power reactor: (HWZPR): Esfahan
- Heavy water: Khondab Heavy Water Production plant – stock up to 130 tons
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URANIUM ENRICHMENT
Gas centrifuges and assemblies and components:

**Rotating components:**
- Complete rotor assemblies, rotor tubes bellows subject to monitoring
- Baffles, top and bottom caps not monitored
- Materials used - maraging steel, certain aluminium alloys and filamentary materials – not monitored

**Static components not monitored:**
- Magnetic suspension bearings, bearings/dampers, molecular pumps, motor stators, centrifuge housing/recipients, scoops

**Auxiliary systems, equipment and components not monitored:**
- Feed systems/product and tails withdrawal systems, machine header piping systems, special shut-off and control valves, UF6 mass spectrometers/ion sources, and frequency changers
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U.S. INTELLIGENCE COMMUNITY THREAT ASSESSMENT
“We continue to assess that Iran is not currently undertaking the key nuclear weapons-development activities we judge necessary to produce a nuclear device. However, Iranian officials have publicly threatened to reverse some of Iran’s Joint Comprehensive Plan of Action (JCPOA) commitments—and resume nuclear activities that the JCPOA limits—if Iran does not gain the tangible trade and investment benefits it expected from the deal.”

“Iran’s ballistic missile programs, which include the largest inventory of ballistic missiles in the region, continue to pose a threat to countries across the Middle East. Iran’s work on a space launch vehicle (SLV)—including on its Simorgh—shortens the timeline to an ICBM because SLVs and ICBMs use similar technologies.”
REMCKS ON THE JANUARY 2019 THREAT ASSESSMENT

“not currently undertaking the key nuclear weapons-development activities”

- Iran is:
  1. Maintaining uranium enrichment and developing more advance centrifuges
  2. Repeating that it is ready to to produce uranium at higher levels of enrichment
  3. Maintaining nuclear weapons design documentation and relevant equipment
  4. Occasionally indicating that it also has “a formula” for nuclear weapons

“Iran’s work on a space launch vehicle (SLV)—including on its Simorgh—shortens the timeline to an ICBM”

- There is no monitoring on ballistic and cruise missile development covering delivery vehicles capable of carrying nuclear payloads
- Keep in mind that the capabilities of the missiles are also of a regional concern
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RECOMMENDATIONS
The IAEA is requested to verify recently exposed material including visits sites, locations, facilities, and nuclear and materials involved in these activities, and Iran is urged to cooperate fully with the IAEA Secretariat in these investigations.

The IAEA has to return to transparent factual reporting on its activities on the implementation of the safeguards agreement and the UNSC 2231 in Iran so that the Member States can independently assess progress made. Such comprehensive reporting should continued, at least, until the Broader Conclusion has been achieved and the IAEA Board has concluded that safeguards and the provisions of UNSC 2231 has reached a stage of routine implementation.

The Joint Commission establishes a transparent reporting system on the implementation of mandate under the UNSC 2231 so that the international community can assess progress made.

Nuclear weapon related design material, documents, and single use equipment should be removed, destroyed, or rendered harmless under the supervision of the IAEA as the progress of the verification process permits.
Thank You For Your Time

We look forward to answering your questions

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