

ISIS Imagery Brief: New Activities at the Esfahan and Natanz Nuclear Sites in Iran

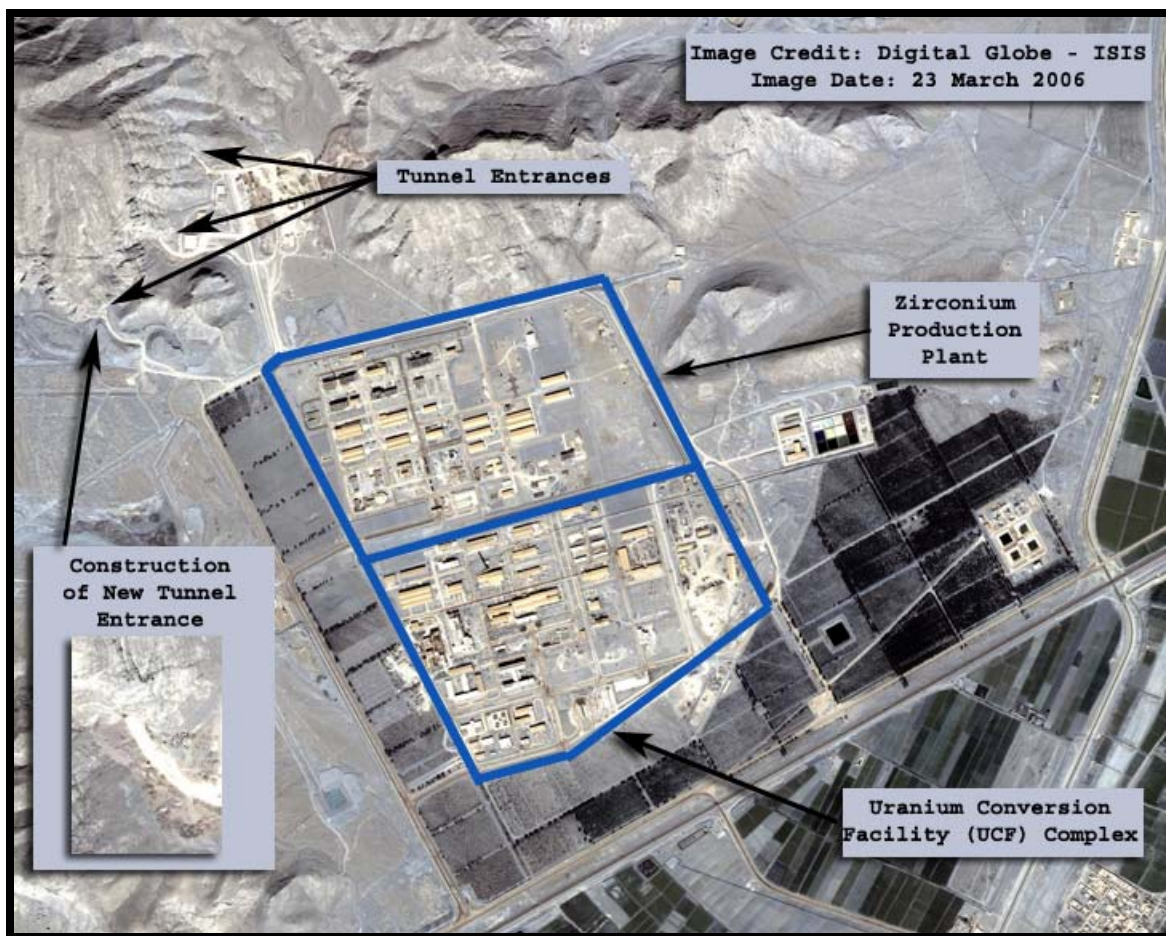
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The Institute for Science and International Security (ISIS)

ISIS has obtained new commercial imagery from Digital Globe of the Natanz and Esfahan nuclear sites in Iran. Featured in these images is a new tunnel entrance near the Uranium Conversion Facility (UCF) at Esfahan and continued construction at the Natanz uranium enrichment site. In addition, a series of images dating back to 2002 shows the underground enrichment buildings and its subsequent covering by dirt, concrete, and other materials.

New Tunnel Construction at the Uranium Conversion Facility (UCF) at Esfahan



Construction of a third tunnel entrance is visible near the Uranium Conversion Facility at the Esfahan site in Iran. Mounds of earth can also be found next to the new entrance, suggestive of recent excavation. In February of 2005, ISIS published [satellite imagery](#) of the construction of a tunnel facility with two entrances. This new tunnel entrance is indicative of a new underground facility or the further expansion of the existing one.



Further Construction at Natanz



Iran has continued to make progress in building the Natanz site. Its two main facilities are the Pilot Fuel Enrichment Plant (PFEP) and the Fuel Enrichment Plant (FEP). The FEP has three large underground sections, including two cascade halls to hold centrifuges.

The pilot plant currently holds about 200 operating centrifuges, and houses the 164-centrifuge cascade that is receiving considerable attention. This facility is expected to be expanded over the next year or two and is slated to hold 1,000 centrifuges.

There is currently little centrifuge equipment inside the underground Fuel Enrichment Plant (FEP). Although slated to eventually hold over 50,000, the FEP does not now contain any operating centrifuges. Iran has stated that it intends to begin installing 3,000 centrifuges at the FEP late this year, although Iran will likely not meet its anticipated

schedule for completing this initial installation.¹ Iran is likely to need well over a decade to install the tens of thousands of centrifuges necessary to produce enough enriched uranium to fuel the Bushehr power reactor.²

In early January 2006, at the end of the suspension in uranium enrichment activities, the Natanz site held a considerable number of centrifuge components and assembled centrifuges, and a great deal of key centrifuge manufacturing and assembling equipment. With suspension ended, the International Atomic Energy Agency (IAEA) can no longer monitor all these items. In addition, Iran has stopped allowing the IAEA to use the advanced inspection methods in the Additional Protocol. As a result, the IAEA is slowly losing knowledge regarding the use and location of many of these items.

¹ ["The Clock is Ticking, But How Fast?" David Albright and Corey Hinderstein, March 27, 2006](#)

² [Ibid.](#)

Underground Facilities: Boxes in a Hole



Figure A
September 2002



Figure B
February 2003



Figure C
June 2003



Figure D
January 2006

The above images depict the progression of the covering of buried facilities that are at the core of the Fuel Enrichment Plant at Natanz.

- Figure A, the earliest image in the series, shows three underground structures--two cascade halls and a smaller support building, located between the two cascade halls. The support building is for uranium feed and withdrawal equipment. Each cascade hall is about 160 meters by about 170 meters. Both cascade halls have been covered in dirt. Trucks and steamrollers are laying what appears to be a gray material, possibly cement, over the soil. Inside the smaller support facility, a series of support beams or posts is visible. These beams will eventually bear the load of the ceiling.
- Figure B shows another layer, which looks like slabs of concrete. It appears that concrete slabs are being placed on top of the gray layer.
- Figure C shows the slabs being covered by earth.
- Figure D, the most recent image in the series, shows the underground facilities, and all associated tunnels and underground infrastructure covered by earth. The

roofs of the underground halls are reported to be eight meters below the ground surface. Given a hole that was initially almost 25 meters deep, the roofs are about 17 meters above the bottom of the initial hole.