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Update on North Korean Light Water Reactor Construction Project

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Light Water Reactor

Satellite imagery spanning May and June 2012 shows construction progressing apace at the Yongbyon experimental light water reactor (LWR). New construction material has been placed on and near the reactor building. This building has yet to be covered with the dome that has been resting adjacent to the building since November 2011. Apart from the dome, other major external work on the reactor and adjacent building seems to be complete with most of the activity occurring inside the reactor building.

Cranes can be seen around the building in the May 3, 2012 imagery (figure 1). By June 5, 2012, a rectangular steel structure of considerable height is erected adjacent to the northern façade of the reactor building (figure 2). In June 24, 2012 GeoEye imagery, two metal beams appear to have been placed across the open roof of the reactor chamber (figure 3). These new additions could serve to lift and lower heavy components into the reactor building. Alternatively, the beams could be part of the support structures for the reactor dome, which could be placed on the building in the near future.

The images were assessed for ISIS by a reactor expert. He estimated that the reactor could be completed in the second half of 2013.

In addition to the work on the LWR complex, construction activity occurred on a series of buildings to the north of the LWR. As seen in the May 3, 2012 imagery (figure 4) roofing was stripped off two adjacent buildings which were then combined into a single building with a common roof as visible in the June 5, 2012 imagery (figure 5).

Fuel Fabrication Complex

The fuel fabrication facility is also the site of additional construction activity. This site houses a gas centrifuge plant. The February 3, 2012 imagery shows three buildings under construction in the southeast corner of the facility (figure 6). In the June 5, 2012 imagery the southern most building appears completed while construction continues on the other two buildings with the addition of interior walls and sections of roofing (figure 7).

Radiochemical Laboratory (Plutonium Separation Facility)

The Radiochemical Laboratory, which separated plutonium from irradiated fuel from the now non-operating five megawatt-electric (MWe) Yongbyon reactor, may be used to separate plutonium produced in the LWR, possibly for use in nuclear weapons (figure 8).

The February 3, 2012 image, taken after snowfall, shows a curiously clear patch on the roof of one of the support buildings, suggesting a source of considerable heat under that part of the roof (figure 8). In later images, this section of the building appears to have no distinguishing factors. This building is adjacent to the long “canyon” where the fuel is processed and plutonium separated. This building may store hot radioactive waste or have another source of heat.



Figure 1. Satellite imagery from May 3, 2012 showing construction materials and support equipment waiting to be placed on the reactor building.



Figure 2. In the June 5, 2012 imagery from DigitalGlobe a support structure erected on the northern side of the reactor building is visible.

Image Credit: GeoEye - ISIS
Image Date: June 24, 2012

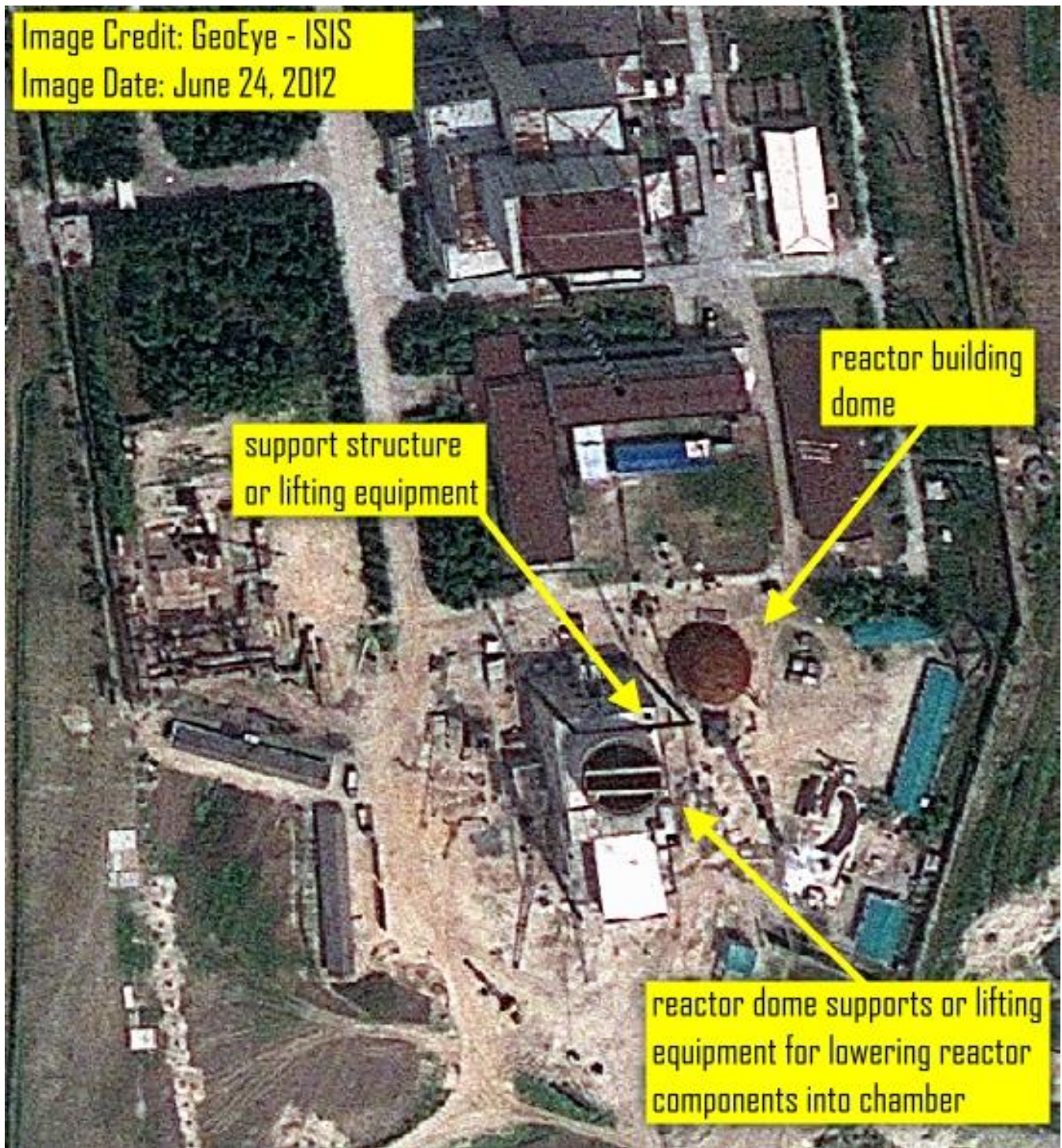


Figure 3. June 24, 2012 GeoEye satellite imagery provided to ISIS by TV sation NKR shows the rectangular metal structure deccribed in figure 2 still clearly visible as are two metal beams placed across the open roof of the reactor that could serve as supports for the reactor dome or be used to move equipment in the reactor building.



Figure 4. A wide area view of the Yongbyon LWR complex showing ongoing construction work on two buildings north of the reactor building.



Figure 5. The June 5, 2012 imagery shows the completed external construction of the buildings in figure 4 that have now been combined under a single roof.

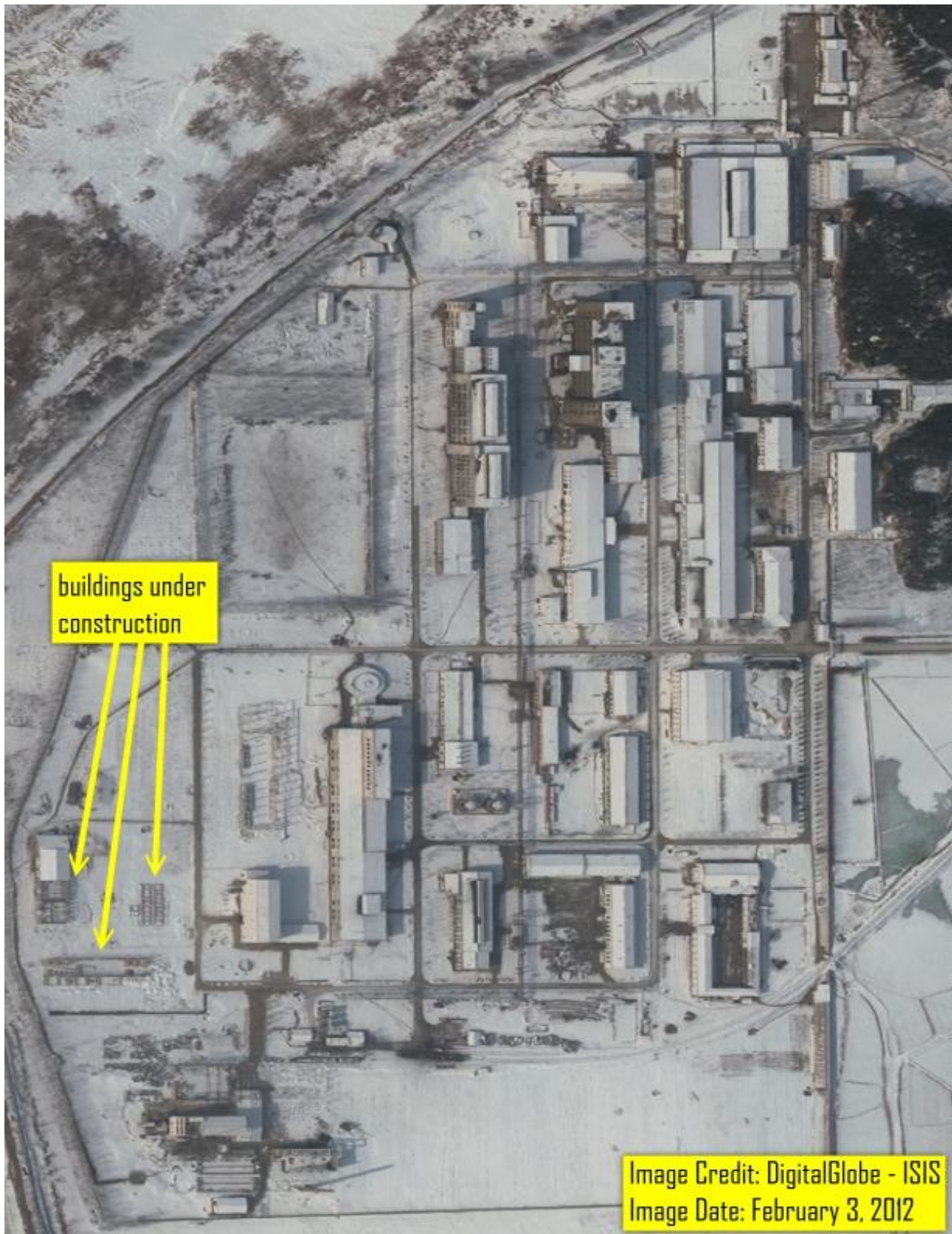


Figure 6. February 3, 2012 imagery of the fuel fabrication complex in Yongbyon showing ongoing construction on a group of 3 buildings in the southern part of the site that houses a gas centrifuge plant.

Image Credit: DigitalGlobe - ISIS
Image Date: June 5, 2012



further construction with added roofing and interior walls

building roof completed

Figure 7. June 5, 2012 image showing the completed exterior of the southernmost of the buildings under construction in the Yongbyon fuel fabrication complex described in figure 6. Construction on the other two buildings is ongoing.



Figure 8. February 3, 2012 image of the complex that houses the plutonium separation site for the Yongbyon 5 MWe reactor. Clearly visible on the roof of a building is a section that is not covered by snow suggesting the presence of a strong heat source. A snapshot of the same area from later imagery shows no discernible features that would otherwise justify the lack of snowfall on the specific area.