

# RADIOACTIVE WASTES FROM DECOMMISSIONING OF THE RTC OF JSC "FOTON"

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The Radiational-Technological Complex (RTC) of the JSC "FOTON" was used in the semiconductor devices production industry. There were (1) IIN-3M nuclear reactor and (2) two irradiation facilities with Co-60 sources on the site. Total site area - 27000 m<sup>2</sup>.



RTC site



Gamma-facility



Gamma-facility



IIN-3M reactor control panel



IIN-3M reactor vessel

## IIN-3M reactor

The IIN-3M pulse research reactor was built at the Tashkent plant of electronic equipment (now JSC "FOTON") in 1974-1975. Fuel loading (aqueous uranyl sulfate solution, 90% enriched on <sup>235</sup>U) and physical start-up of the reactor took place in December 1975. Feasibility studies of the reactor conversion to LEU fuel were carried out and results were negative. Decision was taken to stop and decommission the reactor and gamma-facilities and decommission nuclear facilities located at the RTC. Reactor was shutdown in June 2013.

## Gamma facilities

Gamma irradiation facilities were in operation since 1976. Designed life-time of the installations was not determined by the project. The last charge of sources for the units was carried out in 1990. All sources of Co-60 in installations have overcome their service life. Dose rate in 2013 in the irradiation chambers of the facilities was about 700 Sv/h. More than 100 radioactive sources were transported from the RTC site (Co-60, Pu-238, Sr-90+Y-90) to storage/disposal places.

## "FOTON" RTC site decommissioning stages:

Preparation of the Decommissioning plan; HEU fuel removal; Removal of radioactive sources from gamma facilities; Decommissioning of the RTC site.

**August 2012** – start of the decommissioning planning with the IAEA support; **2014** – permission from Uzbekistan authorities to start decommissioning. Works on decommissioning were performed by Consortium of the Institute of Nuclear Physics of Uzbekistan Academy of Sciences and R&D Company "Sosny" (Dimitrovgrad, Russia).

## Wastes from RTC site

1. Oversized solid radioactive waste – 6 containers;
2. Solid radioactive waste – 456 metallic 200 l drums;
3. Liquid radioactive waste in quantity of 46 (20 l) canisters;
4. Two Big-bags with wipes



Covering reactor vessel with concrete



Reactor vessel in a container with concrete



200 l drums with radioactive wastes



Liquid radioactive wastes in a 20 l canisters



Decontaminating wells in isotope storage building



Decontaminating hot cell in a reactor building



Decontaminated laboratory room in a reactor building



Reactor box after decontamination



Reactor building demolishing



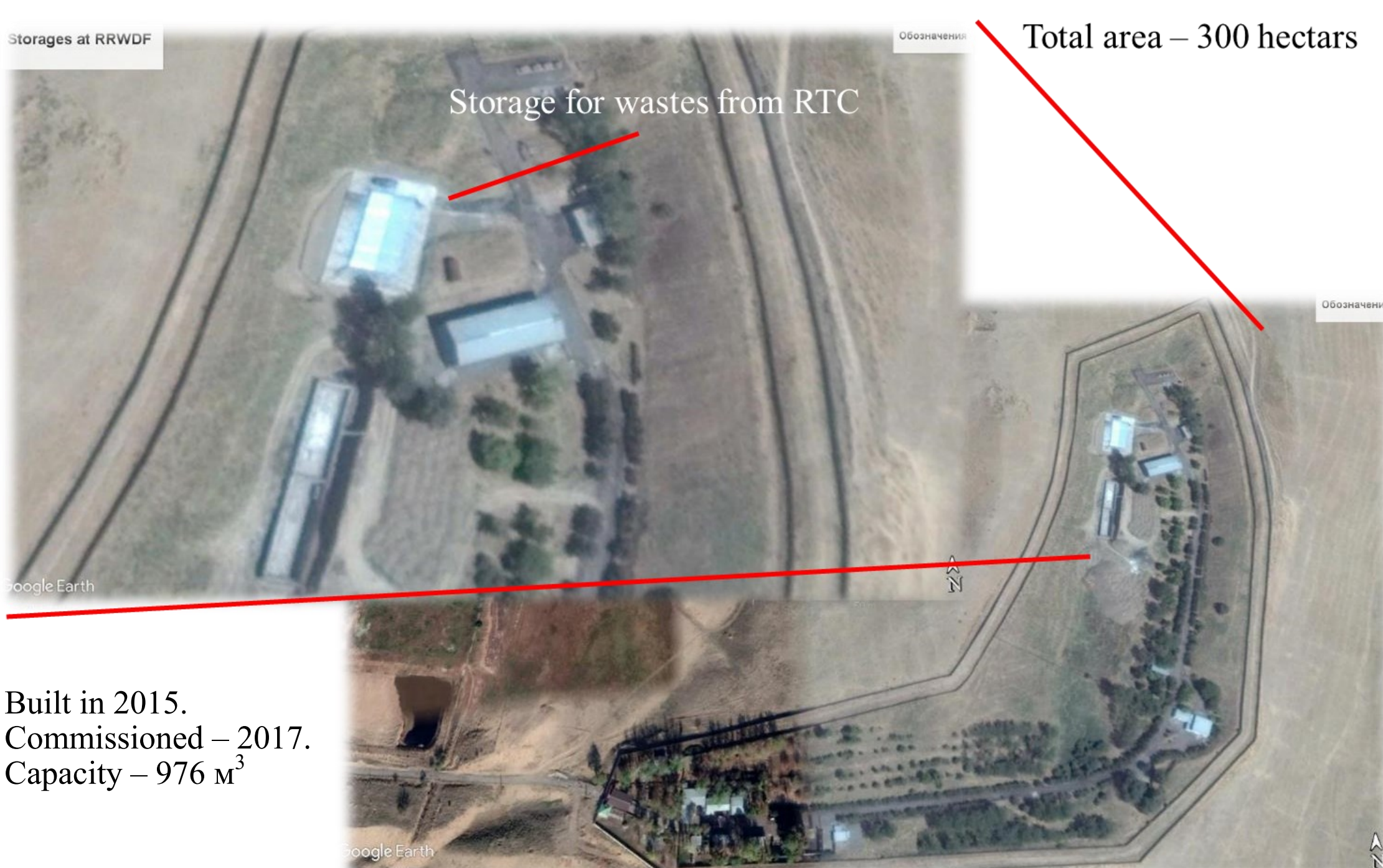
Radwastes from the RTC placed at the Republican Radioactive Waste Disposal Facility (RRWDF)

## Donors of the project on RTC site decommissioning

All works on RTC site decommissioning was performed under financial support of US DOE and UK through the IAEA.

## IAEA activities

- Guidance documents and principles, best international practices;
- Preparation of the Decommissioning Plan;
- Contractual support;
- Close cooperation among international team members;
- Collaboration between implementers, beneficiaries, and regulatory body;
- Expert support during the full length of the project.



New storage at RRWDF for radwastes from the RTC



Stages of construction of a new storage for radwastes from the RTC



Place where was the gamma-facility building



Place where was the Reactor building

Built in 2015.  
 Commissioned – 2017.  
 Capacity – 976 m<sup>3</sup>