# The State Committee on Industrial Safety of the Republic of Uzbekistan

# Fuel cycle consideration for WWR-SM research reactor

**Boltabaev Azizbek**

**20-23 September Vienna**

**Construction of the Institute of Nuclear Physics began in 1956. WWR-SM Research Reactor with power of 2 MW reached criticality in September, 1959**

**In 1994 Uzbekistan became a member of IAEA.**

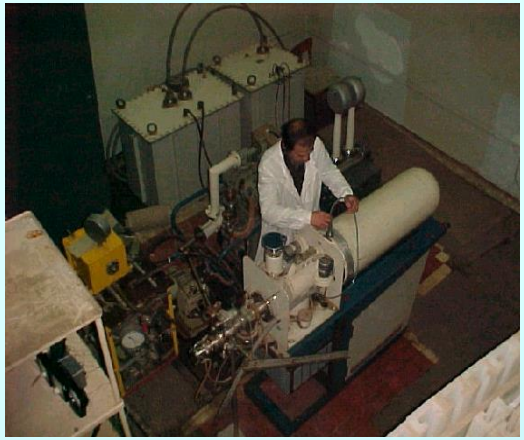
# NUCLEAR FACILITIES AT THE INP

Cyclotron U-115

WWR-SM Reactor


Gamma facility

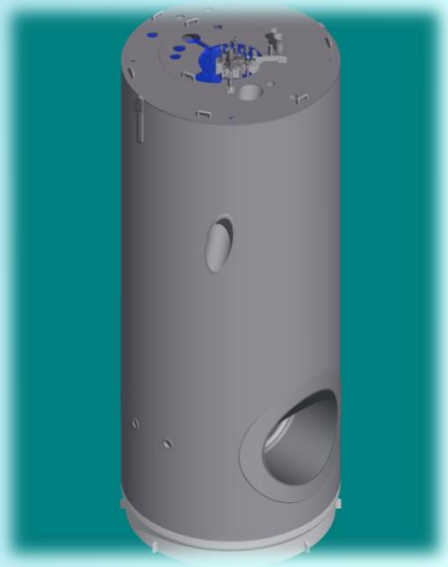
Cyclotron U-150

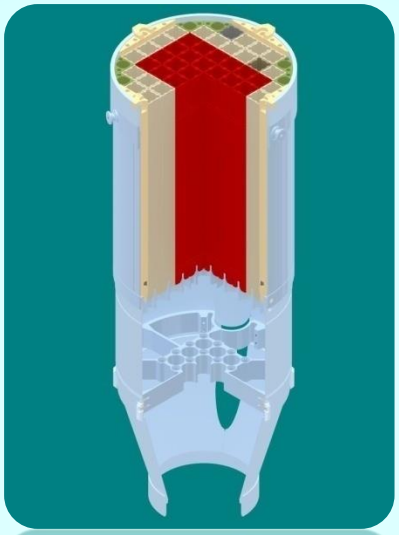


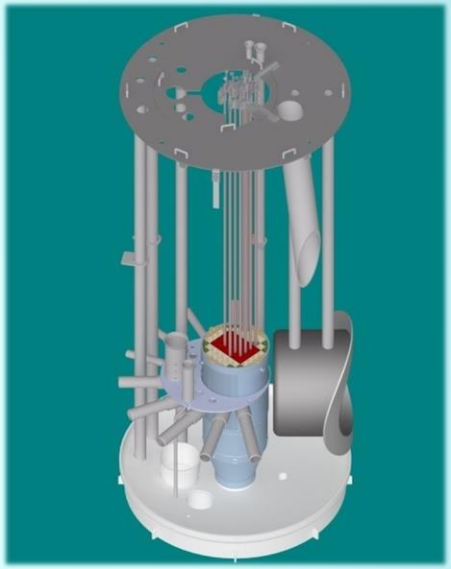
Neutron Generator

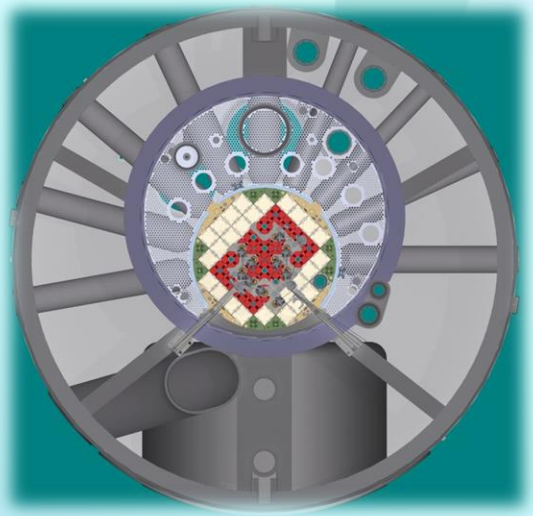
A new Electron accelerator U-003

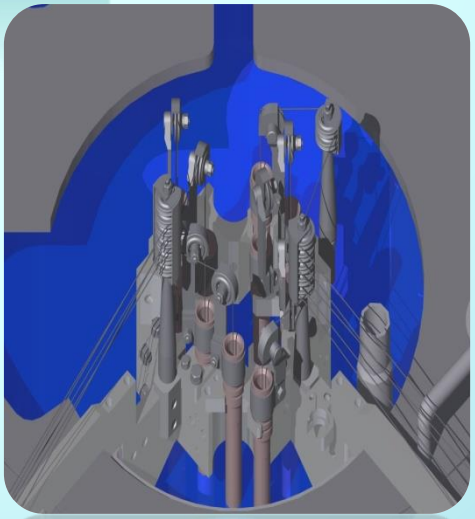
# Digital Mock-up of Research Reactor



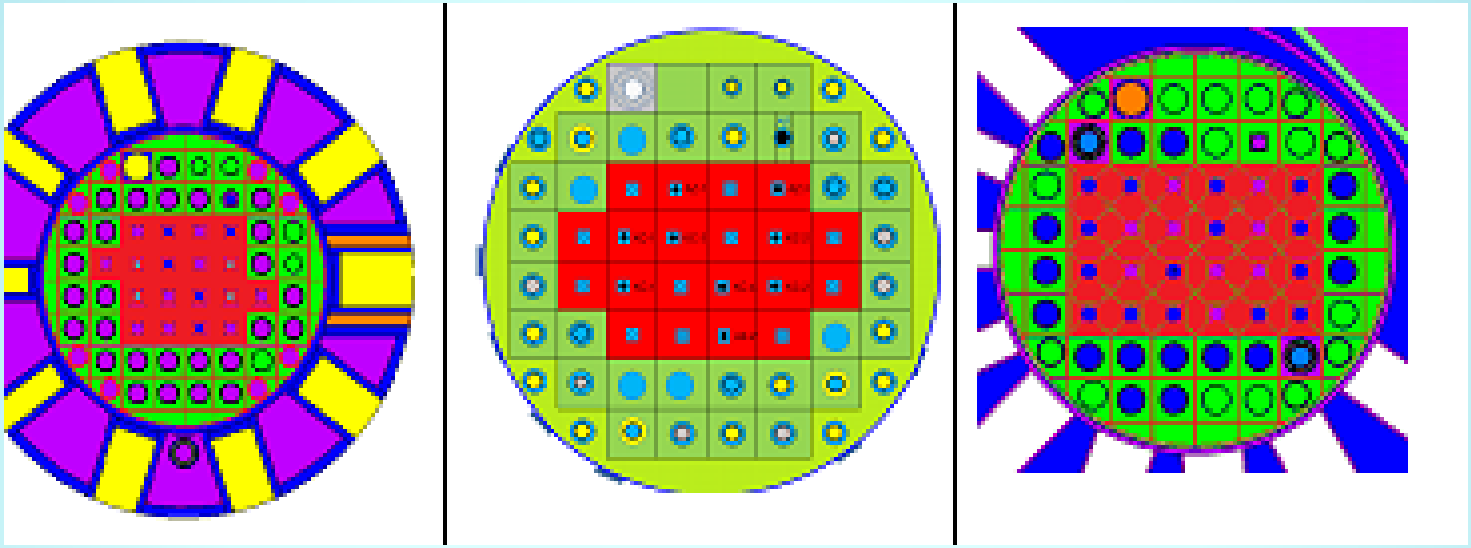








# Active core model of the WWR-SM reactor



90 %  36 %  19,75 %

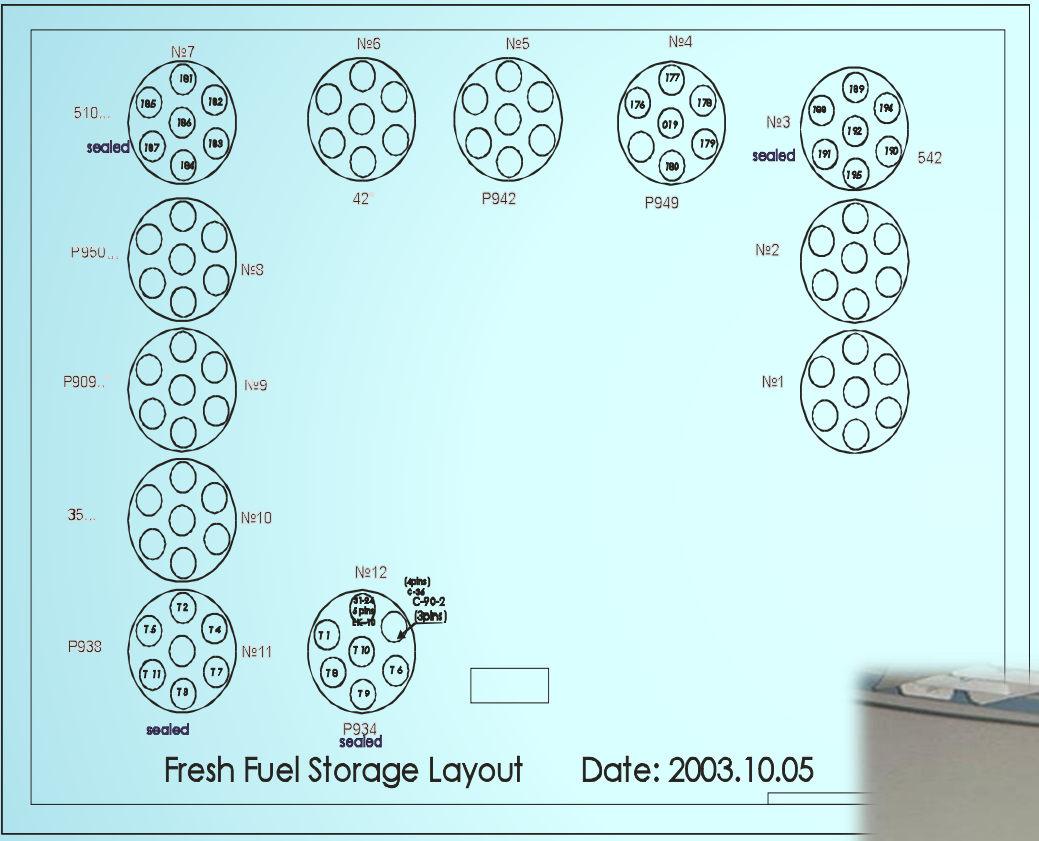
**1959 - Reactor Startup, 2 MW power**

**1971-78 - Reactor modernization; 10 MW power**

**1998 - Reactor core converted from 90% to 36% enrichment on U-235**

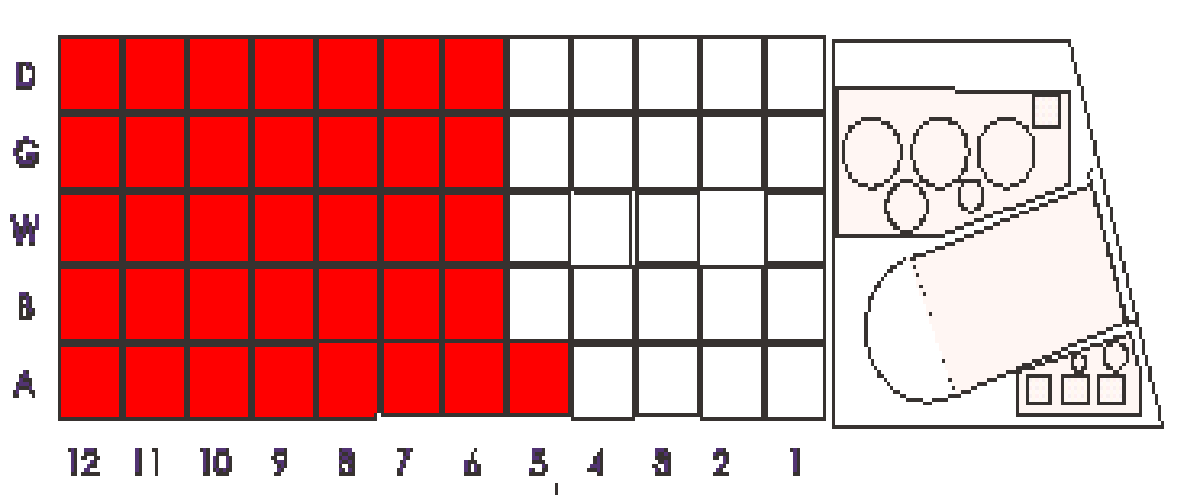
**2009 - Reactor core gradually converted from 36% to 19,7% enrichment**

# Fresh fuel storage.



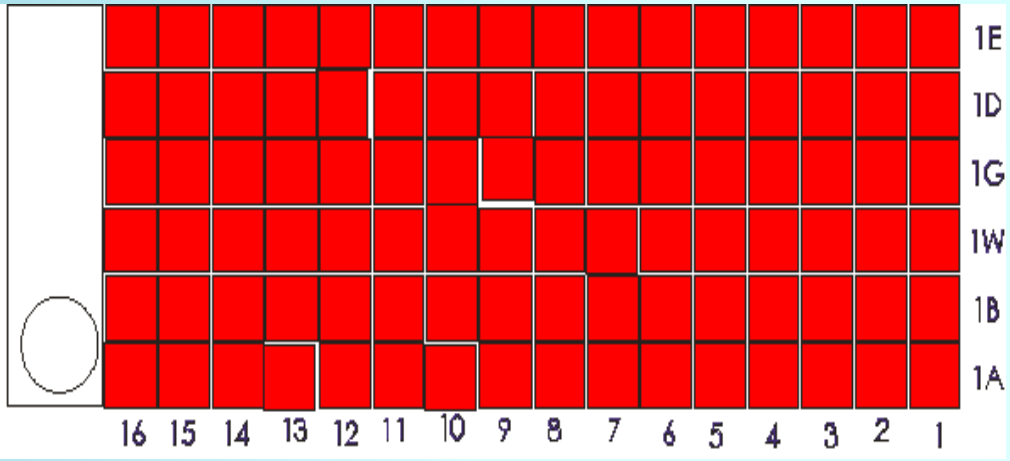

- In the fresh fuel storage there are 12 containers fixed on the wall with iron belt. Each container capacity is 7 FF.

# First Spent Fuel Storage.




SFA storage pools are made of stainless steel and covered with flooring. The spent FA unloaded out off the core is installed into the storage cells, where it is aged not less than 3 years before shipping for reprocessing. The storage 1 has 60 cells

# Second Spent Fuel Storage.



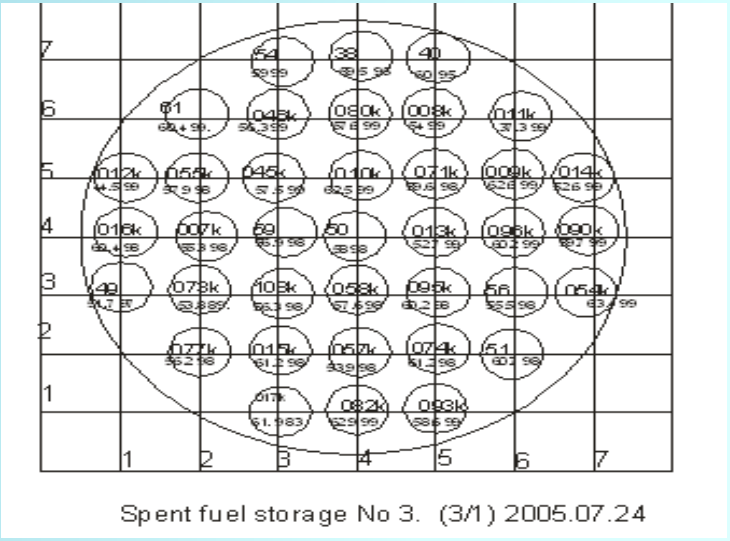

Second SF storage has 2 levels, each level has 96 cells distributed at the step of 150 mm.

Interval is 180 mm between 1 and 2 level

Total cells are192.

At present we use only 1-level

# Third Spent Fuel Storage.



Spent fuel storage No 3. (3/1) 2005.07.24

By the efforts of the Institute new storage with 4 tanks was built in 2000

3/1- 44 cells

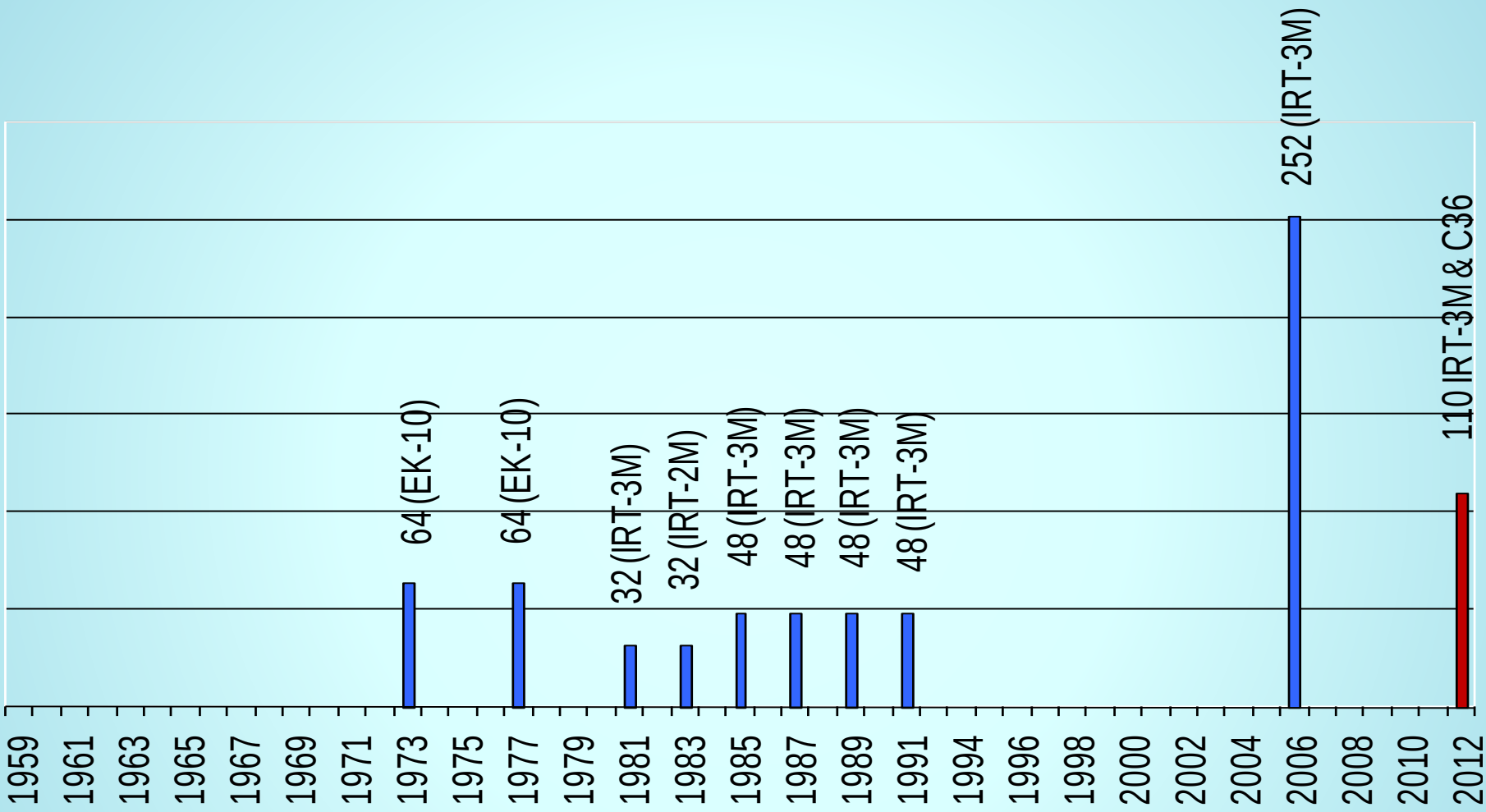
3/2- 37 cells

3/3- 37 cells

3/4- 44 cells

total 162 cells

# SPENT FUEL SHIPMENT SCHEDULE



# Physical protection system

**Thank you for your attention!**