Tajoura Nuclear Research Centre

Research Reactor

ITR-1

Tripoli

Libyan Arab Jamahiriya

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Thermal Power (kW) = 10,000

Type = POOL, IRT

Construction Date = 1980/10/10

Criticality Date = 1981/08/28

Max Flux SS, Thermal (n/cm^2-s) = 2.0E14

Max Flux SS, Fast (n/cm^2-s) = 1.5E14

Moderator = LIGHT WATER

Coolant = LIGHT WATER

Forced Cooling= 1650 m^3/h

Coolant Velocity in Core= 5.6 m/s

Reflector = Be

Control Rods Material = B_4C

Control Rods number = 11 (8 SHIM, 2 SAFETY, 1 REG)

NUCLEAR FUEL DATA

Origin of Fissile Material = RUSSIA

Enrichment Supplier = RUSSIA

Equilibrium Core Size = 16 Fuel Elements

Tubes per Element = 3 & 4 (HEU – 80 %), 6 & 8 (LEU – 19.9 %)

Dimensions of Tubes, mm = 67, 54, 41, 28, SQUARE

Cladding Material = Al Alloy (SAV-l)

Cladding Thickness, mm = 0.8

Fuel Material = Uranium dioxide, dispersed in Al matrix

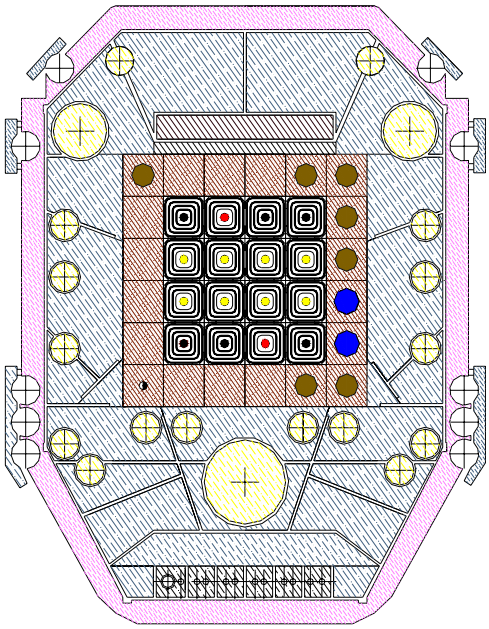
Fuel Thickness, mm = 0.4

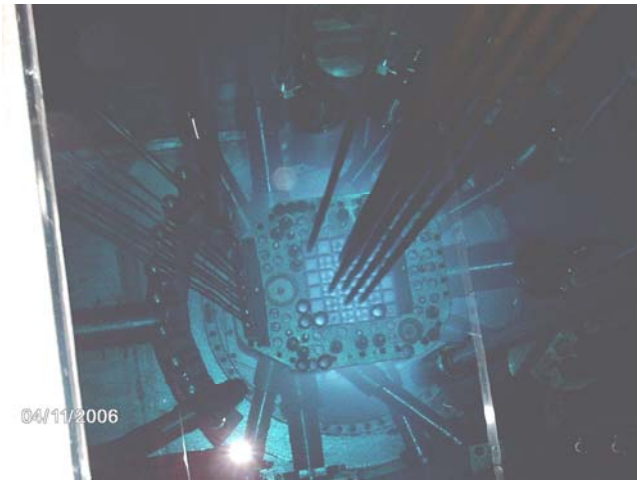
Uranium Density, gU/cm^3 = 1.36 (U-Al alloy – HEU)

2.77 (Uranium dioxide-Al – LEU)

LEU Fuel

Reactor type	**Pool type**	
Power level, MW		**10**
Fuel positions	**16**	
Irradiation position		**51**
Horizontal beam		**11**
Radial		**8**
Tangential		**3**
Fuel:		
Type	**IRT- 4M**	
Meat Material		**U2O-Al**
Clad Material	**Al (SAV-l)**	
Active Length, mm		**600**
Lattice Pitch, mm		**71.5**
Moderator, Coolant		**H2O**
Reflector		**Beryllium**
Control Rod Absorber (KC)		**B4C (6)**
Safety Rod (AZ)	**2**	
Automatic Rod (AP)		**1**
Coolant inlet Temperature. C		**45**
Inlet Pressure,	**Near Atmospheric**	

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Reactor Utilization

Hours per Day = 20

Days per Week = 1

Weeks per Year = 14

MW Days per Year = 55

Fuel Assembly

IRT-4M

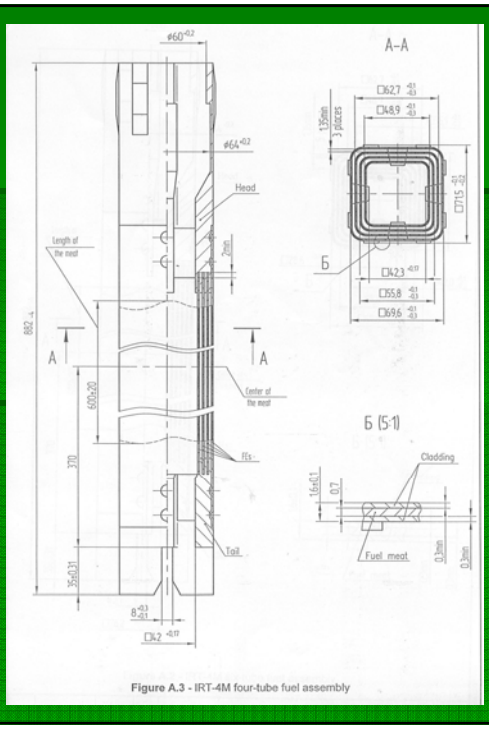


Figure A.3 - IRT-4M four-tube fuel assembly

Fuel Assembly

IRT-4M – six tube

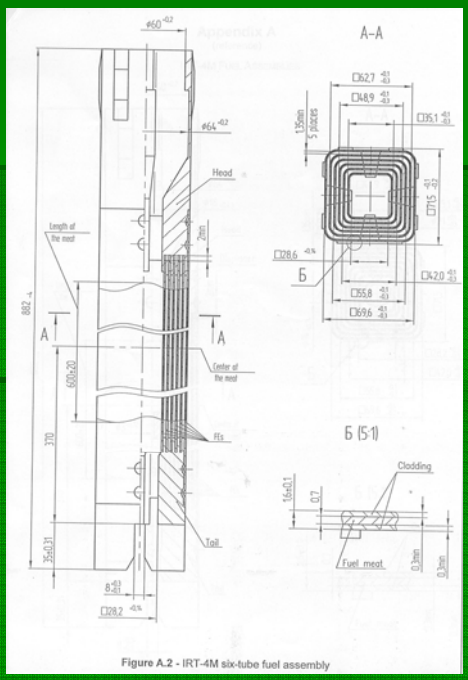


Figure A.2 - IRT-4M six-tube fuel assembly

Fuel Assembly

IRT-4M – eight tube

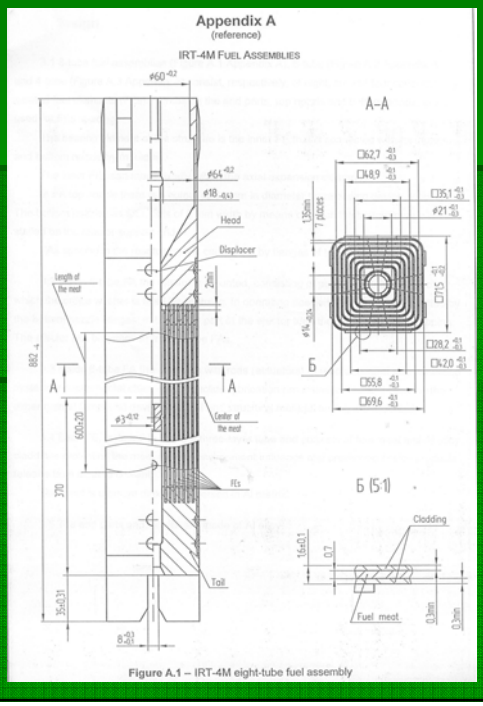
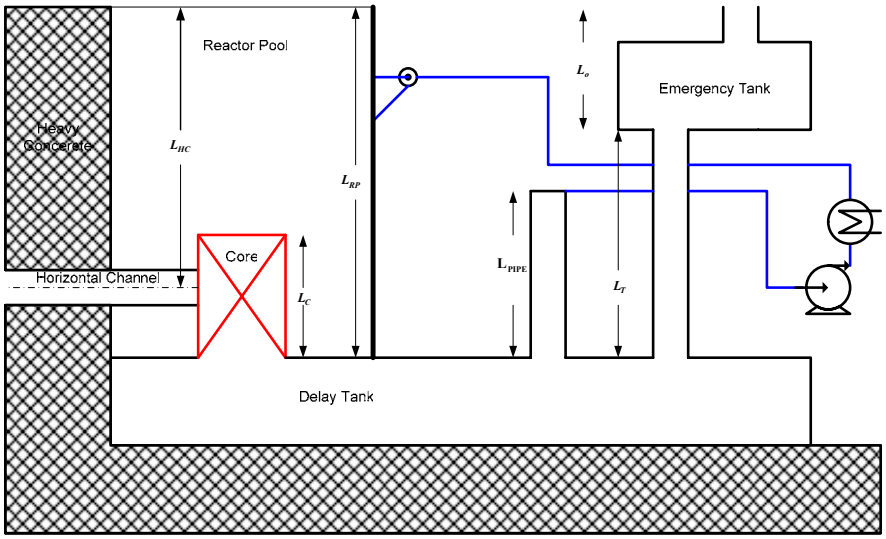


Figure A.1 – IRT-4M eight-tube fuel assembly



- Fuel material = UO_2-Al matrix
- U Enrichment = 19.7 wt% of U-235
- Active length = 60 cm
- Uranium density = 2.77 g/cm^3
- Water gap = 1.8 mm
- Mass of U-235/(6TFA & 8TFA)=263.8 /300 g

- We don't have decommissioning policy ,expertise to effectivly implement a decommisioning project. But we have to have this project(planning and actual decommisioning experience)
- Our reactor start acualy in1983 and the life of the reactor(40 year) so we must have ready decommisioning plane and good experte in the end of 2023 after shudown to decommisioning,the facility will under go to transition plane.
- Transition plane
- the transition plane would be developed by the operator in with the decommisioning plane
- Decommisioning plane
- After the transition plane has been implemented and the decomisioning plane has been approved by the regulatory body.

Preparation program for decommisioning

Regulatory Body established in 2006

- Making Regulation (requirement and guidance)
- Management planning
- Training & Qualification
- Method & technique
- Equipment
- Radiation Protection
- Waste management
- Maintain and keeping document
- Security and safeguards
- Emergency prepadness
- Information exchange

Summarry

- Existing Reactor research
- Establish Regulatory Agency
- program for decommisioning

Finish

Thanks for your attention