Fast Critical Assembly at JAERI (FCA)

1. FCA

Split-table type fast critical assembly, similar to ZPR-3 and -6, and ZPPR in ANL, USA.

Double containers designed considering Bethe-tait typed HCDA.

Reached first critical April 29, 1967.

2. Number of workers at FCA (32)

- Research and Development 12
- Operation and Maintenance 11
- Health Physics 2
- Guard 5
- Office work 2

3. R&D Activities

) Major Experiments at FCA for 20 Years

- Basic physics benchmark experiments
- Physics and Engineering Mockup Experimenta for "JOYO" } 2/3 of FCA activities
- Physics and Engineering Mockup Experiments for "MONJU" }
- Physics Experiments for Design Verification of Axially Heterogeneous Core Fast Reactor

Present Status and Future Plan

Physics Experiments of Fast Reactor

(a) Japanese Demonstration Fast Reactor

(b) Safety related Reactor Physics

(c) Metallic, Carbide and Nitride fuelled Fast Reactor

Physics of Actinide Transmutation

(a) Design Study of Actinide Burning Fast Reactor

(b) Integral Experiments of Actinide Nuclides at FCA

(c) Irradiation Experiments of Actinides at EBR-II or JOYO

Physics Experiments of High Conversion LWR

(a) FCA-Phase-1 Experiments : Uranium fuelled Cores (fuel-plate)

(b) FCA-Phase-2 Experiments . Plutonium fuelled Cores (plate&pin)

4. Plutonium and Uranium Fuel used at FCA

Plutonium

Fissile enrich.	Origin	Dimensions	Number
Pu-92%	US	2"x4"x1/16"	1003
Pu-92%	UK	2"x4"x1/16"	874
Pu-92%	US	2"x2"x1/16"	600
Pu-92%	UK	2"x2"x1/16"	2875
Pu-92%	US	2"x2"x1/32"	99
Pu-81%	UK	2"x2"x1/16"	
Pu-75%	UK	2"x2"x1/16"	
Pu-75%	US	PuO_2-UO_2pin	288
Pu-75%	UK	PuO_2-UO_2pin	

Enriched Uranium

EU-93%	UK	2"x2"x1/16"	2916
EU-93%	UK	1"x1/2"x1/16"	78
EU-20%	US	2"x2"x1/8"	7692
EU-20%	US	2"x1"x1/8"	3603
EU-20%	US	1"x1"x1/8"	1416
EU-20%	US	2"x2"x1/16"	3759
EU-20%	US	2"x1"x1/16"	400
EU-20%	US	1"x1/2"x1/16"	1000
EU-20%	US	0.7"ϕx1/16"	

Amount of Fissile Material

Pu-92%	231.0 kg	(Pu-239 + Pu-241)
Pu-81%	25.0 kg	(")
Pu-75%	35.4 kg	(")
Total	291.4 kg	(Pu-239 + Pu-241)
EU-93%	199.5 kg	(U-235)
EU-20%	349.9 kg	(U-235)
Total	549.9 kg	(U-235)