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# Current status of nuclear facilities in Ukraine

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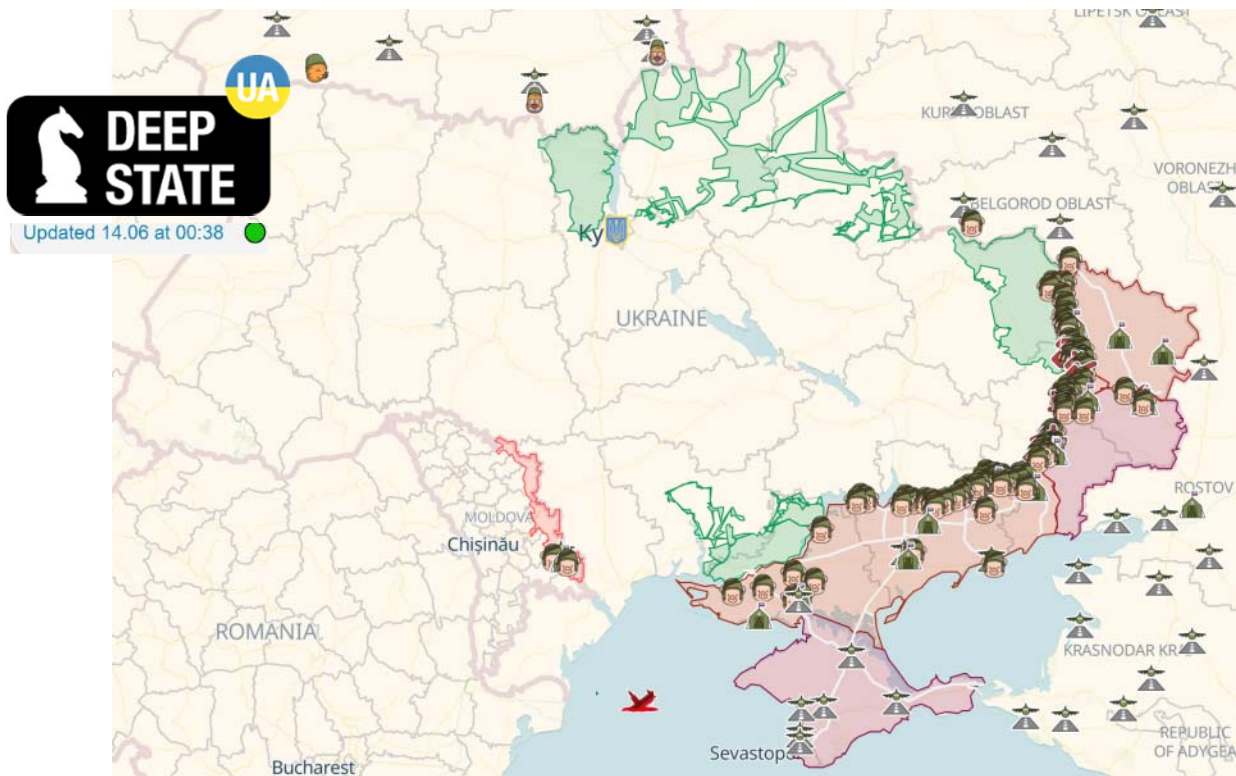
[o.parenjuk@ispnpp.kiev.ua](mailto:o.parenjuk@ispnpp.kiev.ua)



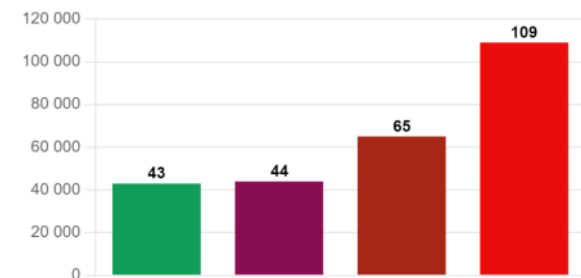
# Institute for Safety Problems of Nuclear Power Plants



# The current frontline in Ukraine



Map layer

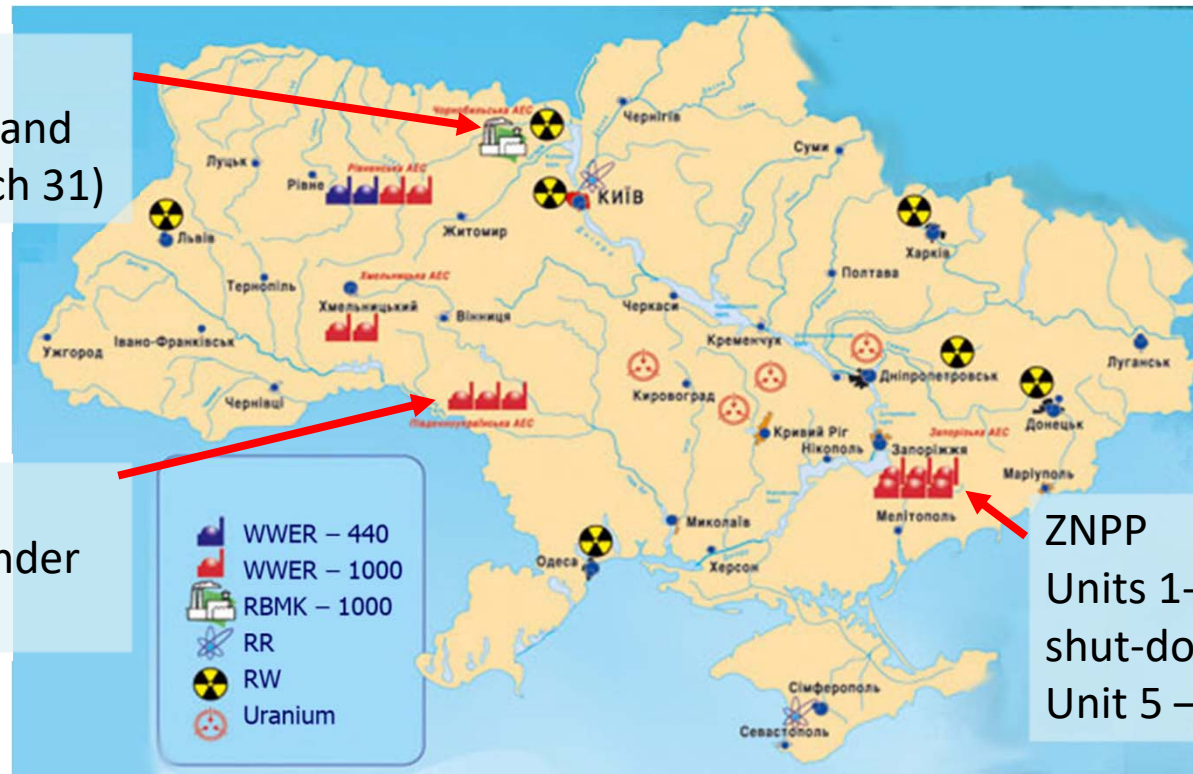


Liberated (7.118%)  
 Occupied until February 24, 2022 (7.283%)  
 Occupied after February 24, 2022 (10.773%)  
 Total temporarily occupied (18.056%)

# Nuclear facilities in Ukraine

SE ChNPP  
Decommissioned and  
deoccupied (March 31)

SUNPP  
3 units working under  
missile attacks



ZNPP  
Units 1-4, 5 in cold  
shut-down,  
Unit 5 – hot state

## Orphan sources

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According to the national registry of sources (2020):  
25248 RS, in particular –

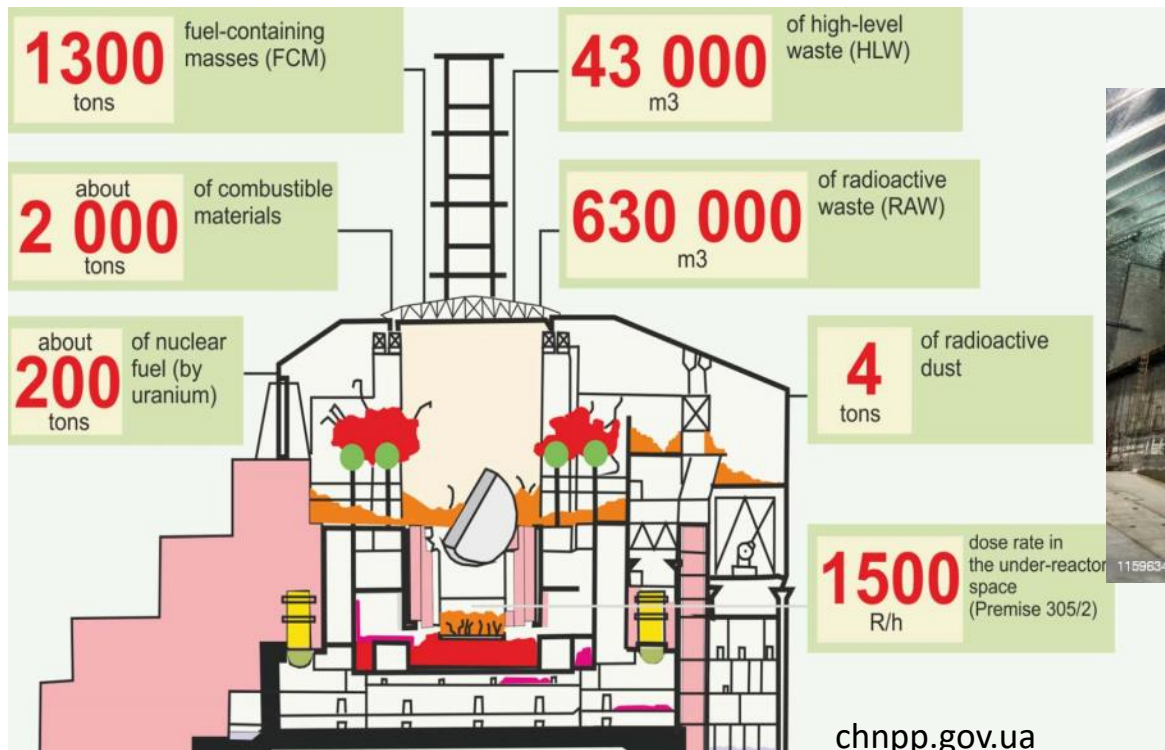
- 8728 sealed isotopic sources and
- 16520 generators
- 4531 users of RS (74%- medical use)
- 549 use sealed RS

# State Enterprise „Chornobyl NPP“

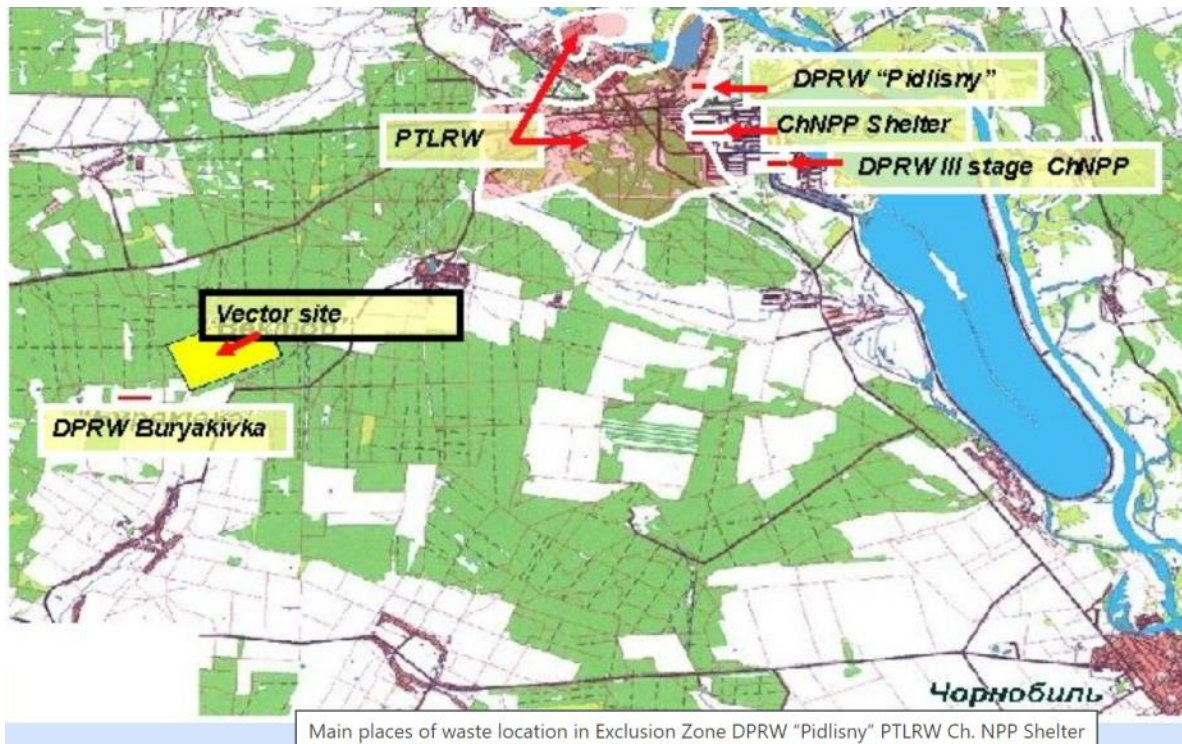
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# State Enterprise „Chornobyl NPP“



# Chornobyl exclusion zone



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Overall area **2,600 km<sup>2</sup>**

10-km zone contains:

- Power Generating Units №1, №2, and №3 of the Chornobyl NPP –permanent shutdown
- The Shelter and the New Safe Confinement (NSC Arch)
- Industrial complex for solid radioactive waste management
- Wet spent fuel storage facility (ISF-1)
- Dry spent fuel storage facility (ISF-2)
- Radioactive waste disposal points (RWDP Buryakivka, RWDP Pidlisnyi, ChNPP Stage III RWDP)
- Radioactive waste interim confinement sites (RICS)

ChREBR – protected area with unique flora and fauna



# Chornobyl. Fortifications in the Red Forest



NUCLIDE	SPECIFIC ACTIVITY (Bq/g)
Cs-137	5.90E+00
Eu-154	1.43E-02
Am-241	2.45E-01
Pb-210	3.20E-02
U-238	4.97E-03
U-233	1.02E-06
U-234	5.31E-03
U-235	2.35E-04
U-236	3.20E-05
Pu-239	3.58E-02
Pu-240	5.14E-02
Pu-241	1.14E+00

# Chornobyl. Fortifications in the Red Forest



	Estimated total effective dose [mSv]	Dominant pathways	Radionuclides
Scenario A (35 days)	0.6	External (97%)	Cs-137
		Inhalation (3%)	Am-241
Scenario B (14 days)	0.3	External (88%)	Cs-137
		Inhalation (12%)	Am-241



Somewhere in  
Chornobyl forests



Can we just follow the  
russian warship?...



Ar



# Zaporizhzhia NPP

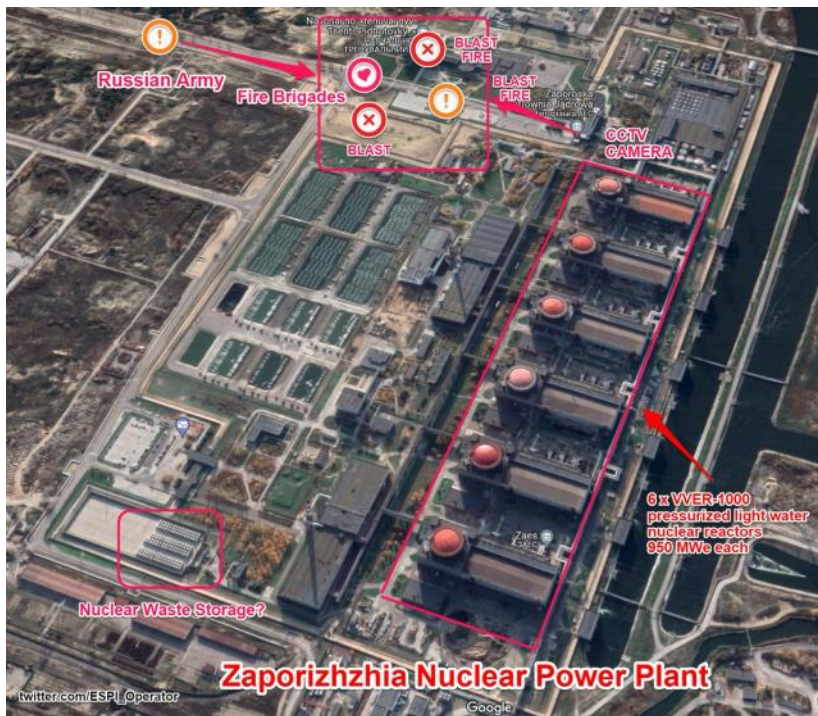


Source: Institute for the Study of War (21:00 GMT, 4 Aug) **B B C**



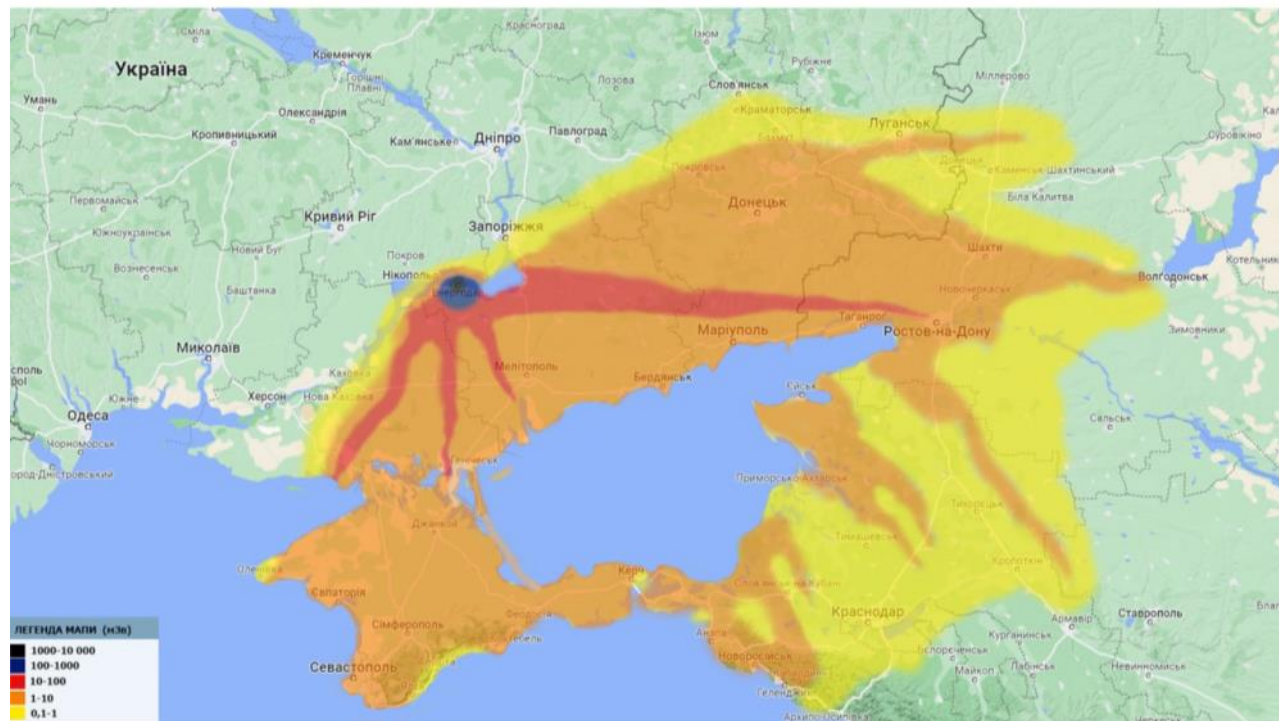
Name	Type	Status	Location	Reference Unit Power [MW]	Gross Electrical Capacity [MW]	First Grid Connection
ZAPOROZHYE-1	PWR	Operational	ENERGODAR	950	1000	1984-12-10
ZAPOROZHYE-2	PWR	Operational	ENERGODAR	950	1000	1985-07-22
ZAPOROZHYE-3	PWR	Operational	ENERGODAR	950	1000	1986-12-10
ZAPOROZHYE-4	PWR	Operational	ENERGODAR	950	1000	1987-12-18
ZAPOROZHYE-5	PWR	Operational	ENERGODAR	950	1000	1989-08-14
ZAPOROZHYE-6	PWR	Operational	ENERGODAR	950	1000	1995-10-19

# Zaporizhzhia NPP



## Zaporizhzhia NPP.

### Possible contamination map, if the reactors are hot



© Ukrainian Hydrometeorological Institute

# Kakhovka dam

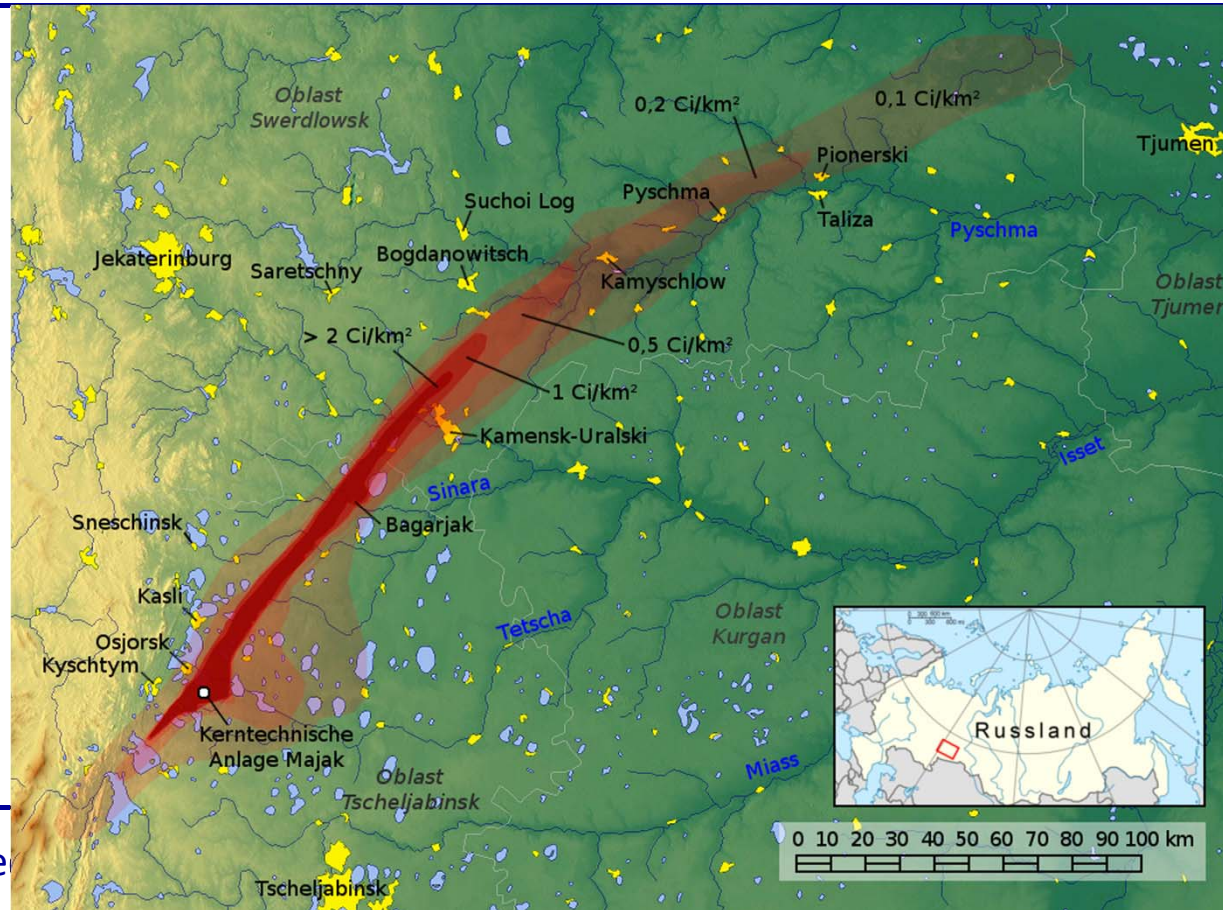


# Kakhovka dam





# Zaporizhzhia NPP – possibly, the Kyshtym (1975) case



Annual Me

# Zaporizhzhia NPP: IAEA mission, today



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Thank you!  
Questions?