ABOUT THE UGLY FEATURES OF THE NEW NUCLEAR PROJECT

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DISCUSSION "GREEN TRANSITION IN BULGARIA - OPPORTUNITIES, BENEFITS AND FALSE SOLUTIONS
DOES BULGARIA NEED A NEW NUCLEAR POWER

29 MARCH 2024
HOME OF EUROPE
SOFIA

A Little Background March 29, 2012

Government Decision № 250: The construction of the Belene NPP is terminated;
Assigns the Minister of Energy ... to submit a proposal for the construction of a new nuclear power plant at the site in Kozloduy, using the paid-for equipment of the Belene NPP

April 11, 2012: the Council of Ministers gives consent in principle under Art. 45 of the Law on Safe Use of nuclear energy to take action to build unit 7 - light water reactor with pressurized water
"New capacities" created at Kozloduy NPP Technical and economic analysis - Westinghouse 2012
EIA report approved
Site approved

Decision of the Parliament of 12.01.2023

Without discussion, the parliament seizes the powers of the government and decides without a tender for unit 7 of the Kozloduy NPP be with Westinghouse's AP 1000.
The government to hold negotiations with the US on agreement for the construction of the 7th block.
Obliges the government through the Minister of Energy in deadline of March 1, 2023 to undertake all necessary actions for making a decision under Art. 45 of the Law on the safe use of nuclear energy for the construction of an energy facility - NPP approved by the Nuclear Regulatory Agency Site No. 2 - Block 7 of the Kozloduy NPP.
Government to take all necessary action for starting the licensing procedure according to The Law on the Safe Use of Nuclear Energy and the EIA procedure for the construction of second identical block of the approved by The Nuclear Regulatory Agency site (block 8) of NPP "Kozloduy").

Safe Use of Nuclear Energy Act

Section IV Special rules for construction and operation of NPP
Art. 45. (1) A nuclear power plant is built by decision of the government.
(2) The proposal for the construction of a nuclear power plant is submitted by the Minister of Energy with an assessment of:
1. nuclear safety and radiation protection, impact on the environment and physical protection;
2. the socio-economic significance of the construction of the NPP for the country or for individual regions;
3. Radioactive waste and spent nuclear fuel, which are obtained as a result of the operation of the NPP, and their management.
4. (Amended - State Gazette, No. 14 of 2015) The Minister of Energy organizes a discussion of the proposal for the construction of a nuclear power plant, in which state and local bodies participate self-government, representatives of public organizations and interested individuals and legal entities. Notification shall be made through mass media or other appropriate means at least one month before the discussion. The evaluation of the results of the discussion is applied to the proposal under paragraph 2.

Practice in application of Art. 45 of the Law on Safe Use of Nuclear Energy

The safety requirements of the Safe Use of Nuclear Energy Act are met at decision-making during the construction of the Belene NPP:
28.04.2004: At government meetings, consent was given for the construction of the Belene NPP (decision in principle).
This is followed by the development of the analyzes required by the Safe Use of Nuclear Energy Act and grades.
An opportunity has been given for their review by those who wish.
On 10.01.2005, a public discussion was held of all analyzes and assessments.
08.05.2005: the government takes decision No. 260 (decision under entity) for the construction of the Belene NPP with maximum electricity power 2000 MW.

WHAT WE DECLARE:
NATIONAL REPORT OF THE REPUBLIC OF BULGARIA ON
COMPLIANCE WITH THE REQUIREMENTS OF
DIRECTIVE 2011/70/EURATOM ESTABLISHING
WITHIN THE FRAMEWORK OF THE COMMUNITY FOR RESPONSIBILITY AND
SAFE MANAGEMENT OF USED NUCLEAR
FUEL AND RADIOACTIVE WASTE, 2015
ndoklad-2015-directive-2011-70-bg.pdf (bnra.bg)

Page 43: "Another duty of the Minister of
energy is the organization of public discussion
before the submission of a draft decision for the construction of
new nuclear power. For the discussion it is necessary to be
presented data on socio-economic aspects,
radiation protection, assessment of spent nuclear fuel and radioactive
waste generated during the operation of the future nuclear power. The
information is published on the website of the Ministry of energy,
providing an opportunity for direct stakeholder communication with
experts from the ministry.'
NPP KOZLODUY NEW POWERS EAD
https://npp-nb.bg/?page_id=1396&lang=en

The submission of a report and, accordingly, the taking of a substantive
decision by the government is related to the fulfillment of the
requirements specified in Art. 45, paragraph 2 of the Law on the Safe Use
of Nuclear Energy - carrying out an assessment of
• nuclear safety and radiation protection, impact
on the environment and physical protection;
• the socio-economic significance of the construction of NPP for
the country or for individual regions;
• radioactive waste and spent nuclear fuel, which are obtained as a result
of the operation of the NPP and their management

Government decision to build 7-8 block

October 25, 2023, Government meeting:
Report approving the report of the Minister of energy to take action on construction of units 7 and 8 of Kozloduy NPP EAD with AR 1000 technology
(https://pris.government.bg/document/d93058dfeb577a9e1864ac7cb93ba179)
The Minister of Energy does not present the required analyzes and assessments, as it is not developed, has not made them publicly available and did not organize their public discussion.
Gross violation of the requirements of Article 45 of the Safe Use of Nuclear Energy Act, as well as the priority requirement of safety, formulated in Article 3 of the Law on Safe Use of Nuclear Energy.
Violation of the Convention on the Right to information and public participation in the decision-making process on matters of the environment /Aarhus/, as well as Art. 8 of European Convention on Human Rights.
An appeal was filed in the High Administrative Court for the annulment of the Government's Decision on the construction of block 7 and 8 of Kozloduy NPP as illegal (case 63/03.01.2024)

UGLY DEVELOPMENT OF THE PROJECT

Decisions of the parliament and the government to spend tens of billions without arguments.

The Prime Minister: "They will replace units 1-4" and "AP1000 can quickly change its power!"
This is a lie, units 1-4 of the Kozloduy NPP were closed 20 years ago and there is no problem with the energy balance during this period.
AP 1000 can to change its power but this has negative economic consequences, the price of the produced energy will rise and become unsellable.

Bulgarian MEP: "In the current geopolitical conditions, the security of energy supplies is most important, albeit at the cost of more expensive electricity.

The security!?! Some lessons from the war in Ukraine, where the Zaporozhye NPP, the largest NPP in Europe, occupied by the Russian army disappeared as an energy site without being destroyed.

Bulgarian MPs: It is important to be the first in Europe to build AR1000 - the Bulgarian industry will produce equipment.
It is not clear what the Bulgarian industry will produce and how - turbines, generators?

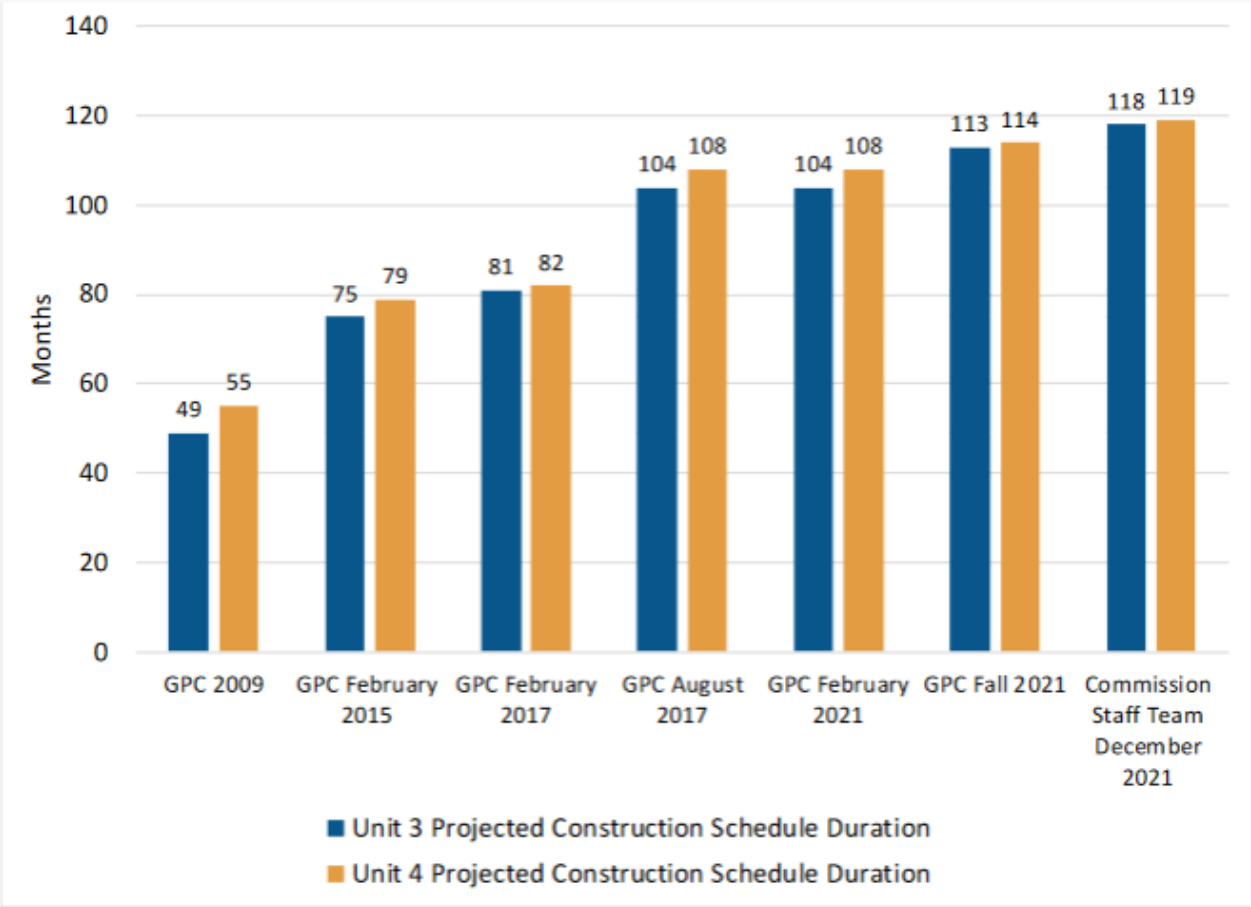
AP 1000

Thermal power 3400 MW, electric power 2500 MW (gross), net 1117 - 1150 MW, post-accident cooling with passive systems

China:
4 blocks built, 2009-2018.
Average construction time – 9 years;

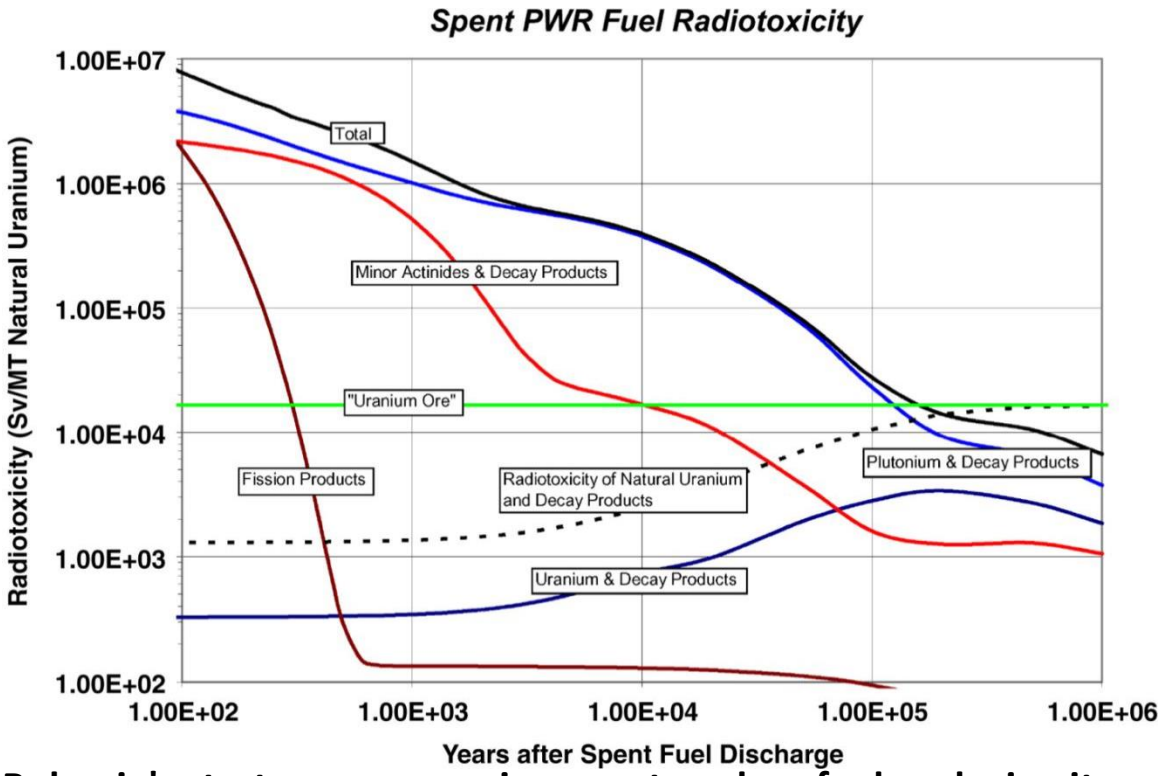
USA:
- 2013, two units were started at the NPP Summer; 2017 abandoned after invested over 9 billion USD;
- 2013, two units were started at the NPP Vogtle networked March 2023/2024.
Average build time: 10+ years instead of the promised under 5 years;
Start-up costs: about 35 billion USD instead of the promised 14 billion USD. The most expensive reactors in nuclear history
Energy – 14,000 USD/kW of electricity installed.
Electricity price: 170-180 USD/MWh
After the crash with Vogtle 3-4 nobody in North America doesn't want to build the AR 1000, as well as in England, Turkey and the Czech Republic.

Figure 1: Projected Construction Schedules for Vogtle Units 3 and 4



Sources: Georgia Power Company's Application for the Certification of Vogtle Generating Units 3 and 4 and Upgraded Integrated Resource Plan; Plant Vogtle Units 3 and 4 Second through Twenty-Fifth Semi-Annual Construction Monitoring Reports; and the testimony of Donald N. Grace and Steven D. Roetger and William R. Jacobs, Jr. in Commission Docket No. 29849.

What will we do with spent nuclear fuel?



Bulgaria's strategy - processing spent nuclear fuel, reducing its mass at the site?!?

Increase in the mass of the stored SNF at the site:
- **2015 - about 803 tons**
- **2021 – about 919 t**
- **2023 – about 1000 t.**

Criminal procedure imposed by the EC. Lack of action to build a deep geological repository.
New reactors with a new type of fuel will further complicate the problems.

INITIAL COSTS 7-8 block:

Repetition of lies about Belene NPP:
Deputy Minister Nikolov: for two AR 1000 reactors, max. 12 billion Euros?!?
Minister Radev: red line for two AR 1000 reactors, 14 billion USD?!? (5600 USD/inst. kW el.)

FORECASTS:
Lazard, for one AR1000 reactor: 10.5 – 17.5 billion USD
FACTS: VOGTLE 3-4 NPP: USD 35 billion (USD 14,000/inst. kW el.)
French Court of Accounts 2020 estimate for 1,650 MW Flamanville EPR: USD 21 billion2015
(12,700 USD/inst. kW el.)

FINANCING:
No strategic/foreign investors, 100% state participation?!?
25-30% of the state budget
70-75% of initial costs through debt financing, with government guarantees
The EIB and EBRD do not plan to finance the construction of new reactors due to the high risk of delays and cost overruns. (last nuclear conference in Brussels)

Cost of electricity from unit 7-8 at Kozloduy NPP - statements and facts

Minister of Energy, Radev: max. BGN 127/MWh?!? = 70 USD/MWh

FACTS: VOGTLE 3-4 NPP: 170-180 USD/MWh

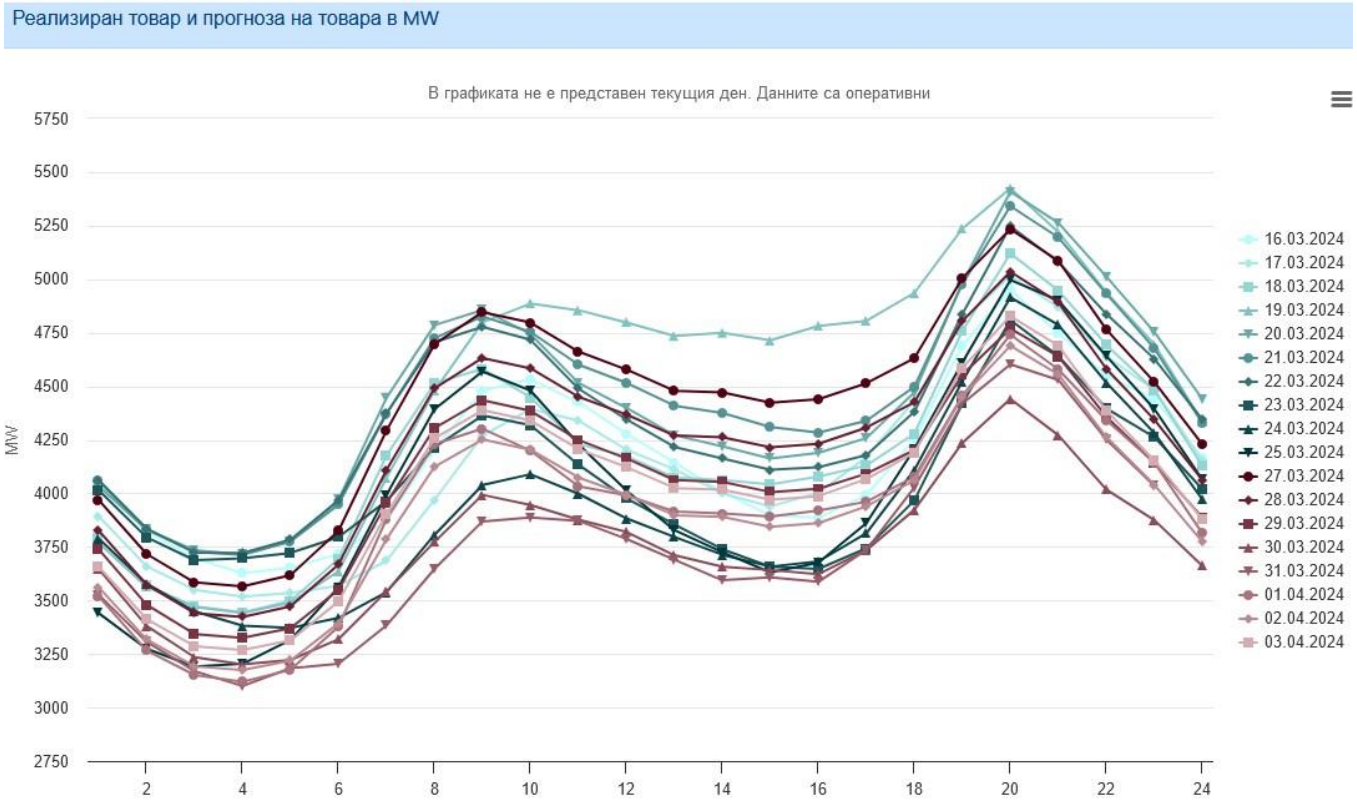
2020 French Court of Accounts estimate for 1,650 MW Flamanville EPR 122–133 USD2015/MWh

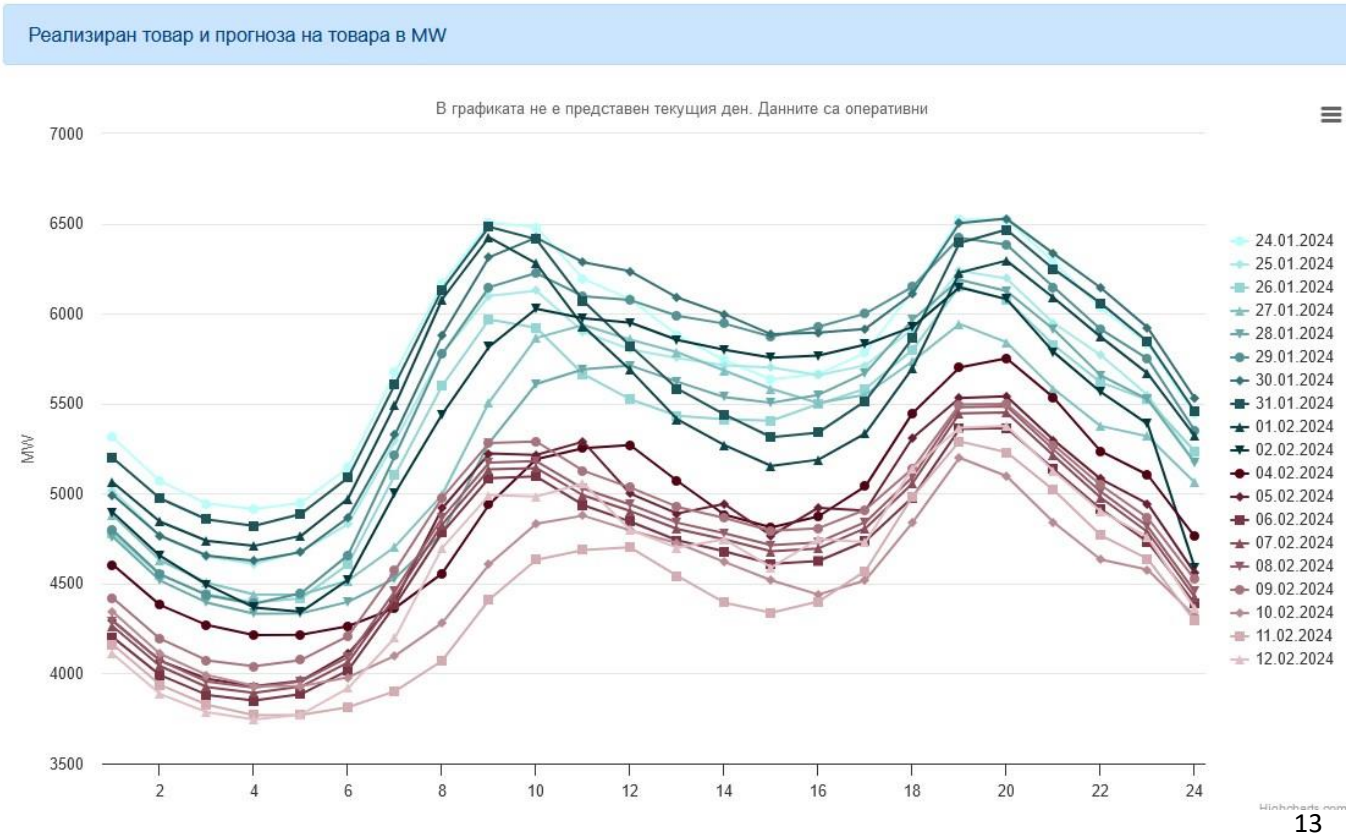
FORECASTS Lazard 2023 LCOE:141 – 221 USD/MWh

FORECASTS Wood Mackenzie 2023 LCOE EUROPE: by 2040 USD 130 – 140/MWh

IEA 2022 and 2023 World Energy Outlooks, EUROPE 128–132 USD/MWh

How will 4 nuclear units (over 4200 MW net) fit into the energy balance?





UGLY DEVELOPMENT OF THE PROJECT

Decision of the Parliament 31.12.2023
Unit 7 to be launched by 2035. Why?
Before that, the government decided it would be 2033.

Disposition of the finances of state-owned companies:
The proceeds from the sale of the equipment for the Belene NPP, owned by NEK, to be used only for the construction of units 7 and 8 of the Kozloduy NPP
Intervention in the work of the nuclear regulator by setting short deadlines in advance:
31.12.2026 - Submission of a request for approval of the technical project to the NRA.

31.08.2028 – project approval (20 months)

Complete incompetence shown
Facts:
Technical project of Belene NPP.

Submitted to NRA April 2008. As of March 2012 (project termination) still unapproved.

AP1000, Design Certification, NRC

March 28, 2002 - NRC staff initiated formal review of the AP1000 design and standard design certification.

January 27, 2006 - NRC issued the AP1000 final design certification rule (DCR) in the Federal Register.

March 10, 2006 - NRC issued a revised final design approval (FDA) based on Revision 15 of the DCD.

May 26, 2007 - Westinghouse submitted an application to amend the AP1000 DCR and Revision 16, AP1000 DCD.

September 22, 2008 - Westinghouse updated its application for updated Revision 17.

December 1, 2010 – updated Revision 18.

June 13, 2011 – updated Revision 19.

August 5, 2011 - NRC completed its review of the AP1000 DCD, Revision **19.**

https://www.nrc.gov/reactors/new-reactors/large-lwr/design-cert/ap1000.html

AP1000, GENERIC DESIGN ASSESMENT (GDA)

OFFICE FOR NUCLEAR REGULATION, GB

Apr-Sep 2007: Step 1 (preparatory step)

Sep 2007 - Jun 2008: Step 2 (initial assessment)

Jun 2008 - Dec 2009: Step 3 (detailed assessment)

Jan 2010 - Dec 2011: Step 4 (detailed design, safety case and security evidence assessment)

Dec 2011 - Westinghouse paused GDA, activities with 51 outstanding issues remaining

Aug 2014 - Westinghouse recommenced GDA of the AP1000®

March 2017 - ONR and the Environment Agency issued a Design Acceptance Confirmation and Statement of Design Acceptability the AP1000© design

https://www.onr.org.uk/new-reactors/ap1000/index.htm

US-Bulgaria intergovernmental agreement on nuclear energy cooperation - excerpts.

Article 7. PUBLIC PROCUREMENTS

The parties note that US expertise will be most effective if the technology provider and the project's EPC (Engineering + Proqurement + Construction) are US entities.

In this regard, if necessary and appropriate, Bulgaria should seek to obtain an exception or permission from the EC and/or other competent authorities that the financing of the Project and the selection of a technology supplier need not be subject to an open market procedure.

Bulgaria will also consider using a US entity as the EPC contractor for the project and obtaining an exemption or authorization from those authorities that the selection of such EPC contractor should not be subject to an open market procedure.

Instead of a conclusion

Parliament should take away functions from the government and to stop the practice of deciding what to be built and who should build it.
To stop the vicious symbiosis between legislature and executive where instead of controlling each other, act in tandem, and responsibility is blurred.
To reverse the decisions to build 7-8 block to 2035 – 2037 and to consider their build as substitutes for 5-6 block.
To provide information to the public and its participation in decision-making.
In the nuclear sphere, attention should be focused on continuing the safe work of 5-6 unit, reprocessing of spent nuclear fuel, financing and construction of a deep geological repository.