



ROSATOM

Rosatom State Nuclear Corporation



AKKUYU NÜKLEER
AŞ

Akkuyu NPP – the world's first BOO project in the nuclear industry

*Technical and Regulatory Issues
Facing Nuclear Power Plant
CORDEL, WNA
Moscow, October 25-26, 2016*

Igor KOGAY
Director for Industrial Safety
and Quality Control
AKKUYU NÜKLEER A.Ş.



ROSATOM

CONTENT



AKKUYU NÜKLEER AŞ

- **General Project Information**
- **Current Status and Plans for 2016**
- **Lessons learned**



ROSATOM

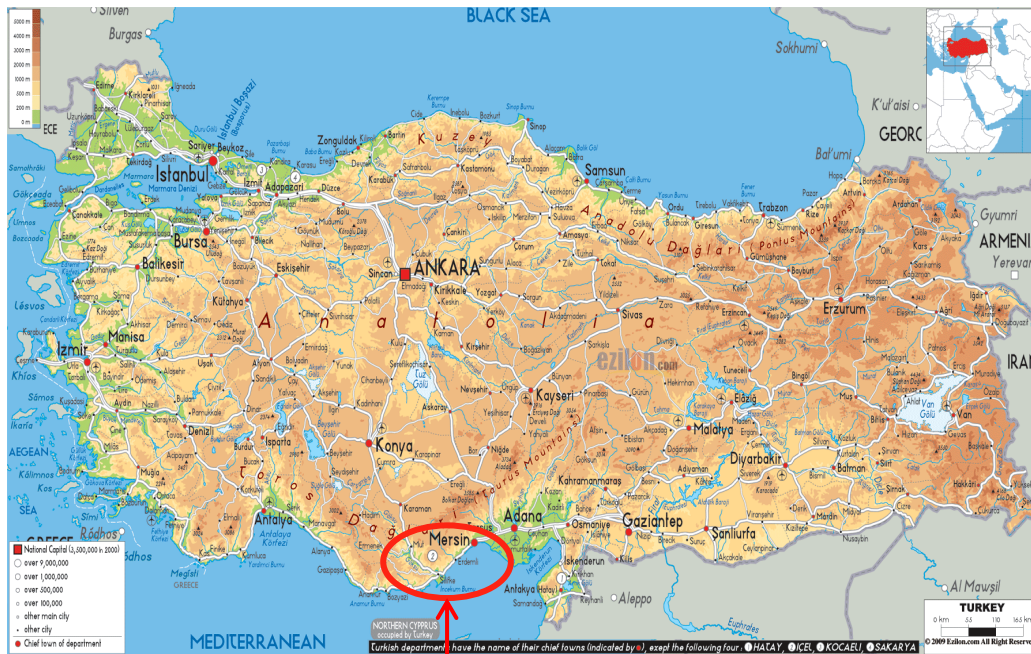
GENERAL PROJECT INFORMATION



AKKUYU NÜKLEER AŞ

Akkuyu Project Features

- First Nuclear Power Plant in Turkey
- First Rosatom BOO (Build-Own-Operate) Project. Under the IGA, Rosatom is responsible for engineering, procurement, construction, operation and maintenance of the plant.
- Legal Basis: Intergovernmental Agreement, May 12, 2010
- Project Design: AES-2006 (VVER-1200)
- Total Capacity: 4,800 MW. (4 x 1200 MW)
- Development Period: 2011-2026
- Total Cost ~ \$ 20 bln
- Power Purchase Agreement for 15 years, fixed price terms .Term Sheet is signed.
- Support of the Russian and Turkish Governments
- Maximization of Turkish personnel involvement in construction and operation of the Plant.
- Job Creation Potential – up to 10 000 for the construction only



Akkuyu site, Turkey

Single responsibility of the “Project Company” for all stages of the project and deadlines

**Russian Government
Funded up \$ 2,75 billion**

1 stage

Preparation

2 stage

Construction

3 stage

O&M

4 stage

Decommissioning

↓ 12/10
Akkuyu NPP
JSC
registration

↓ 03/11
Start site
survey

↓ 12/14
EIA-
positive

↓ 2016
Generation
license

↓ 2018
Construction
license

↓ 2018
1st concrete

↓
Commissioning
2023 – 1 unit
2024 – 2 unit
2025 – 3 unit
2026 – 4 unit

↓ 2086

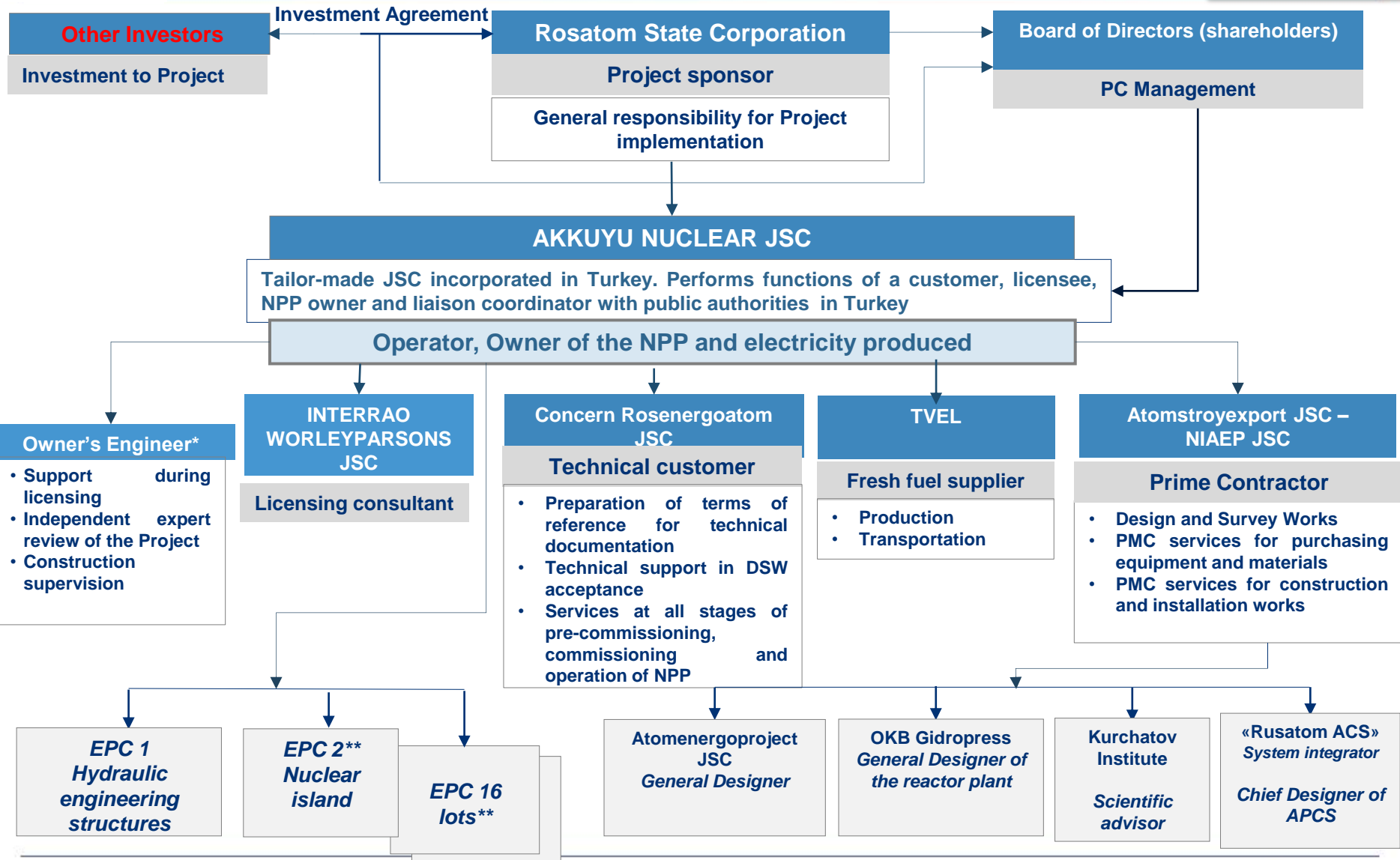


ROSATOM

General: Project organization structure



AKKUYU NÜKLEER AŞ



* Tender is to be held in 2016

** EPC structure is subject to further discussions



ROSATOM

General: Project Cooperation Between Russia and Turkey Covers a Wide Range of NPP Related Construction, Operation and Infrastructure Issues



AKKUYU NÜKLEER AŞ

Russia's / PC Responsibilities

- NPP engineering, procurement, design, field supervision
- Construction management/ Supervision/Start up and Commissioning
- Design Documentation
- Nuclear Island and other special equipment and materials supply
- Fuel supply
- Ownership of NPP until decommissioning
- Operation, modernization, maintenance and upgrade
- Sale of electricity (51/49)%
- Decommissioning and decontamination
- Financing up to 51%
- Nuclear liability insurance,
- Radioactive waste disposal / treatment

Joint Responsibilities

- Construction and assembly works
- Commissioning
- Physical Protection
- Emergency Response Planning
- Public Outreach
- Spent Fuel Management (subject to a separate IGA to be concluded)
- Other Investors (Turkey and other) up to 49%

Turkey's Responsibilities

- Support for Licensing, expropriation and permits
- Site allocation with existing license and infrastructure
- Turkey's nuclear infrastructure development, grid connection
- Publish to Nuclear Laws and regulations



ROSATOM



AKKUYU NÜKLEER AŞ

Current status of the Project and Plan for 2016

Current Status

- The Project Company has received the NPP construction site with effective site license and renewed licensing conditions.
- Power Generation License application filed in 2011
- The Information Centers were opened in Büyükeceli and Mersin.
- Updated “Basic Site Selection Report” has been prepared and approved by TAEK.
- Site Parameters Report submitted to TAEK on 26.11.2014
- EIA Report Approved on 01.12.2014
- Pre-construction work (groundwork) has started
- NPP Design development is underway and close to completion
- Negotiations with TETAS on Power Purchase Agreement (PPA) are in progress .Term Sheet has been signed on 27.01.2015
- Preliminary License for Generation was obtained 25.06.2015
- Amendments to Law (Olive Trees, Coastal line, Electricity Market) was published on OG #29745 dated 17.06.2016

Plans for 2016-2017

- Site Parameters Report to be approved by TAEK
- Application to TAEK for the Construction License (complete package – December 2016)
- Obtaining a limited construction permit from TAEK (August 2017)
- Application License for Generation to EMRA (December 2016)
- Completion of the engineering design development (March 2017)
- Approval of power distribution scheme and NPP grid connection to Turkey Grid System.Negotiations with TEİAŞ
- Detailed Design stage to be started
- Design of Offshore Hydraulic Engineering Structure to be completed and Construction of OHES to be started
- Start of manufacture the LLI equipment (reactor, steam generators, pressurizer, turbine, etc...)



CHALLENGES	MITIGATIONS
The comprehensive Nuclear Energy Law and the Law of Civil Liability for Nuclear Damage need to be adopted	Drafted by MENR. The Nuclear Energy Law is new for Turkish Government and Authorities
New Electricity Market Law	Setting up regulatory base prior to licensing
Experience of the Turkish Party in regulating and licensing of NPP	Acceptance of the regulatory base of the supplier country in case of lack of host country base operators
Understanding of local regulations and their implementation (On Improving Productivity of the Olive Trees, Coastal Line Law)	Assistance in development of regulatory basis and regulatory agency expertise Priorities: National Regulation – IAEA Safety requirements – Vendor Country Regulation – Third country nuclear standards
Understanding of “nuclear” by government agencies and companies	Established effective system of consultations with government bodies and relevant agencies Student’s education, training for officials, regulatory bodies’ personnel



Lessons learned - 2



AKKUYU NÜKLEER AŞ

CHALLENGES	MITIGATIONS
Possibility of changes in regulations	Working groups on the key issues of project implementation.
Public fear of nuclear	Work with public opinion
Having the first NPP EIA report in the country; Public Authorities were more demanding than their regulation's requirements	«Fixed» legislative requirements for the EIA period
Large number of institutions-members of the EIA Commission (55) <ul style="list-style-type: none">- Ministries- Universities- Individual Department of Ministries- Regulatory Body	Country's Ministries (not more than 10) are key members of the EIA Commission
BOO Model	Needs to be detailed before start to negotiate
INIR Mission	To provide INIR mission on early stage of Project (Phase 1 and Phase 2)



ROSATOM



AKKUYU NÜKLEER AŞ



AKKUYU NÜKLEER AŞ

Thank you for your attention!

www.akkuyu.com