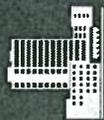




## GENERAL INFORMATION

 NIIIS as a modern research-and-production complex



Home page



Next



Slide show



Manual slide viewing

# FEDERAL AGENCY for ATOMIC ENERGY

## FEDERAL STATE UNITARY ENTERPRISE FEDERAL RESEARCH- AND-PRODUCTION CENTER

# «MEASURING SYSTEMS RESEARCH INSTITUTE

named after Yu. Ye. Sedakov»



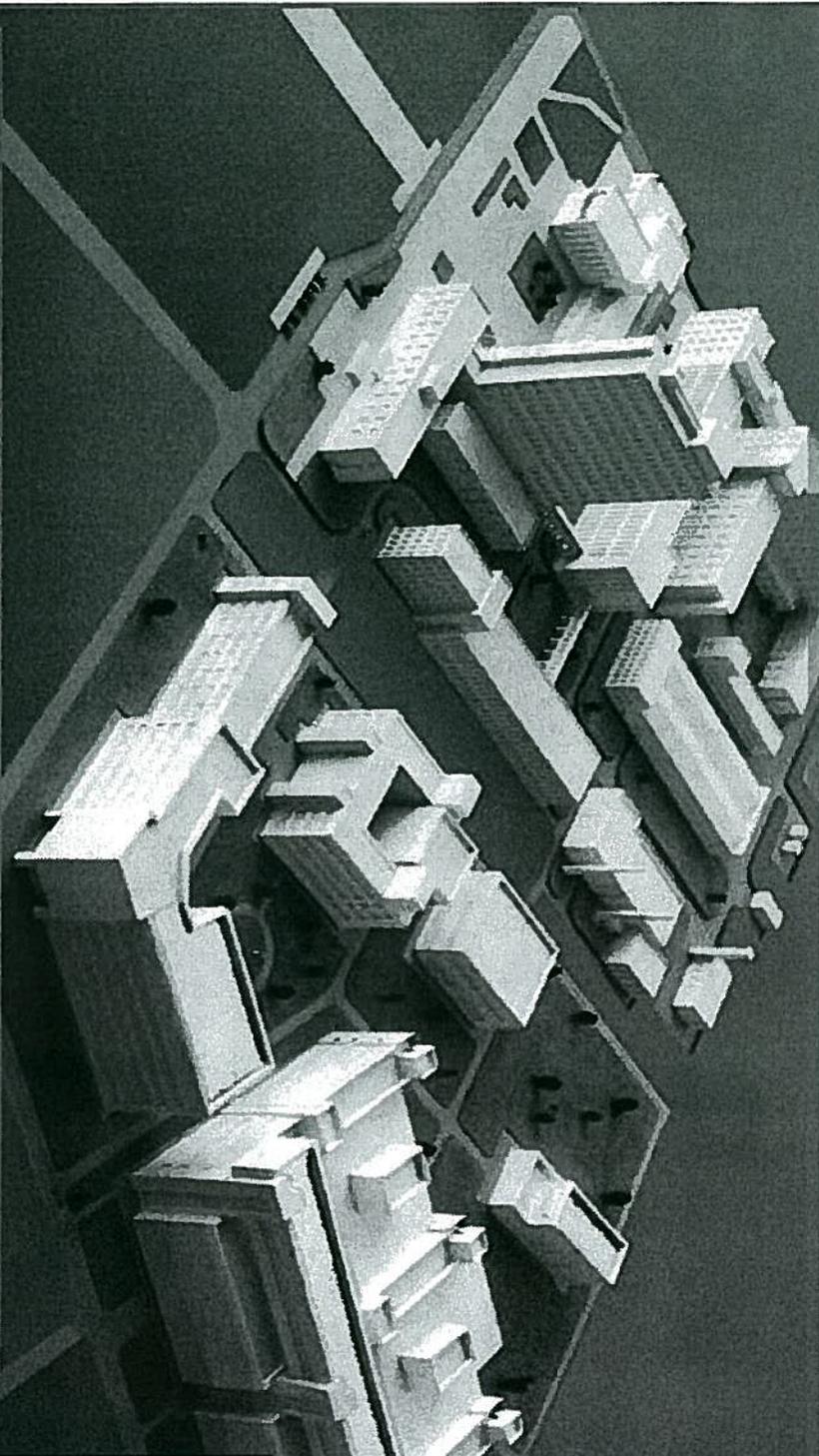
FEDERAL STATE UNITARY ENTERPRISE FRPC «MEASURING SYSTEMS RESEARCH INSTITUTE named after Yu. Ye. Sedakov»



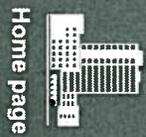
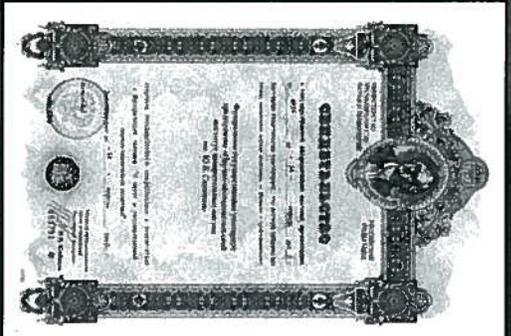
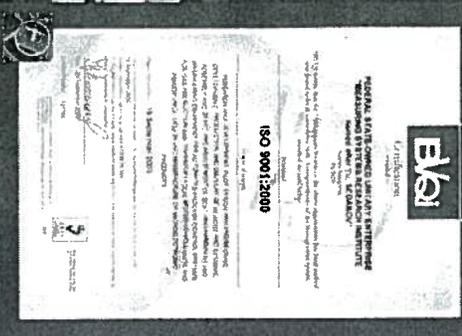
## GENERAL INFORMATION

NIIS as a modern research-and-production complex

# NIIS IS A MODERN RESEARCH-AND-PRODUCTION COMPLEX



- **OVERALL AREA** – 25 hectares
- **BUILDINGS** – 141 000 m<sup>2</sup>
- **BASIC ASSETS** – 1589 mln. rbl.



Home page



To the beginning



Previous



Next



Slide show



Manual slide viewing



FEDERAL STATE UNITARY ENTERPRISE FRPC «MEASURING SYSTEMS RESEARCH INSTITUTE named after Yu. Ye. Sedakov»



## PRODUCTION

Soft-and-hardware devices and complexes of upper level control systems of APCS NPP of new generation



Home page



ПРОГРАММНО-ТЕХНИЧЕСКИЕ СРЕДСТВА АВТОМАТИЗИРОВАННЫХ СИСТЕМ УПРАВЛЕНИЯ  
ТЕХНОЛОГИЧЕСКИМИ ПРОЦЕССАМИ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ

# SOFT-AND-HARDWARE DEVICES AND COMPLEXES OF UPPER LEVEL CONTROL SYSTEMS FOR APCS NPP OF NEW GENERATION



Next



Slide show



Manual slide  
viewing



# PRODUCTION

Soft-and-hardware devices and complexes of upper level control systems of APCSS NPP of new generation



Home page



To the beginning



Previous



Next



Slide show



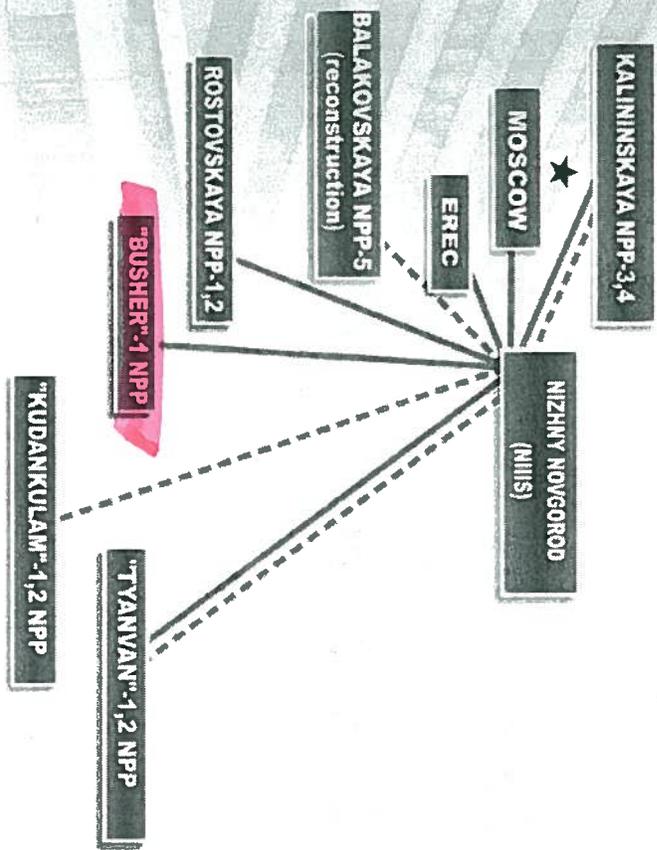
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НИИС

ПРОГРАММНО-ТЕХНИЧЕСКИЕ СРЕДСТВА АВТОМАТИЗИРОВАННЫХ СИСТЕМ УПРАВЛЕНИЯ ТЕХНОЛОГИЧЕСКИМИ ПРОЦЕССАМИ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ

## INFORMATION-AND-CONTROL REAL-TIME SYSTEMS FOR NUCLEAR POWER PLANTS



### GEOGRAPHY OF NIIS WORKS

CONCERN

CRISIS CENTER

NUCLEAR POWER PLANTS  
TOP LEVEL SYSTEM OF THE NUCLEAR POWER PLANT

POWER UNIT

TOP LEVEL SYSTEM OF THE POWER UNIT

WORKSHOP  
SPECIAL SYSTEMS, REACTOR AND TURBINE  
NORMAL EXPLOITATION SYSTEMS

PROCESS EQUIPMENT

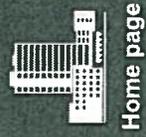
LOCAL DIAGNOSTICS, CONTROL AND ADJUSTMENT SYSTEMS

SENSORS, INDICATORS, ACTUATING MECHANISMS



# PRODUCTION

Soft-and-hardware devices and complexes of upper level control systems of APCs NPP of new generation



Home page



To the beginning



Previous



Next



Slide show



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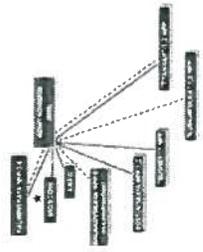


ПРОГРАММНО-ТЕХНИЧЕСКИЕ СРЕДСТВА АВТОМАТИЗИРОВАННЫХ СИСТЕМ УПРАВЛЕНИЯ  
ТЕХНОЛОГИЧЕСКИМИ ПРОЦЕССАМИ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ

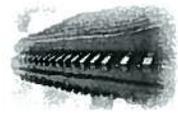
## AUTOMATED PROCESS CONTROL SYSTEMS OF NEW GENERATION



- Computer-based power unit control
- Fiber-optic technology of information transmission
- Invariance to operating systems (Linux, OpenVMS etc.)
- Supply of soft-and-hardware complexes prepared by the manufacturer to the maximum



CONCERN



CRISIS CENTER

NUCLEAR  
POWER PLANTS



TOP LEVEL  
SYSTEM  
OF THE NUCLEAR POWER PLANT

POWER UNIT



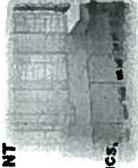
TOP LEVEL  
SYSTEM OF THE POWER UNIT

WORKSHOP



SPECIAL  
SYSTEMS, REACTOR AND TURBINE  
NORMAL EXPLOITATION SYSTEMS

PROCESS  
EQUIPMENT



LOCAL  
DIAGNOSTICS,  
CONTROL  
AND ADJUSTMENT SYSTEMS

SENSORS, INDICATORS,  
ACTUATING MECHANISMS



# PRODUCTION

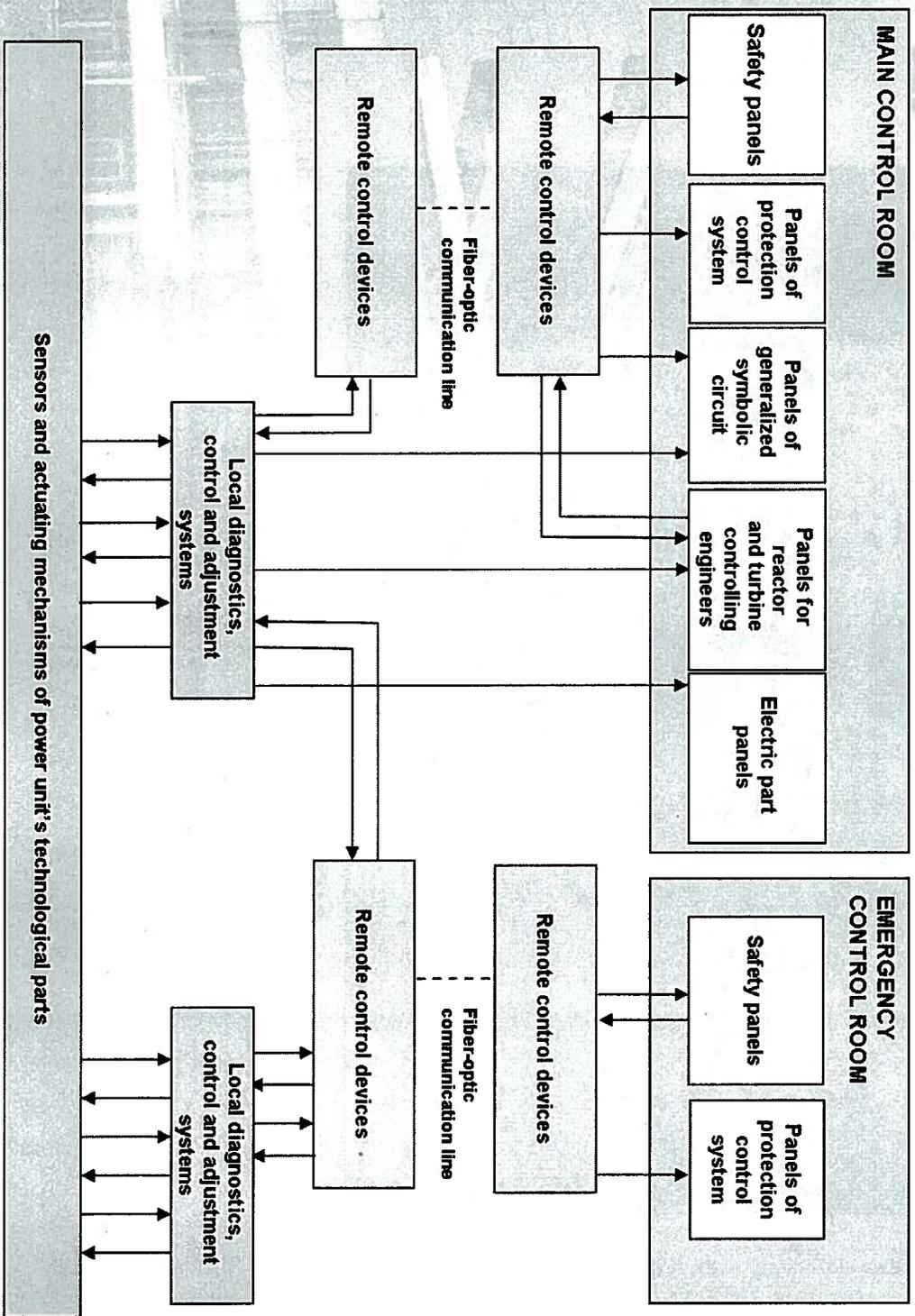
Soft-and-hardware devices and complexes of upper level control systems of APCSS NPP of new generation



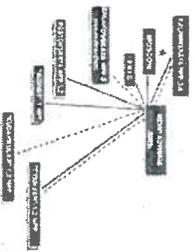
НИИНС

ПРОГРАММНО-ТЕХНИЧЕСКИЕ СРЕДСТВА АВТОМАТИЗИРОВАННЫХ СИСТЕМ УПРАВЛЕНИЯ  
ТЕХНОЛОГИЧЕСКИМИ ПРОЦЕССАМИ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ

## BLOCK DIAGRAM OF OPERATIVE DISPATCHING DEVICES



Navigation icons: Home page (building icon), To the beginning (right arrow), Previous (up arrow), Next (down arrow), Slide show (clock icon), Manual slide viewing (hand icon).



CONCERN

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NUCLEAR POWER PLANTS

TOP LEVEL SYSTEM OF THE NUCLEAR POWER PLANT

POWER UNIT

TOP LEVEL SYSTEM OF THE POWER UNIT

WORKSHOP

SPECIAL SYSTEMS, REACTOR AND TURBINE NORMAL EXPLOITATION SYSTEMS

PROCESS EQUIPMENT

LOCAL DIAGNOSTICS, CONTROL AND ADJUSTMENT SYSTEMS

SENSORS, INDICATORS, ACTUATING MECHANISMS



# PRODUCTION

Soft-and-hardware devices and complexes of upper level control systems of APCS NPP of new generation



Home page



To the beginning



Previous



Next



Slide show

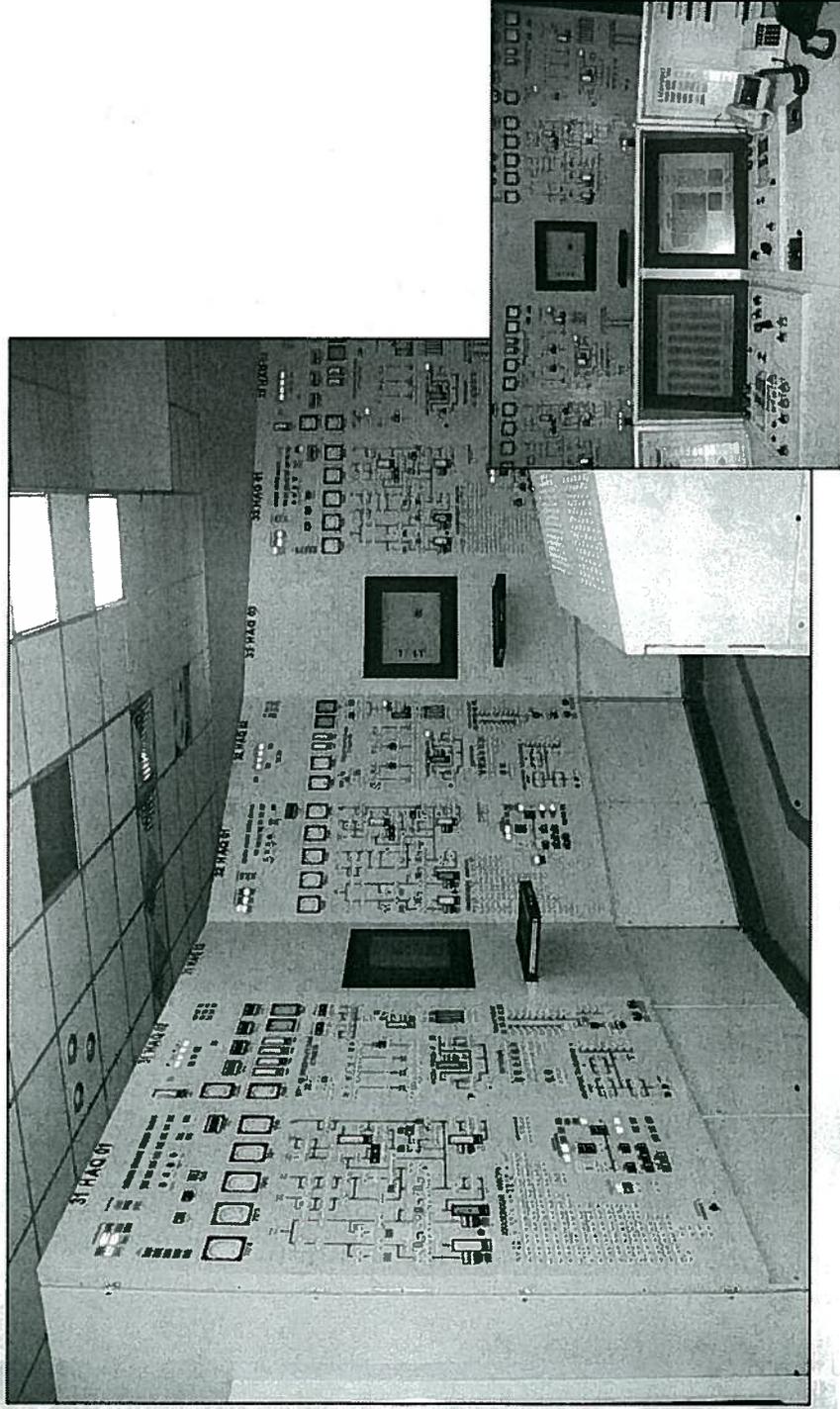


Manual slide viewing

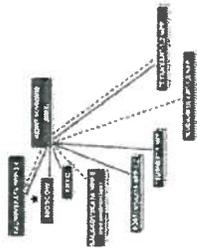


ПРОГРАММНО-ТЕХНИЧЕСКИЕ СРЕДСТВА АВТОМАТИЗИРОВАННЫХ СИСТЕМ УПРАВЛЕНИЯ  
ТЕХНОЛОГИЧЕСКИМИ ПРОЦЕССАМИ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ

## HARDWARE OF POWER UNIT OPERATIVE DISPATCHING



- Direct remote control and power unit control during abnormal operating mode
- Possibility of fast reconfiguration of technological mimic circuits of mosaic panels



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CRISIS CENTER

NUCLEAR POWER PLANTS



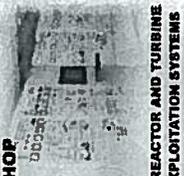
TOP LEVEL SYSTEM OF THE NUCLEAR POWER PLANT

POWER UNIT



TOP LEVEL SYSTEM OF THE POWER UNIT

WORKSHOP



SPECIAL SYSTEMS, REACTOR AND TURBINE NORMAL EXPLOITATION SYSTEMS

PROCESS EQUIPMENT



LOCAL DIAGNOSTICS, CONTROL AND ADJUSTMENT SYSTEMS

SENSORS, INDICATORS, ACTUATING MECHANISMS



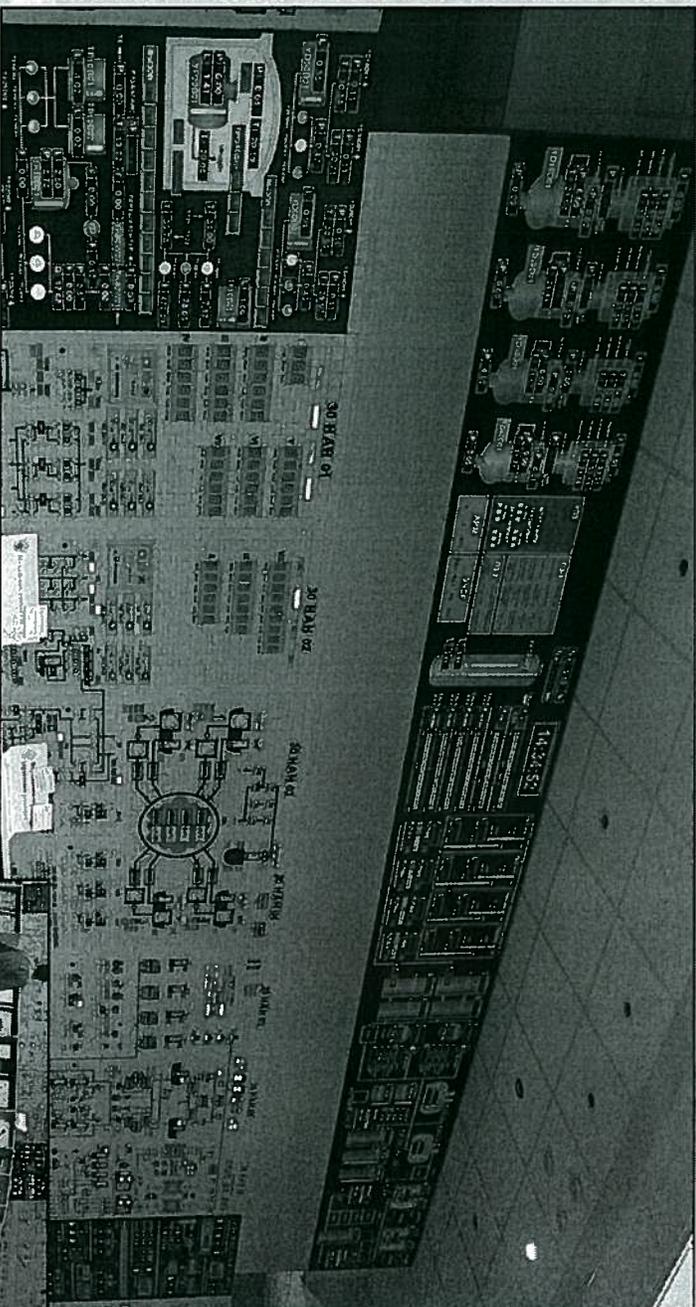
# PRODUCTION

Soft-and-hardware devices and complexes of upper level control systems of APCS NPP of new generation

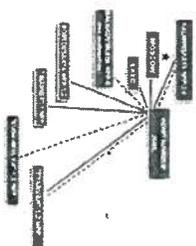
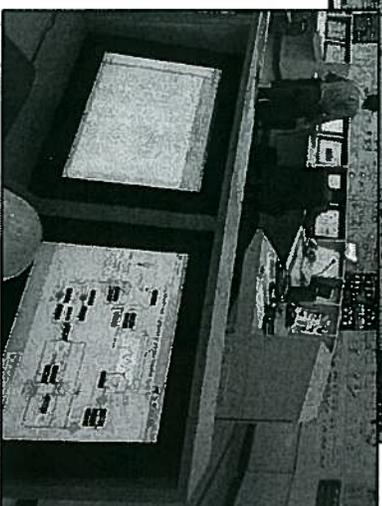


ПРОГРАММНО-ТЕХНИЧЕСКИЕ СРЕДСТВА АВТОМАТИЗИРОВАННЫХ СИСТЕМ УПРАВЛЕНИЯ  
ТЕХНОЛОГИЧЕСКИМИ ПРОЦЕССАМИ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ

## INFORMATION DISPLAYING SYSTEMS



- Display panel for common use
- Mosaic mimic panels
- Displays of operators' automated workplaces



### CONCERN

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### NUCLEAR POWER PLANTS

### TOP LEVEL SYSTEM OF THE NUCLEAR POWER PLANT



### POWER UNIT

### TOP LEVEL SYSTEM OF THE POWER UNIT



### WORKSHOP



### SPECIAL SYSTEM, REACTOR AND TURBINE NORMAL EXPLOITATION SYSTEMS

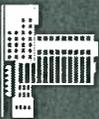
### PROCESS EQUIPMENT

### LOCAL DIAGNOSTICS, CONTROL AND ADJUSTMENT SYSTEMS



### SENSORS, INDICATORS, ACTUATING MECHANISMS

Home page



To the beginning



Previous



Next



Slide show

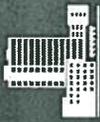


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# PRODUCTION

Soft-and-hardware devices and complexes of upper level control systems of APCS NPP of new generation



Home page



To the beginning



Previous



Next



Slide show



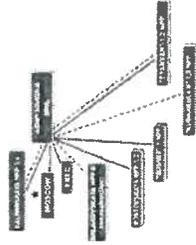
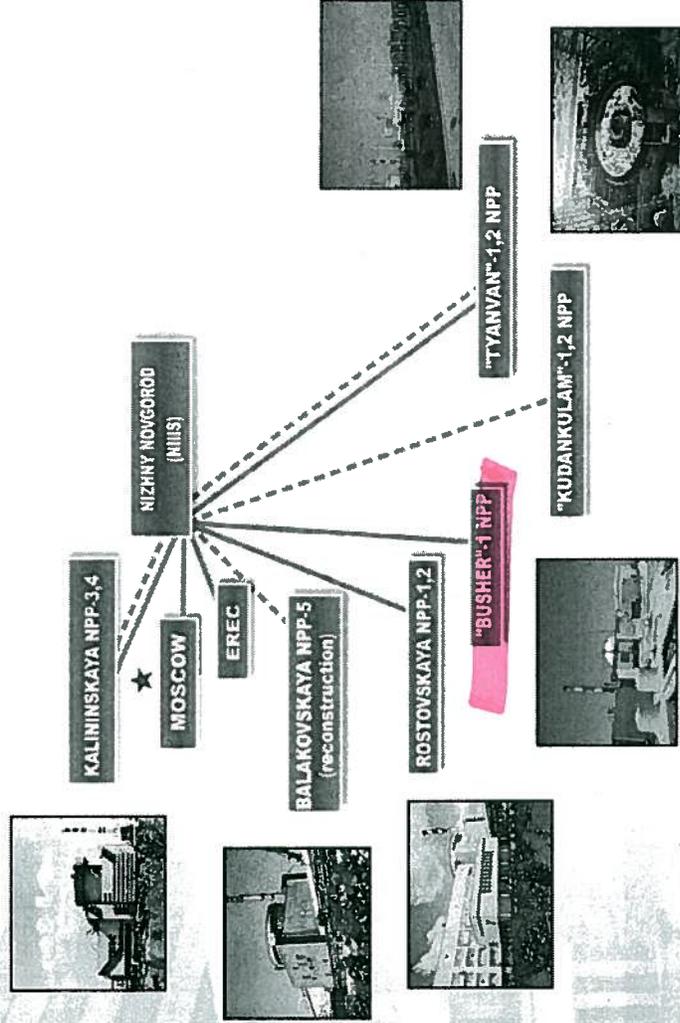
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ПРОГРАММНО-ТЕХНИЧЕСКИЕ СРЕДСТВА АВТОМАТИЗИРОВАННЫХ СИСТЕМ УПРАВЛЕНИЯ  
ТЕХНОЛОГИЧЕСКИМИ ПРОЦЕССАМИ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ

## BASIC VIEW OF AUTOMATED PROCESS CONTROL SYSTEM

- Worked through at №3 Kalininskaya NPP power unit
- Is used for development of APCS NPP «Kudankulam-1,2»
- Can be used in new prospective projects



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NUCLEAR POWER PLANTS

TOP LEVEL SYSTEM OF THE NUCLEAR POWER PLANT

POWER UNIT

TOP LEVEL SYSTEM OF THE POWER UNIT

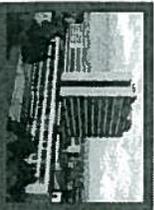
WORKSHOP

SPECIAL SYSTEMS, REACTOR AND TURBINE NORMAL EXPLOITATION SYSTEMS

PROCESS EQUIPMENT

LOCAL DIAGNOSTICS, CONTROL AND ADJUSTMENT SYSTEMS

SENSORS, INDICATORS, ACTUATING MECHANISMS



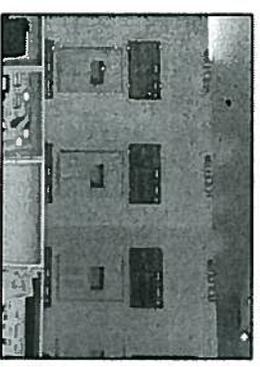
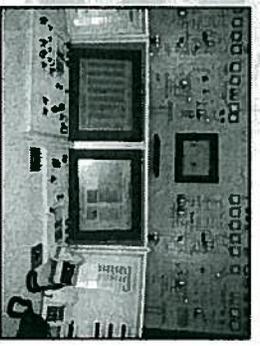
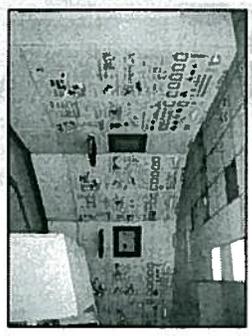
# PRODUCTION

Soft-and-hardware devices and complexes of upper level control systems of APGS NPP of new generation



ПРОГРАМНО-ТЕХНИЧЕСКИЕ СРЕДСТВА АВТОМАТИЗИРОВАННЫХ СИСТЕМ УПРАВЛЕНИЯ  
ТЕХНОЛОГИЧЕСКИМИ ПРОЦЕССАМИ АТОМНЫХ ЭЛЕКТРОСТАНЦИЙ

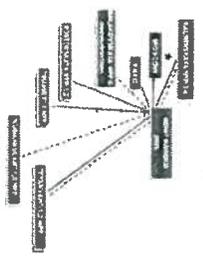
## SECURITY AT NUCLEAR POWER PLANT



• Control and indication of security systems with high speed of information transmission

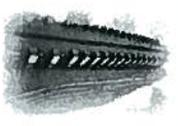
• Complete reservation of digital control and measuring channels

• Seismic resistance up to 9 points Richter scale



### CONCERN

### CRISIS CENTER



### NUCLEAR POWER PLANTS



### TOP LEVEL SYSTEM OF THE NUCLEAR POWER PLANT



### POWER UNIT

### TOP LEVEL SYSTEM OF THE POWER UNIT

### WORKSHOP



### SPECIAL SYSTEM, REACTOR AND TURBINE NORMAL EXPLOITATION SYSTEMS

### PROCESS EQUIPMENT



### LOCAL DIAGNOSTICS, CONTROL AND ADJUSTMENT SYSTEMS

### SENSOR, INDICATORS, ACTUATING MECHANISMS



Home page



To the beginning



Previous



Next



Slide show



Manual slide viewing



## GENERAL INFORMATION

 NIIIS as a modern research-and-production complex



Home page



To the beginning



Previous



Next

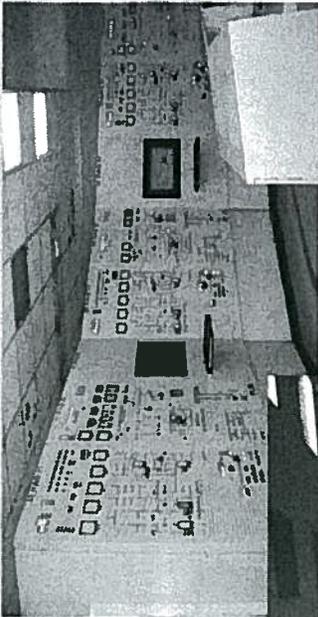
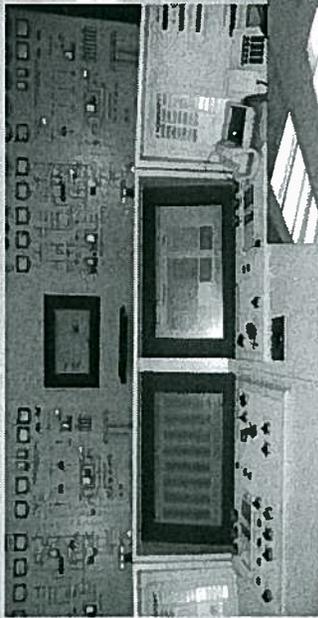
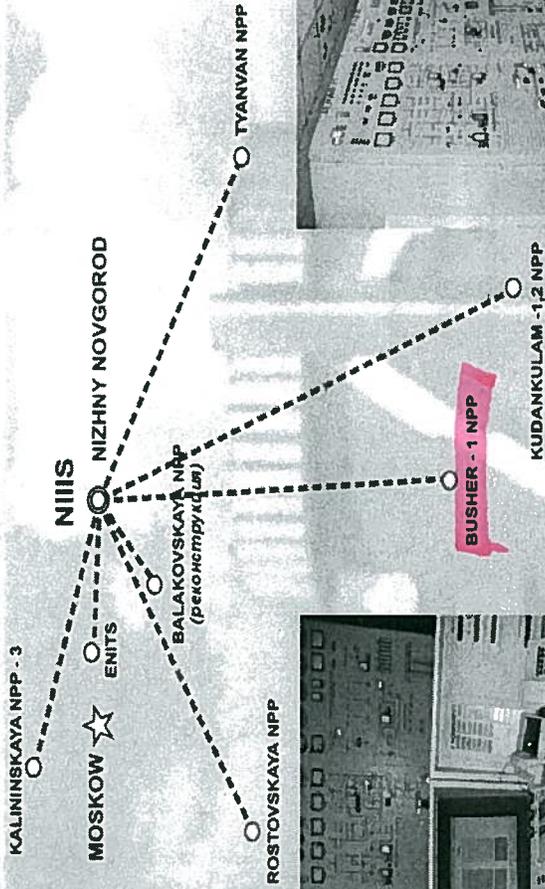


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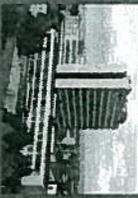
# NIIIS PRODUCTS FOR ATOMIC ENERGY



# NEW GENERATION AUTOMATED CONTROL SYSTEM



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## GENERAL INFORMATION

■ NIIIS as a modern research-and-production complex

# AUTOMATION OF POWER INDUSTRY



Home page



To the beginning



Previous



Next



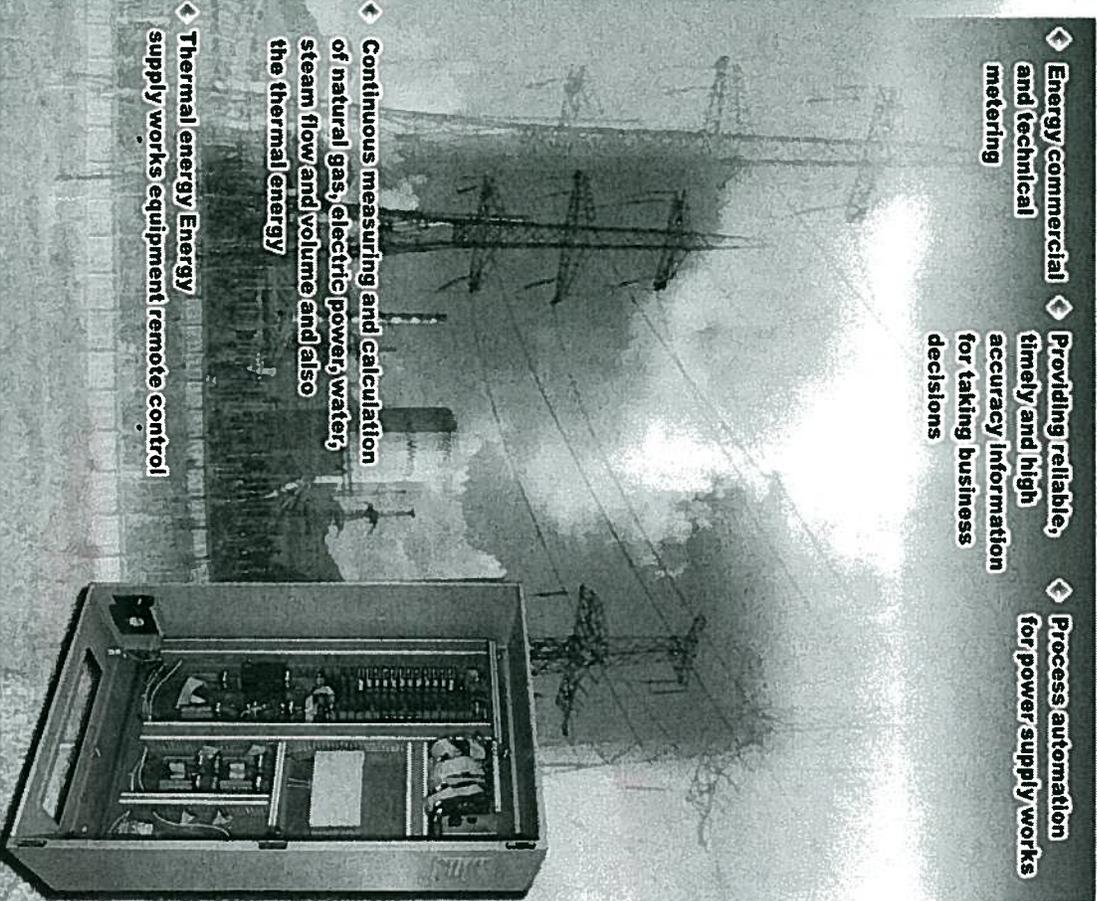
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- ◊ Energy commercial and technical metering
- ◊ Providing reliable, timely and high accuracy information for taking business decisions
- ◊ Process automation for power supply works

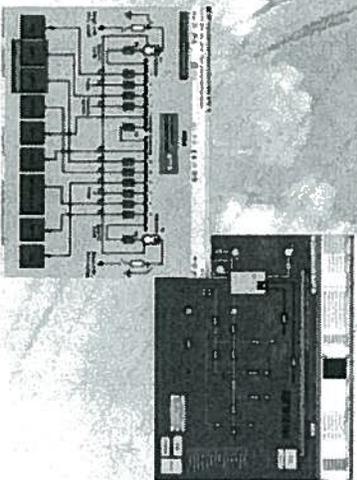
- ◊ Continuous measuring and calculation of natural gas, electric power, water, steam flow and volume and also the thermal energy
- ◊ Thermal energy Energy supply works equipment remote control



## AUTOMATION OBJECT

- ◊ Auxiliary electric power stations
- ◊ Distribution facilities
- ◊ Complete transformer stations
- ◊ Emergency diesel power stations
- ◊ Electric mains
- ◊ Heat supply works
- ◊ Water supply works
- ◊ Water drain works

Energy supply monitoring and control system



ROSATOM



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