

AUTOMATED CONTROL SYSTEMS FOR AIR DEFENCE /AIR FORCES



PANORAMA AUTOMATED CONTROL SYSTEM



PURPOSE

The system is intended to be used at AF and AD command posts at operational and tactical levels.

BASIC CHARACTERISTICS

Quantity of channels for connecting interfaced and controlled objects	up to 90
Quantity of air object logs received in 10 sec	up to 1200
Radar data range:	
- X, Y coordinates, km	from 2400 to +2400
- H coordinate, km	from 0.1 to 100
- velocity, km/h	from 0 to 6000
Digital terrain map	
Redundancy of main elements	central computer, LAN, database server, gateway
Quantity of workstations	up to 150
Open system architecture	
Versions	stationary, mobile



TASKS TO BE SOLVED

Reception, processing, storage, display and data output:

- on friendly and enemy forces;
- on air and ground situation;
- on state of combat potential of subordinate forces and means;
- on use of air space.

Distribution of efforts between the subordinate forces and means.

Automatic (automated) target distribution and target designation to the active means.

Radar information sources control.

Estimation:

- variants of the AD/AF units to be based;
- detection zones of radio reconnaissance aids;
- kill zones of AD active means;
- parameters of electronic environment, optimization of

communication system

and radio-technical support.

Set of task to control fighter and attack aviation.

NEMAN-E AUTOMATED CONTROL SYSTEM



PURPOSE

The system is intended to be used at air units and bases for automated control of units and crews of fighter and attack aircraft during operation planning, air patrol and combat actions.

BASIC CHARACTERISTICS



Quantity of tracked air objects	up to 250
Quantity of ground objects stored in the database	up to 1000
Quantity of connected control and guidance posts	up to 10
Parameters of air targets:	
- range (km)	up to 4000
- height (km)	up to 100
- velocity (km/h)	up to 6000
Quantity of interfaced and subordinate objects	up to 45
Open system architecture	
Versions	stationary mobile



TASKS TO BE SOLVED

Collection, processing, storage and display of information on air and ground situation, combat orders, assigned missions, commands, signals, as well as the status and combat readiness of subordinate forces.

Prompt distribution of fighter aircraft for repulsing enemy massive raids or destroying individual air targets.

Effective use of attack aircraft for destroying planned ground targets.

Guidance of aircraft to air and ground targets using control and guidance posts.



POLYANA-E AUTOMATED CONTROL SYSTEM



PURPOSE

The system is intended to be used at SAM brigade (regiment) command posts for automated control of weapons and reconnaissance means of the SAM brigade (including mixed structure).

BASIC CHARACTERISTICS



Total quantity of air object logs received in 10 sec	up to 500
Quantity of tracked targets	up to 150
Quantity of interfaced objects	up to 16
Quantity of objects under control	up to 24
Quantity of target distribution commands generated automatically	up to 80
Quantity of stored and displayed ground objects	up to 300
Quantity of processed flight requests for own aircraft	up to 1000
Mission setting time, sec	3-5
Quantity of workstations	8



TASKS TO BE SOLVED

Reception, processing and storage of information about enemy forces and its transmission to subordinate command and control posts as necessary.

Reception of information about the status and actions of own forces (subordinate and interacting).

Collection of information about combat readiness of subordinate units and its transmission to a higher command post.

Collection and generation of information about common air situation and its transmission to subordinate units.

Reception of combat orders and instructions from a higher command post.

Generation of combat orders and instructions to subordinate units.

Distribution and designation of targets for subordinate units.

Transmission of control commands to subordinate units and reception of reports.

Evaluation of efficiency of combat actions of subordinate forces.

Logging and documenting of combat actions.

Independent and integrated training of combat crews with evaluation of their actions.

RANGIR-RBE AUTOMATED BATTERY COMMAND POST

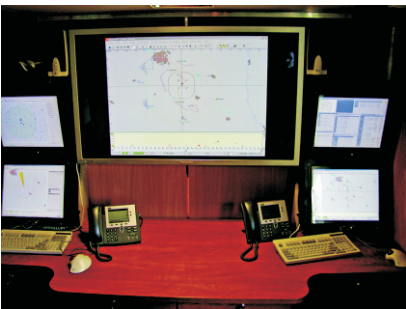


PURPOSE

Control of a short-range SAM battery both in the centralized mode under control of a higher command post (HCP) and during independent operation of the battery.

BASIC CHARACTERISTICS

Quantity of tracked air objects (using data from the HCP, combat vehicles, radar)	up to 80
Rate of data exchange with combat vehicles, sec	1
Rate of data issue to the higher command post, sec	5
Time for mission setting:	
- in automatic mode, sec	1
- in manual mode, maximum, sec	5



PROVISION

Combat operations and automated control of fire from anti-aircraft systems, including the Tor, Tunguska, Strela-10M2 (M3), Osa, Pantsir and others systems, as well as control of SAM subunits equipped with portable SAM systems.

SPRUT-E SYSTEM FOR AF COMMAND POSTS



PURPOSE

The system is intended to be used at AF command posts for automated control of aircraft when monitoring them on their way to air and ground targets, during en-route flights and during air patrol.

BASIC CHARACTERISTICS

Quantity of automated control channels	24
Total quantity of simultaneously processed and displayed air objects	up to 120
Total quantity of simultaneously processed and displayed ground objects	up to 100
Quantity of workstations	5



TASKS TO BE SOLVED

Collection, processing, storage and display of information on air and ground situation and combat control information.

Issue of control commands to fighters.

Combat control functions:

- navigation;
- correction of combat parameters in control channels;
- guidance to ground targets;
- leading out to air patrol zones;
- en-route control;
- monitoring of aircraft on their way to landing airfields.

Interface with air surveillance aircraft (such as AWACS).



RIF-E AUTOMATED CONTROL SYSTEM



PURPOSE

The system is intended to be used at control posts of electronic reconnaissance units (radar platoons, companies, battalions) for automatic pickup, processing, fusion and display of radar data from radars and mobile radio altimeters, friend-or-foe identification of targets and transmission of radar data to the higher command post.

BASIC CHARACTERISTICS



Quantity of processed air objects and active jammers, min	250
Errors in azimuth,] depending on the radar data source
Errors in range, m	
Errors in height, m	
Air object update rate, sec	
Processing range, km	
Height limit	
Velocity limit, km/h	
Probability of radar target acquisition and tracking	min 0.95
Probability of false tracks	max 0.05
Quantity of simultaneously connected:	
- radars with analog output	to 4
- mobile radio altimeters	to 4
- radars with digital output	to 2
- interacting and higher control posts in any combination	5 - 10
Quantity of workstations	3 - 8
Interface with air surveillance aircraft (such as AWACS)	

Using the latest commercial-off-the-shelf (COST) hardware and software.

Object-Oriented Development: UML design, object-oriented middleware.

Using : - operating Systems - Linux, Windows NT.

- hardware - SUN, PC.

Integration of Internet technologies (Java, HTML, SOAP).

Interoperability standards: MIL 2525B

Information exchange standards: IP, XML, web services.



PURPOSE

The automation of control processes for the radio-engineering brigade combat operation, support of pick up and processing of data, coming from the radio-engineering units, data transmission to the AF and AD command posts, airspace monitoring.



BASIC CHARACTERISTICS

Total amount of the air objects at the input	up to 2000
Amount of simultaneously tracked air objects	up to 1000
Radar data processing range:	
by range, km	up to 2400
by altitude, km	up to 300
by velocity, km/h	up to 6000
Amount of received (processed) flight plans	up to 2500
Amount of simultaneously connected items:	
interacting	up to 5
radar data consumers	up to 10
radar data sources	up to 8
Amount of workstations	up to 24



Data receiving from the secondary radars and automated ATC system in real time; and data fusion to the integrated air picture data, received from all sources available in the country.





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