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558 ARP
558 AIRCRAFT REPAIR PLANT

MODERNIZATION OF MI-8MT (MI-17) HELICOPTER

GYROSTABILIZED SURVEY-SEARCH SYSTEM (GSSS) INSTALLATION

Designation:

01 Twenty-four-hour detection, recognition, acquisition and auto tracking of ground targets and obstacles using image on the video monitor screen;

02 Measurement of slant range distance to object at any season and time of day, in simple and restrictedly adverse weather conditions, for the purpose of pilotage, take-off and landing (including on unprepared platforms);

03 Solving other special tasks (reconnaissance, search, air drop, etc.).

Provides:

20 +/-, arc minutes — Gyrostabilization accuracy of sight line;

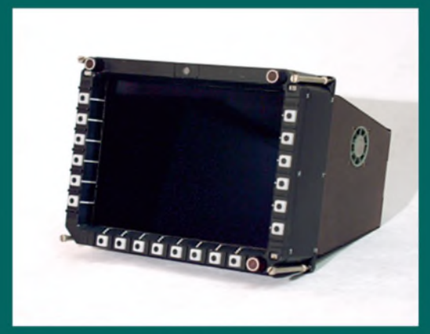
2 fields of view — Thermal imager operation in fide and narrow field of view and electronic image zooming;

24 hours — Survey and sighting with displaying of television image on indicators;

5 +/-, meters — Target-range finding accuracy using laser range finder at 10 km distance;

Sight line control — Wide ranges (±230 degrees in azimuth and from plus 30 to minus 110 degrees in elevation).

NAVIGATION AND ELECTRONIC DISPLAY SYSTEM



New aircraft control and navigation instrumentation (ACNI) based on multifunctional colored liquid-crystal indicators (MFI) with horizontal screen configuration and keyboard frame has been designed for the helicopter.

ACNI provides:

01 Displaying information from GSSS on the indicator (MFI);

02 Calculating, displaying on the indicator (MFI) and recording into volatile memory coordinates of the detected objects;

03 Rolling out the helicopter to ground object with known coordinates and automatic aiming of the sight line electrooptical system at it;

04 Reckoning of current coordinates of the helicopter location (CCHL);

05 Correction of reckoned CCHL using information from GLONASS and NAVSTAR satellite navigation systems;

06 Calculation and representation for indication of all the necessary parameters for approaching the waypoint at target time;

07 Calculation and representation on indicators (MFI) all the necessary en-route parameters;

08 Control signals calculation and generation to autopilot for automatic en-route flight;

09 Storage of navigational database in volatile memory;

10 Displaying pilotage and navigational information, emergency, warning and notifying signals on indicators;

11 Calculation and displaying on indicators (MFI) information about reaching control flight parameters, operating tolerance limits;

12 Registration of image from the indicator to solid-state recorder of SVR system.

NIGHT VISION EQUIPMENT COMPLEX

Night vision equipment provides observability of the helicopter external environment in conditions of natural night illumination with maximum visual range of 2-4 km in order to perform the following:

01 Take-off, hovering, pilotage at the heights from 50 to 200 m with visual ground control;

02 Entries and landings on unequipped and unilluminated platforms;

03 Observing external environment in NVE without refocusing of night vision goggles;

04 Observing and instrument readout on the helicopter instrument panels missing NVE eyepieces;

05 Detection and recognition of power line towers, trees, house-type commercial vehicles and other targets against the ground covered with green grass at the distance of minimum 0.5 km.

The helicopter lighting equipment (external, internal, lighting and flash equipment) is adjusted for working with night vision equipment

INSTALLATION OF FLIGHT INFORMATION VIDEO REGISTRATION SYSTEM (VRS)

VRS is intended for recording the following information on solid-state exchangeable storage unit:

- **Color video image of external environment and the information displayed on MFI;**
- **Voice conversations of the crew;**
- **Flight information received from airborne systems;**
- **SVR control commands.**

Information received from video registration system allows to perform operational analysis of:

- **Helicopter combat employment** (results of on-target striking, aircraft reconnaissance);
- **In-flight emergency situations;**
- **Pilot's errors.**

Video image

Deflection of video image on the flight information

Recorded flight information from MFI screen

Airborne communication complex (ACC) installation

Airborne communication complex (ACC) is intended to provide

anti-jamming open and protected radiotelephone and radiotelecode communications when interacting with other aircrafts and ground control stations.

SATELLITE* – FIRE DAMAGE PROTECTION AGAINST PRECISION RADIO CONTROLLED WEAPON

*** AIRBORNE EQUIPMENT FOR AIRCRAFT INDIVIDUAL EMI SHIELDING.**

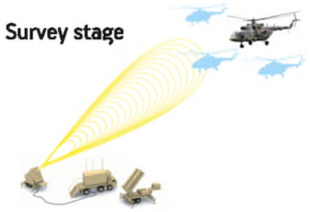
Designation

"Satellite" Individual EMI shielding equipment (IESE) is intended to provide aircraft individual EMI shielding protection against all types of precision radio controlled weapon attack from hostile interceptor aircraft missile systems (IAMS) and air defense missile systems (ADMS);

Precision radio controlled weapon are interceptor aircraft systems and air defense missile systems equipped with missiles with semi-active and active RF guiding heads.

Operation principle

01. Survey stage



02. Acquisition, following and launching missile on decoy target

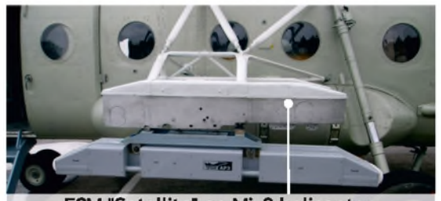
Reliable EMI shielding is achieved by means of active jamming, which effect:

01 angle measurement channels of fighter interceptors ARLPK and ADMS;

02 active (semi-active) homing heads of guided aircraft missiles and antiaircraft guided missiles.

Interferences create concealed guided cripping of angular measurement follow-up systems, exercise of which leads guided missile to:

– intense alternating accelerations;
– flight path curvature;
– substantial decrease of flight range due to depletion of the engine energy potential;
– increase of current and terminal miss.



ECM "Satellite" on Mi-8 helicopter

Objects of "Satellite" IESE electronic countermeasures:

– airborne radar targeting systems of Su-27, MiG-29, MiG-25, MiG-23, MiG-31, Su-30 aircrafts of all modifications, including with "BARS" floodlight, F-15, F-16, F-18, F-22, Mirage-2000, EF-2000

– homing heads of R-27R, AIM-120 AMRAAM, AIM-7 "Sparrow", "Activ Sky Flash", "Matra Mica", MIM-23B, MIM-104, 9M38 missiles

– "Osa" ADMS MD, "Tunguska" ADGMS, "Roland", "Gepard", "Patriot", "BUK-M1"

"ADROS" ELECTROOPTICAL SUPPRESSION STATION

01 For active helicopter protection against guided missiles with IR homing heads.

02 IR homing heads with amplitude-phase (APM), frequency-phase (FPM) and time-pulse (TPM) modulation and high jamming resistance.

03 Target lockon breaking along the path of such missiles as "Stinger" (FPM), "Igla" (TPM), "Igla-1" (FPM), R-60 (FPM), R-60M (FPM), R-73 (TPM), "Sidewinder" (APM) and others.

04 At that, substantial elevation of the station radiation energy (interference signal) over engine radiation of the helicopter under protection (target signal).

05 Based on new method of electrooptical suppression and new design of electronically controlled modulator on the basis of programmable processors.

DVINA-M AUTOMATED FLIGHT INFORMATION PROCESSING SYSTEM

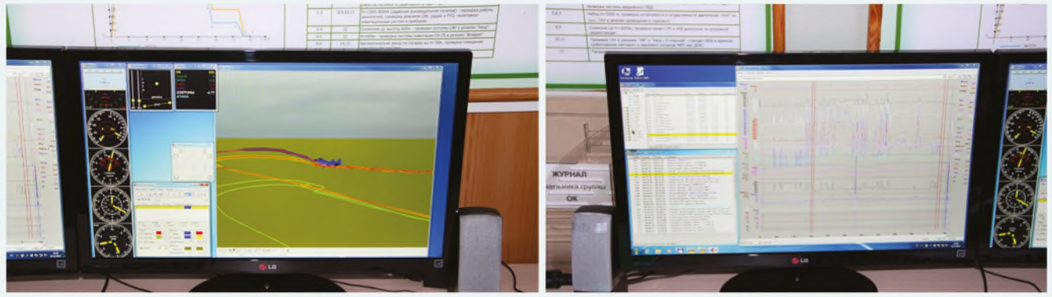
The system is intended for:

01 Reading;

02 Operational processing;

03 Storage of flight information, registered by such devices as "Tester", "Gamma", "MSRP-64", "SOK UBD", "Ekran", BUR-4-1(-07), BUR-4-1-10, BUR-SL-1, BUR-1-2.

FLIGHT DATA RERECORDING UNIT



WORK STATION OF "DVINA-M" INFORMATION PROCESSING SYSTEM OPERATOR