ANNUAL REPORT 2019

Ukrainian State Air Traffic Services Enterprise

Contest

1. GENERAL INFORMATION ON THE ENTERPRISE

1.1. Organizational structure and management

State Aviation Administration of Ukraine (hereinafter - State Aviation Administration) is a central executive authority. Its activities are directed and coordinated by the Cabinet of Ministers of Ukraine through the Minister of Infrastructure of Ukraine. The State Aviation Administration ensures the implementation of the state policy in the sphere of Civil Aviation and airspace management of Ukraine (the competent authority for Civil Aviation).

Institutionally, the Ukrainian State Air Traffic Services Enterprise (UkSATSE) as the Air Navigation Services Provider, is separated from the Civil Aviation Regulatory Body - the State Aviation Administration.

UkSATSE is a base of the national Air Navigation System and the Integrated Civil-Military Air Traffic Management System of Ukraine (ICMS). The enterprise is authorized by the State Aviation Administration to provide Air Navigation Services in the Ukrainian airspace and in the airspace over the high seas where the responsibility for providing air traffic services is delegated to Ukraine under the international agreements (hereinafter – Airspace under responsibility of Ukraine).

The place of UkSATSE in the system of State regulation, the organizational structure of UkSATSE and ICMS is shown in Figures 1 - 3.

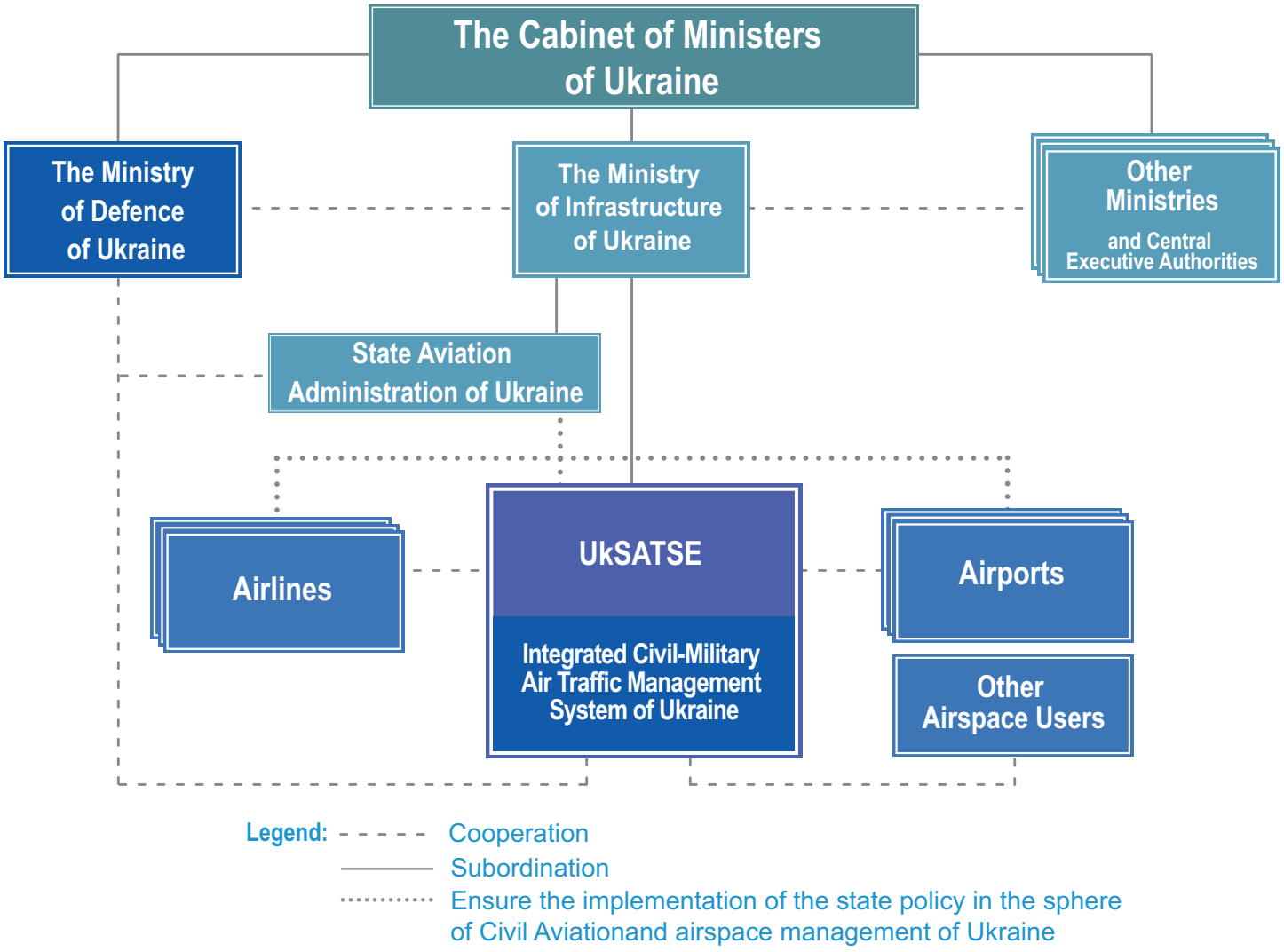


Fig. 1. UkSATSE in the system of State regulation

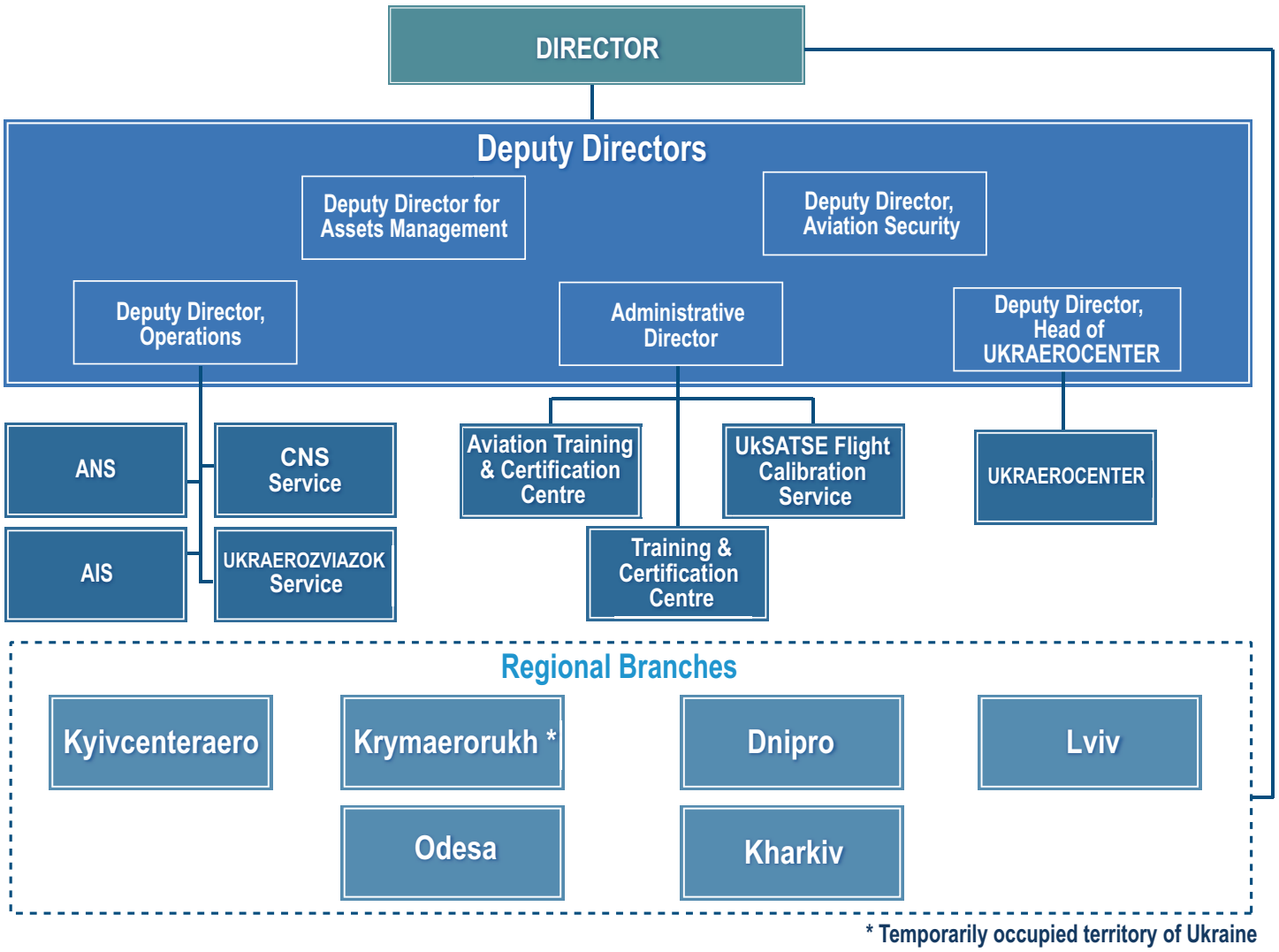


Fig. 2. Organizational structure of UkSATSE

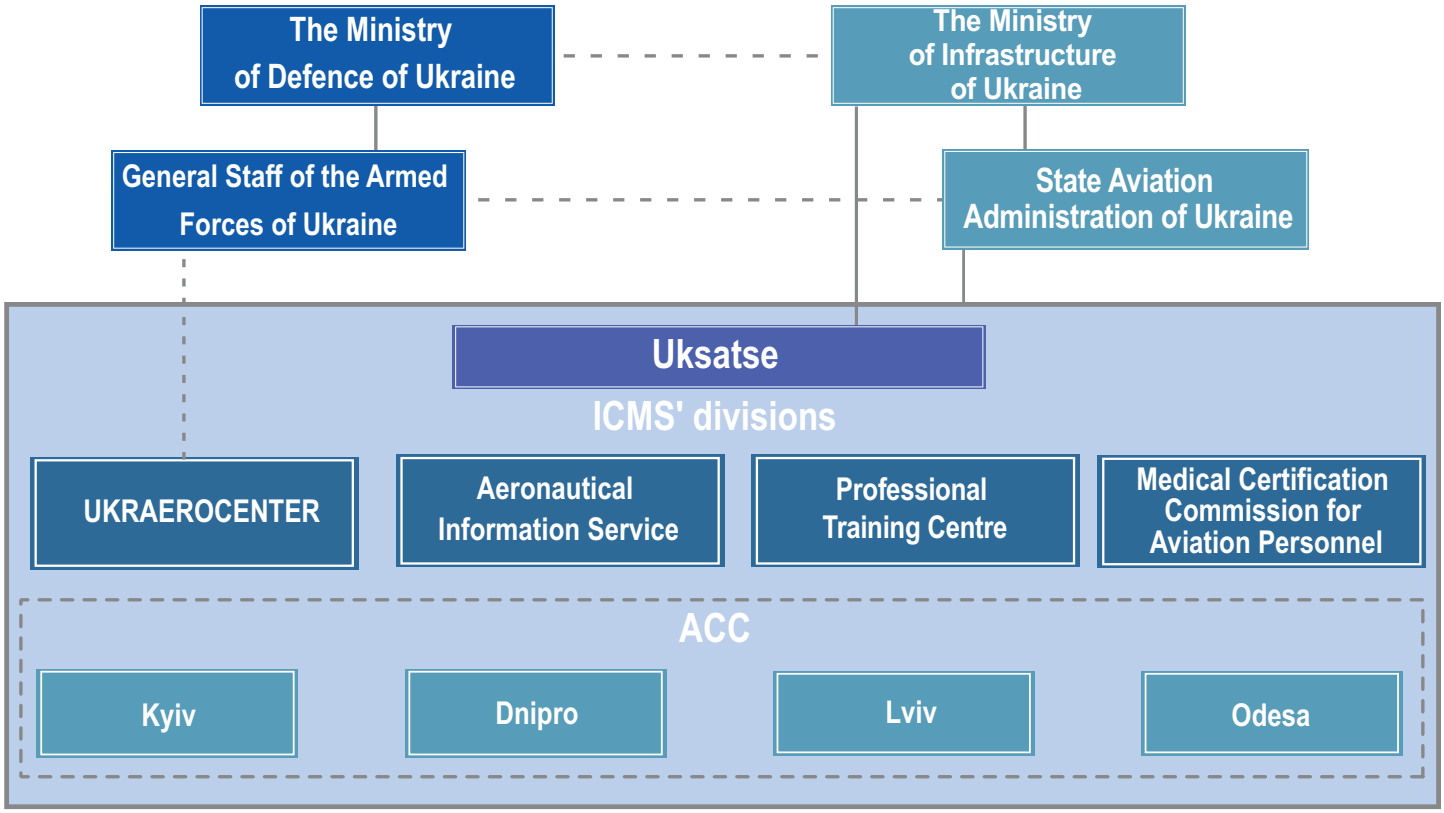
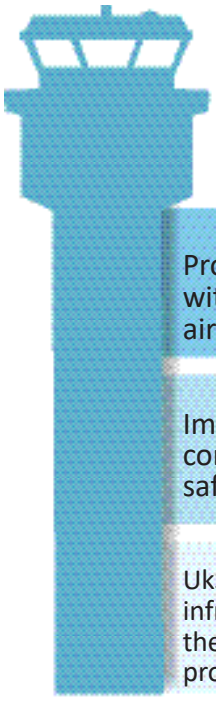


Fig. 3. Organizational structure of ICMS

1.2. Mission, vision, place of UkSATSE, strategic objectives and development programs

Mission, vision and place of the enterprise



Mission

Provision of high-quality, safe and environmentally friendly air navigation services within Ukrainian airspace and airspace over the high seas, where the responsibility for air traffic services provision is delegated to Ukraine by international agreements.

Vision

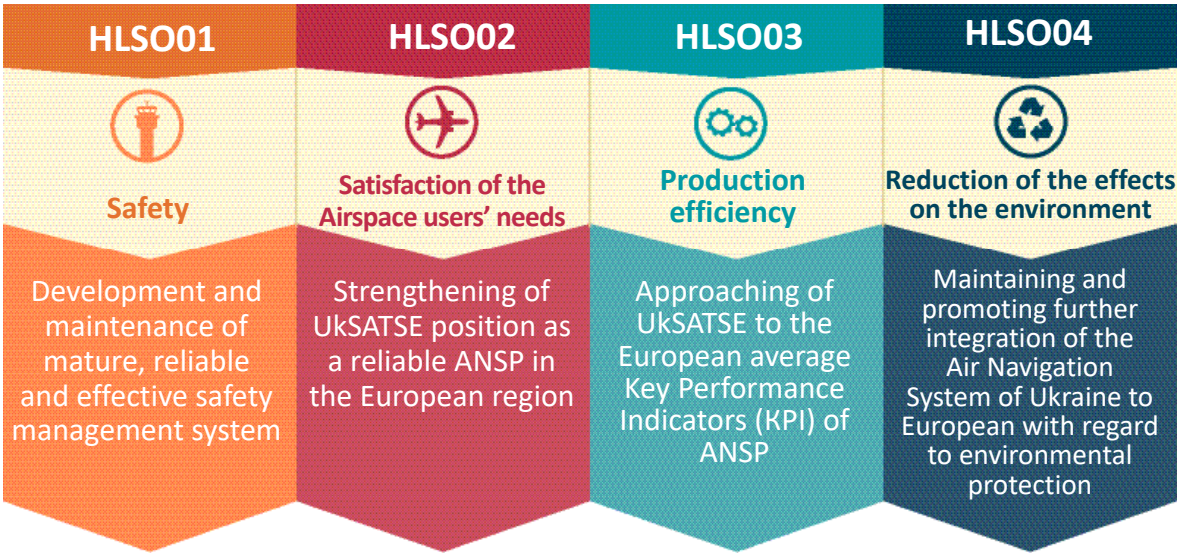
Improvement of cooperation with stakeholders of the national and world aviation community in order to achieve the best world indicators in this area to ensure the safe, high-quality and efficient transportation of passengers and cargo by air.

Place

UkSATSE is a reliable, predictable and economically efficient component of the civil aviation infrastructure of Ukraine, which actively developing, taking into account the functioning of the Integrated Civil-Military Air Traffic Management System of Ukraine as well as the overall process of European integration and the relevant development of the national ANS.

Overview of strategic Objectives

The Strategic Objectives of UkSATSE were identified taking into account dynamic and stable internal and external factors. The key focus, given the external factors, is concentrated on the following High Level Strategic Objectives (HLSO):



In order to support the processes of medium-and short-term planning, the medium level strategic objectives were established (listed in Annex 1 to this Report).

Planning stages of UkSATSE activity for the future

Three stages (steps) of UkSATSE activity in the next five years were identified according to the results of strategic planning.

Bringing core activities in compliance with all national and international standards in safety and air navigation services

The gradual implementation of the State policy on the development of the national air navigation system

Transition to the third stage shall be made provided the proper implementation of the first two stages

Strengthening the UkSATSE position as a reliable ANSP in the European Region

These stages determine the need for modernization and improvement of existing infrastructure, financial and administrative autonomy, human resources management and further improvement of internal processes according to the existing integrated management system. This will help the UkSATSE to make more fundamental contributions to the continuous development of the national economy and society, performing the essential functions of optimum GNP and ensuring safety of Air Traffic.

Development programs in the areas of activity according to the process approach

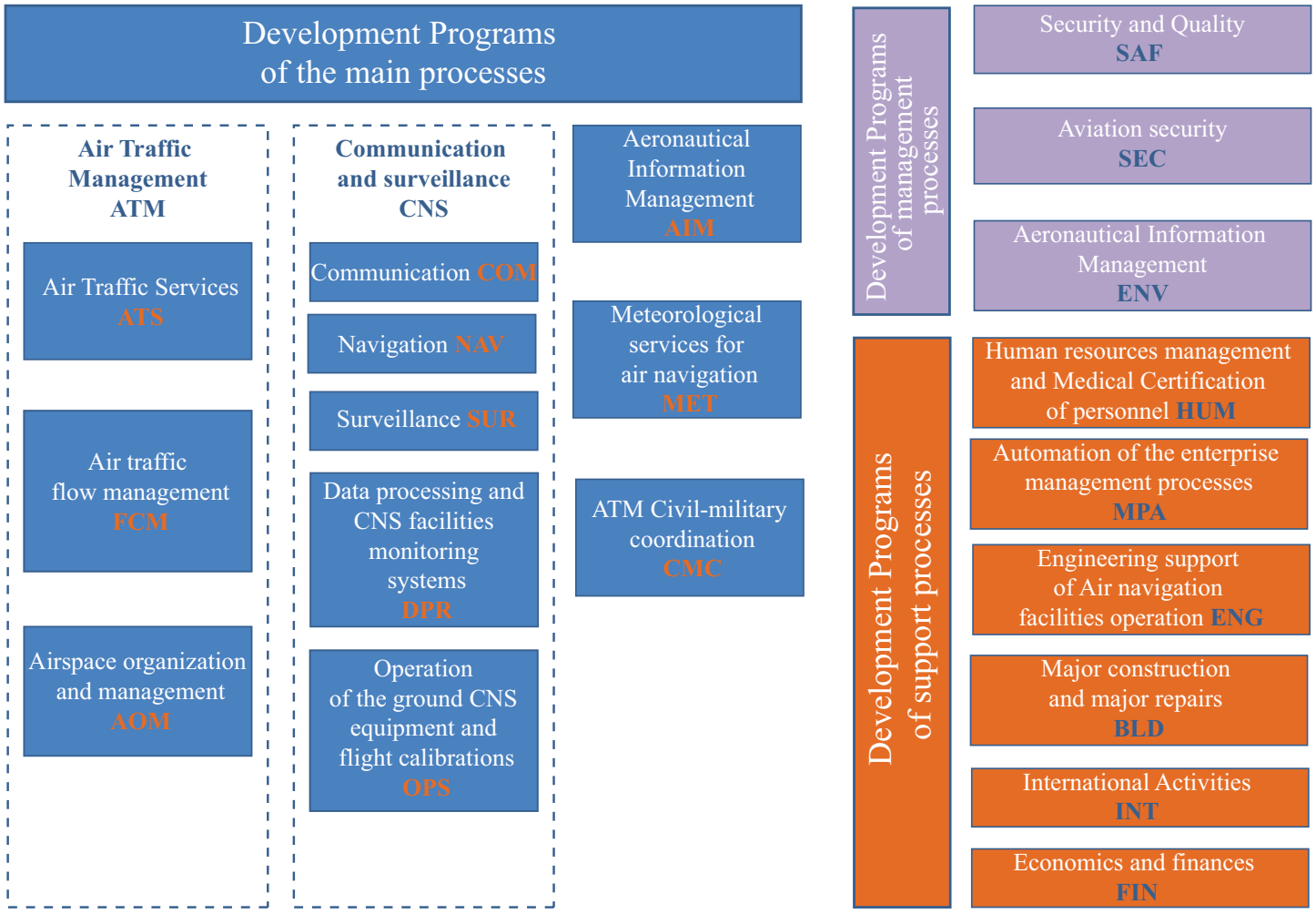


Fig. 4. Development Programs according to the directions of activity

2. DEVELOPMENT PROGRAMS OF THE MAIN PROCESSES

2.1 Air Traffic Services (ATS)

Main directions of work in the previous year

Activities in the ATS area were organized in accordance with the 2019 Annual Plan of the Ukrainian State Air Traffic Services Enterprise approved by the order of UkSATSE of 25.01.2019 No. 68.

Conclusions and recommendations on improving activities in the specified area

Further improvements of air navigation services (ANS) are needed through implementation of the Development Strategy of the Ukrainian State Air Traffic Services Enterprise until 2030, approved by the order of UkSATSE of 20.10.2017 No. 394.

2.2 Airspace Organisation and Management (AOM)

Main directions of work in the previous year

Management of main tasks, identified by LSSIP:

- AOM 13.1 “Harmonize Operational Air Traffic (OAT) and General Air Traffic (GAT) handling”;
- AOM 19.1 “ASM support tools to support A-FUA”;
- AOM 19.2 “ASM Management of real-time airspace data”;
- AOM 19.3 “Full Rolling Process in the Airspace and Air Traffic Management Interface and distribution of Airspace Management Information”;
- AOM 19.4 “Management of Pre-defined Airspace Configurations”;
- AOM 21.2 “Implementation of Free Route Airspace”.

Development of Airspace management:

- development of Airspace Management under the responsibility of Ukraine in accordance with ICAO standards and recommended practices, taking into account the legislation of the European Union (EU) and the European Organisation for the Safety of Air Navigation (EUROCONTROL) document “ERNIP Part 1” of the European Organisation for the Safety of Air Navigation;
- development of the ATS routes network on performance-based navigation (PBN) and according to the EUROCONTROL working paper ERNIP Part 2;
- analysis of efficiency of use of elements of the airspace structure;
- measures on introduction of Free Route Airspace in the Airspace of Ukraine (FRAU);
- further support of the Route Availability Document (RAD) for compliance with the rules of use and availability of the Airspace in accordance with the EUROCONTROL working paper (document) ERNIP Part 4;
- further implementation of the concept of flexible Use of Airspace;
- development of Airspace Management in accordance with the ICAO standards and recommended practices, considering the national interest of Ukraine, EU legislation and the EUROCONTROL ERNIP Part 3;
- ensuring harmonization of the Operational Air Traffic and General Air Traffic in accordance with the ICAO standards and recommended practices, considering the national interest of Ukraine, EU legislation and EUROCONTROL documents;
- improvement of the rules and procedures for civil-military coordination;
- development of cooperation of ASM of Ukraine with the EUROCONTROL Network Manager and the ASM bodies of neighbouring countries.

Expert activity:

- implementation of expert evaluation of draft Instructions on flights performance, changes and amendments thereto, and support of Aeronautical Information Publication concerning Airspace Management of Ukraine;
- inspection of the database on compliance of the changes in the AIP of Ukraine related to the development of the Airspace structure for the current period;
- coordination of the Airspace use and civil-military coordination at international, inter-institutional and operational levels within the scope of competence;
- methodical and consulting work with the users of the Airspace of Ukraine on the issues of Airspace Management and its effective use;
- assessment of draft amendments to the ATM system;
- preparing proposals for improving the Airspace structure on the basis of an analysis of the effectiveness of use of the Airspace structure elements.

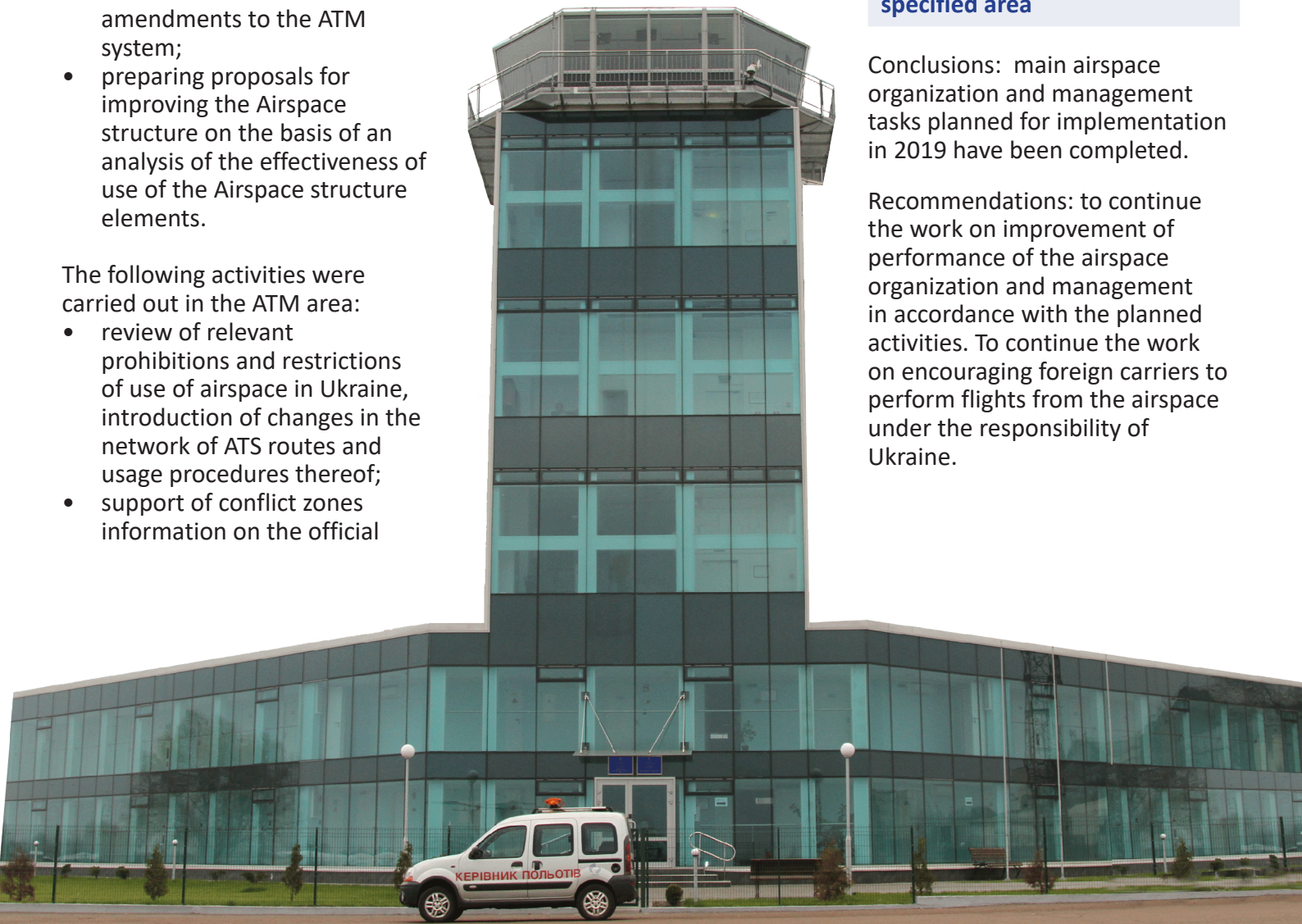
The following activities were carried out in the ATM area:

- review of relevant prohibitions and restrictions of use of airspace in Ukraine, introduction of changes in the network of ATS routes and usage procedures thereof;
- support of conflict zones information on the official website of the State Aviation Administration according to the letter of ICAO of 05.05.2017 No. SMM 1/4-17/51;
- conducting post-implementation monitoring of efficiency of special procedures implemented for the planning of Aircraft flights by the four ATS routes in the western part of Simferopol Flight Information Region (FIR);
- implementation of FRAU H24 (FRA KIDRO - Phase 1, Scenario 1b, Phase 2) and post-implementation monitoring of its effectiveness;
- transition to SCC - Single CDR Category environment and post implementation monitoring of the efficiency of this transition;
- negotiations with foreign Airlines (Azerbaijan Airlines, Air India, Singapore Airlines, Thai Airways, LOT, Emirates, Fly Dubai, Qatar Airways etc.), correspondence, providing flight planning suggestions;
- preparation of materials and participation in the meetings of the 40th Session of the ICAO Assembly, EASPG /01, Working Group meetings regarding normalization of Air Traffic in the Airspace over the High Seas in the Black Sea Region– the Black Sea Task Force (BSTF) etc.);
- correspondence and meetings with representatives of ANSPs/ international organizations/ aviation authorities of the countries of Europe, Asia and America, provision of justifications for the elimination of restrictions on Airlines flights to Ukraine (IATA, FAA, GCAA UAE etc.).

Conclusions and recommendations on improving activities in the specified area

Conclusions: main airspace organization and management tasks planned for implementation in 2019 have been completed.

Recommendations: to continue the work on improvement of performance of the airspace organization and management in accordance with the planned activities. To continue the work on encouraging foreign carriers to perform flights from the airspace under the responsibility of Ukraine.



2.3. Civil-Military Coordination within Air Traffic Management (CMC)

Main directions of work in the previous year

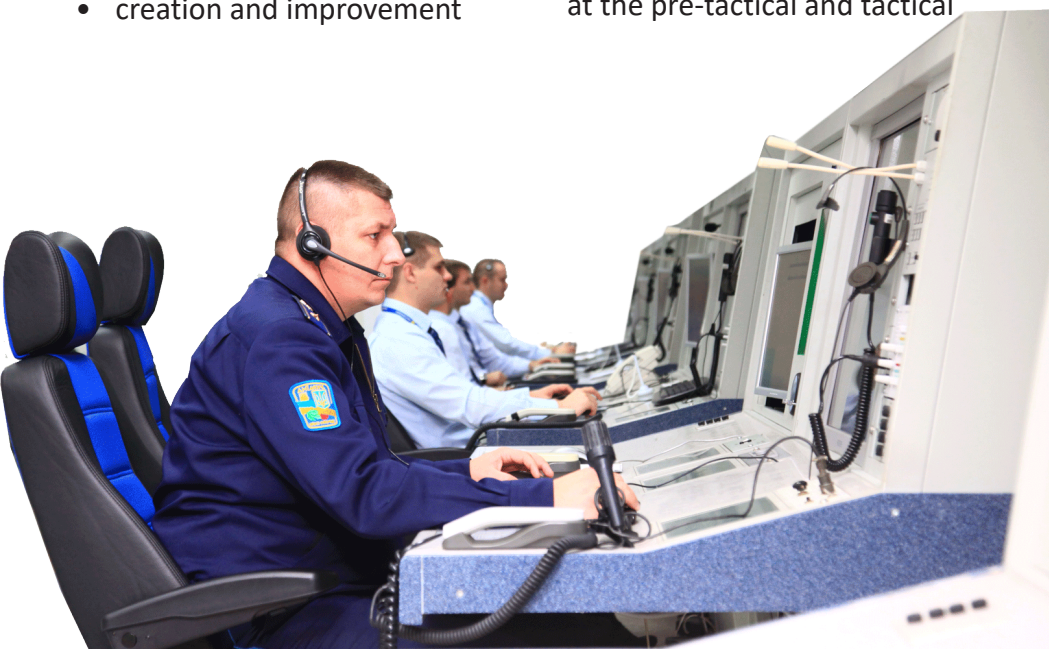
- introduction of improved rules and procedures of civil-military coordination between the Joint Civil-Military System (JCMS) units and the centers and Aircraft control bodies of the Armed Forces of Ukraine during planning and implementation of activities related to the airspace use and monitoring compliance with the procedure for the airspace use in Ukraine;
- introduction of the airspace with a single category of conventional ATS routes;
- acquisition and installation of a specialized hardware and software complex for displaying air situation from radar sources of the Armed Forces of Ukraine;
- improving the interaction process between JCMS units and the centers and points of control of Aircraft of the Armed Forces of Ukraine by means of cryptographic information protection;
- modernization of the direct operational links network between the ATM centers and the centers and points of control of Aircraft of the Armed Forces of Ukraine;
- modernization and development of the closed UkSATSE information exchange network;
- reconstruction of the Ukraerocenter premises;
- creation and improvement of the CMC at strategic, pre-tactical and tactical levels of ASM in accordance with the national interests of Ukraine, standards and recommended practices of ICAO, European Union legislation and EUROCONTROL documents;
- improvement of ASM and Civil-military complex system support at the pre-tactical and tactical levels of ASM with the use of AC «Center» and AC ATC;
- improvement of means of communication and information exchange;
- introduction of improved Civil-military complex rules and procedures between JCMS and security and military sector bodies when planning and implementing airspace use activities, monitoring compliance with airspace use procedures and rules of Ukraine.

Conclusions and recommendations on improving activities in the specified area

Planned for 2019 measures on implementation and improvement of the Civil-military complex at strategic, pre-tactical and tactical levels of ASM in accordance with the national interests of Ukraine, standards and recommended practices of ICAO, European Union legislation and EUROCONTROL documents have been implemented.
To continue the work on improvement of ASM and Civil-military complex system support at the pre-tactical and tactical levels of ASM with the use of AC CENTER and AC ATC.
To continue the work on improvement of means of communication and information exchange.

The measures planned for 2019 to improve Civil-military complex rules and procedures have been implemented partially.
It is planned to continue to work in the following year on:

- improvement of Civil-military complex rules and procedures according to the action plan for the next year;
- improvement of airspace use analysis;
- improvement of interaction between the Joint Civil-Military System (JCMS) units and the centers and points of control of aircraft of the Armed Forces of Ukraine by the means of cryptographic protection of information aimed at protection of information during interaction under the Code Command System;
- putting into operation a specialized software and hardware complex for displaying the air situation from radar sources of the Armed Forces of Ukraine (2nd stage);
- creation of additional informational working positions at the ACC aimed at increasing the level of information and radar information in the workplace of the senior air traffic controller (senior navigator) at the ATM centers;
- deployment of fiber-optic communication lines between the Information Telecommunication Units (ITU) “Legend”, ITU “Guitar” and the Ukraerozviazok Service aimed at increasing the reliability of the communication system in the process of information exchange between the centers and points of control of the Armed Forces Aircraft of Ukraine and JCMS units;
- modernization and development of the closed UkSATSE information exchange network.



2.4. Aeronautical Information Management (AIM)

Main directions of work in the previous year

- modernization of the database;
- obtaining electronic data packages on terrain and obstacles on the territory of Ukraine in accordance with the requirements of Annex 15 to the Convention on International Civil Aviation «Aeronautical Information Services», ICAO;
- obstacle data processing, publication in AIP of Ukraine;
- introduction of Aeronautical Information Management (AIM) system);
- support of the products of Air navigation information of Ukraine;
- participation in activities on improvement of existing and newly developed national regulatory documents on aeronautical information support/ management;
- introduction of requirements for the AIS staff and its activities.

Professional training of the staff was not carried out in 2019.

Conclusions and recommendations on improving activities in the specified area

Development of the software and modernization of the aeronautical database are carried out in accordance with the Terms of reference «Software application of the AIS automation tools», approved by the director of UkSATSE on 22.01.2016.

Introduction of an air navigation information management system for automated creation and maintenance of air navigation information products (AIP Ukraine, including AMDT and SUP, AIC, NOTAM, aeronautical maps), as well as exchange of digital data sets between automated systems.

In accordance with the Plan of the main measures for the transition from Aeronautical Information Service (AIS) to Aeronautical Information Management (AIM) system, approved by the Order of the State Aviation Administration dated 14.05.2010 No. 331, new formats, models of exchange, means for digital Air Navigation data management, requirements for the AIS staff considering its competence, which will ensure improvement of quality of air navigation information.

2.5. Meteorological Services of Air Navigation (MET)

Main directions of work in the previous year

- implementation of the requirements of the Aviation Regulations of Ukraine «Meteorological services for civil aviation» with amendments (hereinafter - the Regulations as amended), introduced by the Order of the State Aviation Administration of Ukraine of 12.06.2019 No. 732, registered with the Ministry of Justice of Ukraine as of 19.08.2019 No. 950/33921, regarding meteorological en-route services.
- implementation of the Action Plan for the introduction of OPMET data exchange in digital format of the ICAO Global Meteorological Information Exchange Model (IWXXM) at the Ukrainian State Air Traffic Services Enterprise for 2019 - 2022, approved by Order of UkSATSE of 18.01.2019 no. 41 (hereinafter - the Action Plan for the implementation of OPMET data exchange in IWXXM format).
- taking measures on assessment of competence of UkSATSE aviation meteorological personnel;
- commissioning of the upgraded Centralised meteorological support system for air navigation (CMSSAN) software for processing and visualisation of lightning direction finding data on CMSSAN websites;
- scheduled training of the personnel of meteorological en-route service in the Training and Certification Centre (TCC) on the program of recovery training of weather forecasters of the Weather Monitoring Body (WMB).

Conclusions and recommendations on improving activities in the specified area

Main activities carried out in 2019:

- a number of measures provided for in the Action Plan for the organization of meteorological en-routes service in accordance with the requirements of the Aviation Regulations of Ukraine «Meteorological service of civil aviation» (as amended), approved by the order of UkSATSE of 03.10.2019 No. 897 have been implemented;
- in order to amend and clarify the requirements of the Rules with changes in the part concerning GAMET zone forecasts for low-level flights, the Instruction on GAMET forecasts production approved by the Order of UkSATSE of 13.11.2019 No. 989 has been developed;
- meteorological en-route service is organized from 9.00 UTC 10.12.2019 in accordance with the requirements of the Regulations as amended;
- in accordance with the Action Plan for implementation of OPMET data exchange in IWXXM format technical requirements have been developed for:

1. (a) the software tool for graphical presentation of SIGMET information compiled in TAC for FIR Ukraine and neighbouring countries at the weather forecasters' workplaces;
2. (b) upgrading of CMSSAN equipment and software for OPMET data processing in IWXXM format;
3. (c) the software tool of the intellectual template for the compilation of information at the workplaces of UkSATSE weather forecasters;

- participation in the training of the personnel of meteorological en-routes service under the TCC programme for the recovery training of weather forecasters of Weather Monitoring Body;
- there was organized and conducted a routine assessment of the competence of the aviation meteorological personnel of UkSATSE, which provides meteorological service for en-routes flights-weather forecasters of Weather monitoring body of ATM centers of RBs «Kyivcenteraero», Lviv, Odesa and Dnipro in accordance with the requirements of the Guidelines for assessment of the competence of the aviation meteorological personnel of Ukrainian State Air Traffic Services Enterprise, approved by the Order of UkSATSE of 16.11.2018 No. 783 «On approval of the updated documentations»;
- in order to improve Meteorological en-route Services in the airspace under the responsibility of Ukraine, pursuant to ICAO EUR Doc 014 «SIGMET and AIRMET Guidance for the ICAO European Region» recommendations on cross-border coordination of SIGMET

information release, as of August 1, 2019 coordination of SIGMET information between the WMB Kyiv and Lviv ATM and WMB centers in Minsk (Republic of Belarus) was introduced (memorandum to the directors of RB «Kyivcenteraero» and Lviv RB of 04.07.2019 No. 3-07 / 335/19 on coordination of SIGMET information);

- in order to provide methodological recommendations on the implementation of SIGMET cross-border coordination of information release, a procedure for coordination of SIGMET information between weather monitoring bodies providing meteorological services to adjacent flight information regions has been developed (memorandum to the Deputy Directors of ATC RB «Kyivcenteraero», Dnipro, Lviv and Odesa RBs of 15.07.2019 No. 3.1/256/19 on SIGMET approval procedure);
- the documentation on meteorological en-routes service contained in the Collection of Documentation of the Air Navigation Service was updated (Order of the Deputy Director for ANS of 30.05.2019 No. 61 (Amendment No. 14), of 25.11.2019 No. 117 (Amendment No. 20) « on amendments to the Collection of Documentation of the Air Navigation Service of UkSATSE «);
- participation in the work of the working group on preparation of the operational concept of modernization of ANS of Ukraine, created by order of UkSATSE of 08.05.2019 No. 392 (as amended), and proposals to the draft operational concept of modernization of the UkSATSE air navigation system for 2019 - 2030 in terms of meteorological en-route services were prepared;
- since 07.11.2019, space weather advisory information has been displayed on the websites of ACC CMSSAN controllers in connection with the introduction by ICAO of the provision of space weather advisory services to support international air navigation (para. 3.8 of ICAO Annex 3) and in order to ensure compliance with the requirements of document PANS-ATM Doc 4444 on the provision by ATS authorities of information on space weather phenomena to aircraft crews that may be affected by them (memorandums of understanding to the Deputy Directors of ATC of 25.10.2019 No. 3-07 / 434/19 on the implementation of space weather information services, to the Deputy Director for CNS RB Kyivcenteraero of 25.10.2019 No. 3.1 / 439/19 on amendments to the websites of ACC CMSSAN controllers, to the Deputy Director for Operations and Development of 25.10.2019 No. 3.1 / 440/19 on changes to the structure of websites of ACC CMSSAN controllers).
- VOLCEX19 training was organized in accordance with ICAO directives and the order of VOLCEX19 training in UkSATSE with the participation of WMB forecasters, specialists from ATM RB, UkSATSE and AIS centers (memorandum to Deputy Director - Head of UkSATSE of 06.11.2019 No. 3-07/ 454/19 and Deputy Directors for ATC, Head of AIS of 06.11.2019 No. 3-07 / 452/19 on VOLCEX19 trainings and of 18.11.2019 No. 3-07 / 475/19 on provision of revised VOLCEX19 training procedure);
- following the results of the training, a report on the relevant ICAO form was prepared for the State Aviation Administration of Ukraine (letter from UkSATSE of 27.11.2019 No. 1-24.4 / 7223/19 on submission of a report on UkSATSE participation in VOLCEX19);
- a procedure for regulating consultative processes between UkSATSE structural subdivisions and external suppliers of meteorological information to air traffic service bodies and meteorological monitoring bodies for the performance of their functions, approved by the Order of UkSATSE of 30.05.2019 No. 490, was developed and put into effect as of 10.06.2019;
- order of UkSATSE of 15.03.2019 No. 233 «On approval of standard procedures for the preparation of contingency plans for the personnel of UkSATSE by types of air navigation services (third edition)» was issued;
- as of 07.02.2019 in the center of CMSSAN (RB «Kyivcenteraero») the software tool «LIGHTNING CMASS» designed for processing and visualization of lightning direction finder data on the ARM CMSSAN (Order of UkSATSE of 30.01.2019 No. 82 « On implementation of the LIGHTNING CMASS» after the fifth stage of modernization under No. 6 of CMSSAN in RB «Kyivcenteraero») was put into operation;
- software support was provided for the Meteorological information for aircraft in flight (VOLMET) and the Automatic terminal information service (ATIS);
- there was regular control of operational and production activities and methodical management of WMB centers of ATM, selective critical, technical and methodical control and quality assessment of meteorological products is created by WMB, based on the results of the control, methodological recommendations and explanations were prepared.

Conclusions: planned for 2019 activities to improve meteorological en-route services have been implemented.

Recommendations: the work on improvement of meteorological en-route services in accordance with the planned activities and projects for the next year shall be continued.

2.6. Communication (COM)

Main directions of work in the previous year

- introduction of AMHS centers;
- transition from AFTN to AMHS network;
- continued replacement of outdated aeronautical telecommunication product;
- installation of gateways for voice communication systems of Lviv and Kyiv ATS centers in order to implement VoIP technology;
- implementation of radio centers using VoIP protocol;
- modernization and expansion of the Backbone telecommunication network.

Conclusions and recommendations on improving activities in the specified area

It is recommended to create a working group to implement the target task of LSSIP COM11.1 «Voice over Internet Protocol (VoIP) in En-Route» and COM11.2 «Voice over Internet Protocol (VoIP) in Airport / Terminal».

2.7. Navigation (NAV)

Main directions of work in the previous year

Main direction of work was improvement of traditional navigation and PBN infrastructure by means of:

- replacement of the outdated traditional ground navigation systems: NDB, ILS and ADF;
- development of PBN ground infrastructure based on DME/DME.

Conclusions and recommendations on improving activities in the specified area

Proceed with the works on:

- establishment of PBN ground infrastructure in the vicinity of major airfields;
- improvement of airfield accessibility;
- increasing air capacity through the use of more orderly routes;
- improvement of navigation infrastructure efficiency.

2.8. Surveillance (SUR)

Main directions of work in the previous year

The main direction of the work was improvement of the surveillance infrastructure by means of:

- improvement of PSR and secondary surveillance radars (SSR) coverage;
- introduction of surveillance systems with technology ADS-B;
- upgrading of the MLAT multilateration surveillance system installed in Kyivcenteraero RB;
- improvement of surveillance data collection and dissemination processes.

Conclusions and recommendations on improving activities in the specified area

Proceed with the works on:

- improvement of surveillance performance in the Black Sea region;
- implementation of the system of collection, processing and dissemination of surveillance data;
- improvement of ground traffic surveillance performance at Kyiv/Boryspil airfield.

2.9. Data processing and monitoring systems of CNS facilities (DPR)

Main directions of work in the previous year

- implementation of the new AS ATC in Odesa ACC;
- modernization of AS ATC «AIRCON» in Dnipro, Kharkiv and Odesa RBs;
- implementation of AS ATC in Lviv ATM Center.

These activities are carried out in order to: install remote workplace for Tower at Zaporizhzhia ATC unit, implement necessary functionality for realization of FRA and replace outdated AS ATC equipment.

Within the framework of preparations for the implementation of modernized infrastructure of UkSATSE ATM on the basis of UkSATSE Data Processing Center one of the main directions is the initialization, planning and organization of implementation of Data Processing Center in UkSATSE. It is planned to implement a single AS ATC of UkSATSE.

As part of this activity, several consultations were held with both suppliers and consultants on the feasibility of such an application. Preparation of the operational concept and tender documents for a two-staged EBRD-funded tender has been started.

Conclusions and recommendations on improving activities in the specified area

In order to implement the project DPR01/004 «Initialization, planning and organization of implementation of the data processing center of UkSATSE» it is recommended to create a project management and develop an organizational structure for project management.

2.10. Operation of CNS ground facilities and flight inspections (OPS)

Main directions of work in the previous year

Plans for the preparation of the spring-summer period of 2019 and autumn-winter period of 2019 - 2020 have been fully completed. The works on extension of service life (resource) of CNS ground facilities in the reporting period of 2019 were carried out according to the schedule.
According to the approved schedules, the service life (resource) was extended and 382 certificates of CNS ground facilities compliance were received from the State Aviation Administration:

- aviation telecommunication - 322 units;
- navigation - 48 units;
- surveillance - 12 units.

In connection with the decommissioning of CNS ground facilities, 68 sets of permits were returned to the State Aviation Administration, of which:

- aviation telecommunication - 53 units;
- navigation - 13 units;
- surveillance - 2 units.

Outdated equipment has been decommissioned:

- transmission radio stations at NDB of «Pii» and «Krasnoborka»;
- automatic direction finder ADF-80K at « Kirovohrad» airfield;
- airfield surveillance radars DRL-7cm at airfields of «Ivano-Frankivsk» and «Uzhhorod»;
- an implementation plan for modifications to the ATM system has been prepared and a request for a safety assessment on the withdrawal of ADF-75 at Lviv aerodrome has been submitted.

The SP-75 ceased its intended use at the airfields of «Vinnitsia» and «Ivano-Frankivsk», ADF-75 at the airfield of «Kharkiv».
Maintenance plans for CNS ground facilities in RBs and ATC units of UkSATSE in the reporting period were fulfilled in full-scope according to the maintenance and repair schedule. Repairs for the reporting period were carried out in accordance with the work plan on repair of CNS ground facilities. According to this direction, the management of the CNS facilities operation service has performed the following:

- 1 contract for repair of uninterruptible power supplies was concluded;
- 7 contracts for the purchase of spare parts for CNS ground facilities were concluded;
- following repairs have been carried out: surveillance means - 9 units, navigation means - 3 units, means of aviation telecommunication - 6 units, telecommunication equipment - 6 units, uninterruptible power supply sources - 6 units, diesel generators - 12 units.

Within the framework of maintenance optimization, UkSATSE has issued the Order of 27.02.2019 No. 180 «On Development and Approval of Maintenance Instructions», which entitles RBs to approve maintenance instructions for a specific list of equipment. Order of UkSATSE of 24.04.2019 No. 372 was issued, which amends the Order of UkSATSE of 10.02.2016 No. 42 «On implementation of normative documents on metrological activity». According to this document, metrologists of RBs are granted the right to conduct metrological examination of regulations and maintenance instructions, which are approved by the directors of RBs. There was issued the order of the deputy director for operation and development of 05.06.2019 No. 64 «On amendments to the job descriptions of metrologists of RBs» in accordance with the requirements of the order of UkSATSE of 24.04.2019 No. 372 «On amendments to the Order of UkSATSE of 10.02.2016 No.

42», of the Order of UkSATSE of 10.02.2016 No. 42 «On introduction of normative documents on metrological activity». Thus, the right of RBs' metrologists to conduct metrological examination is fully legalized. There was issued an order of the Deputy Director for operation and development of 09.07.2019 No. 69 «On use of operation documentation templates for maintenance». The mentioned order put the templates into operation. By the Order of UkSATSE of 26.11.2019 No. 1020 the procedure for development of operational documentation for maintenance of ground CNS facilities was approved and put into operation.

In 2019, an upgraded PSR TRLK-10TS (TRLK-3 Bar), MSSR SIR-S (TRLK-2 Dubno) and DME equipment was put into operation in Transcarpathian ATC unit.

The following software was put into operation:

in Odesa RB:

- new version of ASMM VOLMET software «Program METVOICE» V8.18.5 of 07.05.2018 with data base of 16.05.2019;
- new version of the software «C-ATIS» of the Automatic terminal information service system (ATIS) version V5.17.1124 with updated base of rules V5.19.0714.

in Dnipro RB:

- AS ATC «Aircon 2100/2000» software and Air Traffic Control Simulation Systems - 12.02.2019;
- AS ATC «Aircon 2100/2000» software and Air Traffic Control Simulation Systems - 08.07.2019.

in RB «Kyivcenteraero»:

- AS ATC software «Strila-Alenia», which eliminates errors in the subsystem of recording and playback of objective data RPBS, in the subsystem of radar data processing and in the subsystem of flight data processing FDPS;
- AS ATC «Strila-Alenia» software, which provides reception and processing of radar data of the modernized TRLK-10 (town of Bar);
- lightning direction finder «LIGHTNING CMASS» software for data visualization after the fifth stage of modernization according to CMSSAN No. 6 using the SADIS system.

in Kharkiv RB:

- AS ATC software «AIRCON2100» and Air Traffic Control Simulation Systems of Kharkiv RB - 25.30.2019;
- software to AS ATC «AIRCON2100» - 17.07.2019

During 2019 with the help of SASS-C (EUROCONTROL) and CARD-M software there were constantly carried out checks of the parameters of surveillance means in accordance with the approved schedule of quality control of the initial data of surveillance means. The software was used in the work of commissions for the implementation of new/upgraded surveillance equipment. The errors in the calculation of aircraft positions when tracking on AS ATC «Roksolana» at Lviv RB were revealed. In response to the requests of the operating units, an analysis of errors in the data of surveillance means has been carried out, appropriate recommendations on their prevention have been given, a letter has been sent to «LOT» airline on bringing the onboard equipment into compliance. TRLK-10 (TRLK Chuhuiev) and Ekran-85 (Kharkiv) are connected for permanent recording to the data base. In response to a request from the Safety and Quality Inspectorate, an analysis of data on aircraft incidents was performed and materials were prepared to substantiate the commission's findings. The CAT-62 message format and the accuracy of aircraft position determination based on the data of AS ATC «Indra» Lviv RB have been analyzed. New versions of SASS-C VERIF v.8.2.0 and PREDICT v.2.4.1 software were installed at the workplace in office 716.

In 2019, with the aim of ensuring safety and preventing the impact on the operation of CNS ground facilities, 577 letters were processed and relevant conclusions were prepared regarding the approval of the compliance of the locations and altitudes of facilities in the airdrome area with the facilities whose activities may affect safety and the operation of radiotechnical equipment of civil aviation.

Measurements of closing angles were made for 4 CNS objects, namely:

- measurements of the closing angles of ATCR-33S / SIR-S radar, which is located in Lviv RB (airport «Lviv»);
- Closing angle measurement for ATCR-33S / SIR-S radar, which is located in Dnipro RB (Dnipro airport);
- Measurement of closing angles for MSSR radar, which is located in Dnipro RB (Dnipro airport);
- execution of works on measuring the closing angles of MSSR SIR-S, which is located at TRLK-1 (Zhydachiv) RB «Kyivcenteraero», as well as to clarify the coordinates of TR, the receiving radio center, located in Lviv RB (airport «Lviv»).

The geographical coordinates (WGS-84) of the CNS facilities were measured at 6 objects, namely:

- geodesic work on measuring WGS-84 coordinates and heights on the roof of the UkSATSE headquarters building;
- geodesic works on measuring WGS-84 coordinates and heights on the roof of the building of the State Aviation Enterprise «Ukraine»;
- geodesic works on measuring WGS-84 coordinates and heights on the roof of TCC building;
- WGS-84 geographic

coordinates measurement of DVOR/DME radio beacon installed in Odesa RB (Odesa airport);
- measurement of coordinates of the new NDB equipment installation site in the territory of NDB «Bohdanivka»;
- measurement of coordinates of the new NDB equipment installation site in the territory of NDB «Chervone».

During 2019 reporting period, such activities were carried out to identify and eliminate radio interference.
In accordance with the established procedure, CNS service has received from UkSATSE units the following requests:
- 8 requests to eliminate radio interference that affected the operation of aircrafts onboard VHF radio communications equipment during flights in the airspace of Ukraine;
- 19 requests for elimination of radio interference, which affected the operation of UkSATSE's CNS ground facilities.

The influence of radio interference on the work of onboard equipment was observed by the crews of aircraft during the flights in the areas of responsibility of RB «Kyivcenteraero», Dnipro, Lviv and Odesa RBs. The influence of radio interference on the operation of CNS ground facilities was observed in RB «Kyivcenteraero», as well as in Kharkiv, Odesa and Lviv RBs.
Due to operational measures taken by the radio monitoring team, radio interference was eliminated.
In accordance with the requests for the elimination of radio interference and the plan of work of the CNS Facilities Operation Service for 2019, the specialists of radiocontrol group made 18 visits to the regions of Ukraine, including 12 planned and 6 visits aimed at finding sources of radio interference:
- in Lviv RB at the working frequencies of the weather radar as well as at 135.6 MHz, 133.775 MHz and 118.675 MHz;
- in Odesa RB, on frequencies of automatic direction finder (one visit).

During the visits there was performed a radiocontrol and checks of the electromagnetic situation at the frequencies and in the frequency bands, which are assigned and allocated for ATS to all RBs.
Works on checking the radiation parameters of VHF AIRCOM radio stations in Ukraine in the airports of Boryspil and Odesa were carried out.
During the radiocontrol measures 9 sources of radio interference were detected and eliminated. Of those, there have been identified and eliminated at airborne telecommunication channels:
- 2 sources of radio interference in the area of responsibility of Lviv ACC;
- 2 sources of radio-interference in the area of responsibility of Kyiv ACC.

At the same time, 5 sources of radio interference were detected and eliminated in the radio frequency bands allocated to the radar and radio navigation means. As a result of the taken measures, together with the radio-frequency bodies of special and general users of the radio-frequency resource of Ukraine, the emission of the detected sources of radio interference was stopped.

An analysis of the results of these measures shows that radio interference was caused by:
- powerful VHF emitting devices, which the general public illegally uses to block the operation of the processors of electronic electricity meters;
- defective antenna amplifiers of a television signal;
- side emissions of separate radio broadcasting transmitters of VHF-band;
- radio emitting devices of broadband access to a global network «Internet».

The main parameters of emission of 166 units of VHF range of Aeronautical Telecommunication transmitters were checked in: Dnipro RB - 27 units, Lviv RB - 9 units, Odesa RB - 23 units, Kharkiv RB - 40 units, RB «Kyivcenteraero» - 67 units.
Also during the visits, the main parameters of emission of transmitters of NDBs in Vinnytsia, Zhuliany, Ivano-Frankivsk, Kryvyi Rih, Pekari, Poltava, Uzhhorod, Cherkasy, as well as the main parameters of emission of NDB transmitters in «Bohdanivka», «Verkhnie Vysotske», «Kakhovka», «Pekari», «Pii», «Rashivka», «Serednie» and «Chervone» were checked.
According to the results of inspections, non-compliances in radiation were revealed in:

- 39 units of VHF range of Aeronautical Telecommunication transmitters;
- 11 units of Aeronautical Telecommunication transmitters in Poltava, Vinnytsia and Cherkasy;
- 8 transmitters of NDB in «Chervone» (2 semi-sets), «Bohdanivka» (2 semi-sets), «Serednie» (1 semi-set), «Pii» (2 semi-sets) and «Rashivka» (1 semi-set).

In all cases of identified non-compliances, recommendations were made for their elimination.

Assistance was provided to eliminate the influence of radio interference:

- to the work of Meteor-635S weather radar in Lviv and Kharkiv RBs;
- on 121.5 MHz radio communication equipment in RB «Kyivcenteraero»;
- on the equipment of automatic direction finder in Odesa RB.

And also, the assistance in carrying out of research of electromagnetic compatibility of VHF range transmitters for the purpose of the selection of place for installation of VHF transmitters for covering with aeronautical telecommunication in the airspace over the Black Sea.

Specialists of the Radio Control and Frequency Assignment Group of the CNS Facilities Operation Service took part in coordination and assignment of such radio frequencies:

- 130,650 MHz - for the channel of aeronautical telecommunication in Odesa ACC, OVU sector;
- 805 kHz - for NDB «Verkhnie Vysotske».

Conclusions and recommendations on improving activities in the specified area

- to implement measures on introduction of new modern means of radio beacons with instrumental landing systems (ILS), non-directional beacons (NDB) in replacement of the out-dated equipment and DME radio beacons for provision of Performance-based navigation (PBN);
- to conduct seminars on sharing experience and improving the technical operation of surveillance equipment;
- to purchase spare units and assemblies for surveillance, navigation, aviation air and ground communications equipment from manufacturers to ensure the reliability of CNS services;
- to develop organisational and administrative documents for the organisation of maintenance with the specification of types and methods of maintenance, the order and procedure of CNS means certification after the implementation of the Aviation Regulations of Ukraine «Technical Requirements and Administrative Procedures for Certification of Ground Communication, Navigation and Surveillance in Civil Aviation of Ukraine».

3. DEVELOPMENT PROGRAMS OF MANAGEMENT PROCESSES

3.1. Safety and quality (SAF)

Evaluation of the level and quality of services

The actual level of safety is an indicator that determines the actual number of safety events with a direct impact of ATM system, classified by severity class, per aircraft flight. The calculation of the actual level of safety was carried out by applying the methodology set forth in the procedure for monitoring the levels of the integrated system and safety performance indicators approved by the order of UkSATSE of 27.12.2019 No. 1126. The results are provided in the table 1.

The actual level of correspondence is an indicator characterizing the degree of correspondence of procedures, training of personnel and technical equipment with the requirements established by regulatory legal acts and state standards of Ukraine in the part concerning the ATM system. Calculation of the actual level of correspondence was carried out by applying the methodology set forth in the procedure for determining the actual level of correspondence approved by Order of UkSATSE No. 530 dd. 28.08.2018 and coordinated by the State Aviation Administration of Ukraine on 11.07.2018. The results are provided in Table 2.

The results of the calculations indicate that the objectives related to safety and quality of service specified in the Regulation on the Integrated Management System of UkSATSE, which was put into effect by Order of UkSATSE of 10.08.2018 No. 493, were achieved during the reporting period.

The input data for the assessment were the results of internal audits, external audits, inspection checks, audits by “third parties”, assessment of changes made in the air traffic management system, investigation of accidents, connected with safety, analytical activity, feedback of information processing (alerting systems).

According to the results of the audit conducted by EUROCONTROL and CANSO in 2019, UkSATSE was included in the group of 27 countries with the highest indicators of safety management system perfection with an average level of maturity of the safety management system of 70 - 78%.

The safety management system was implemented under 17 main safety components and elements, including the safety culture, the safety policy, the risk management process, the safety report process, monitoring of safety characteristics, safety training and education.

The assessments were carried out as part of the joint EUROCONTROL and CANSO project.

The ability of UkSATSE to provide efficient, reliable, safe and high-quality ANS is confirmed by certificates issued by the State Aviation Administration of Ukraine in 2017 and the European Union Aviation Safety Agency (EASA) in 2018 to UkSATSE as an ANS provider.

Table 1. Actual safety level in 2019

Accident severity class	Actual level of safety in ATM system in 2019	Minimal level of safety in ATM system	Level of safety provision in ATM system
1 – accidents and catastrophes	0	2.59×10^{-9}	Acceptable
2 – serious incidents	0	2.59×10^{-6}	Acceptable
3 – large incidents	0	2.59×10^{-5}	Acceptable
4 – important incidents	1.79×10^{-5}	2.59×10^{-3}	Acceptable

Table. 2. Actual level of correspondence in 2019

Types of services	Minimal level of correspondence	Targeted level of correspondence	Actual level of correspondence
ATS, CNS, MET	0.7	0.75 – 1	0.788
AIS			0.868

3.2. Aviation Security (SEC)

Main directions of work in the previous year

Increasing the level of protection of the most vulnerable objects of air navigation from acts of unlawful interference (AUI) in 2019 was provided in accordance with the Action Plan of the Ministry of Infrastructure of Ukraine of 01.02.2019 No. 691 On the prevention of possible terrorist acts and acts of unlawful interference in the activities of transport, postal services and infrastructure in 2019, the annual plan of the Enterprise, the plans of the main activities of the aviation security units, the Aviation Security Program of the Ukrainian State Air Traffic Services Enterprise, approved by the order of UkSATSE of 03.07.2018 No. 385, and the requirements of the relevant regulatory documents of Ukraine, standards and recommendations of ICAO and ECAC on civil aviation security.

Arrangements have been made to improve the security of UkSATSE facilities, including:

- preparations were made for SAS certification, in the course of which UkSATSE updated the aviation security programme agreed by the State Aviation Administration of Ukraine, developed and agreed at the State Aviation Administration of Ukraine the general requirements for equipping UkSATSE facilities with security equipment, developed a training programme on aviation safety of the personnel of aviation safety units, updated the aviation security quality control programme, and the training programme on aviation security of UkSATSE personnel, other instructions, memos and so on. Procedures for purchasing technical means of maintenance and a set of measures to put them into operation were carried out. The mentioned measures have significantly increased the level of protection of UkSATSE's assets and from other illegal infringements upon the company's activity. ASS of UkSATSE will be certified after installation of technical maintenance equipment in each of the 4 RBs for protection of the most vulnerable restricted areas (in ATC operating halls, hardware halls, Tower, etc.). For today maintenance points are equipped in RB « Kyivcenteraero» and Odesa RB, and the process of equipment of maintenance points in Lviv and Dnipro RBs is at the stage of completion.

All employees of aviation security under the new staff structure have received basic training in aviation security, and personnel of aviation security units have received training in their areas of activity. The effective measure, increased the level of aviation security culture of the company employees, became obligatory training on the basics of aviation security of all personnel, has the right of access to the controlled zones of UkSATSE.

Updated security alarm systems were put into operation and existing access control systems were maintained.

UkSATSE specialists carried out inspections of aviation security conditions in the regional branches and in UkSATSE Flight Calibration Service in accordance with the aviation security Quality Control Plan. Corrective actions have been taken in due time.

No acts of unlawful interference were reported at the UkSATSE facilities in 2019.

Conclusions and recommendations on improving activities in the specified area

The preparation process for the certification of the UkSATSE AVSEC Service is in progress.

3.3. Environment (ENV)

Main directions of work in the previous year

Facilitation of implementation of the national and international legislation requirements, as well as prevention of harmful impact of the enterprise's activities on the environment:

- increasing level of environmental safety through compliance with the national legislation, as well as the requirements of EUROCONTROL, standards and recommended practices of ICAO;
- improving the environmental image and role of the Enterprise in the international arena;
- minimization of the negative impact of the Enterprise's activities on the environment by avoiding situations of unauthorized emissions and non-disposal of waste;
- collection, analysis and maintenance of the register on environmental aspects of UkSATSE, development and planning of corrective actions;
- control of the environmental impact level, their significance in the economic activity of the enterprise;
- update of the technical condition of equipment and fixed assets in order to reduce the impact of ecological aspects on the environment;
- control of compliance with the norms of environmental legislation in the course of business activities and during the renewal, reconstruction or building of fixed assets of the enterprise;
- keeping, summarizing and analyzing statistical reports;
- raising the level of awareness of the Enterprise's employees regarding the negative impact of aviation activities on the environment.

Conclusions and recommendations on improving activities in the specified area

In order to improve environmental protection activities, it is recommended to continue monitoring and control of environmental aspects of the enterprise, works on inventory of sources of environmental pollution and control over compliance with the norms and prevention of harmful impact of the business activities of the enterprise, in particular:

- improving ATS and usage of available infrastructure;
- introduction or updating of existing ATS methods to carry out environmentally friendly operations in the airspace of Ukraine;
- control of compliance with standards and prevention of harmful impact of stationary objects of the enterprise;
- increasing environmental efficiency;
- reduction of the environmental impact of waste related to the provision of ANS services by UkSATSE and the operation of the enterprise;
- decommissioning of outdated equipment;
- improvement of interaction between UkSATSE units.

4. DEVELOPMENT PROGRAMS FOR SUPPORT PROCESSES

4.1. Human Resources Management and Medical Certification of Personnel (HUM)

Main directions of work in the previous year

Organization and implementation of professional training, retraining, confirmation/ renewal and upgrade of qualification) for UkSATSE employees in the areas of:

- professional training of ANS;
- professional training of CNS service personnel;
- aviation security training of UkSATSE employees;
- language training and testing;
- development and improvement of educational material and technical base;
- maintenance and improvement of the competence of managerial and instructors/teachers staff.

Measures to improve and develop the regulatory framework for the functioning of the staff training and certification system:

- support of the Regulation on professional training of air traffic management personnel at Ukrainian State Air Traffic Services Enterprise approved by the order of UkSATSE of 22.09.2016 No. 288;
- support of the Regulation on professional training of communication, navigation and surveillance personnel approved by the order of UkSATSE of 23.07.2018 No. 425;
- support of the Regulation on professional training of communication, navigation and surveillance personnel approved by the order of UkSATSE of 23.07.2018. 425;
- support of the TCC Guidelines for Training of Air Traffic Management Specialists approved by the order of UkSATSE of 03.01.2017 No. 369;
- implementation and further performance of the requirements of the Aviation Regulations of Ukraine «Technical Requirements and Administrative Procedures for Issuance of Certificates and Licenses for Air Traffic Control Officers» approved by the order of the State Aviation Administration of Ukraine of 31.05.2018 No. 485;
- development and implementation of the Guidelines for Training of Air Traffic Control Officers at Ukrainian State Air Traffic Services Enterprise approved by the order of UkSATSE of 02.10.2019 No. 888;
- development and approval of the ATCOs Initial Training Plan, Air Traffic Control Officers Basic Training Course and ATCOs Rating Training Course;
- taking measures on certification of UkSATSE as an organization for training of ATC officers in accordance with the requirements of the Aviation Regulations of Ukraine «Technical Requirements and Administrative Procedures for Issuance of Certificates and Licenses for Air Traffic Control Officers», approved by the order of the State Aviation Administration of Ukraine No. 31.05.2018 No. 485;
- participation in the development of draft aviation regulations of Ukraine regarding the requirements for professional training and competence assessment of CNS personnel.

Revision of qualification requirements for teachers and instructors:

- revision of qualification requirements for teachers, instructors and experts in accordance with the requirements of the Aviation Regulations of Ukraine «Technical Requirements and Administrative Procedures for Issuance of Certificates and Licenses for Air Traffic Control Officers» approved by the Order of the State Aviation Administration of Ukraine dated 31.05.2018 No. 485;
- verification of the compliance of teachers, instructors and experts to the qualification requirements;
- development and implementation of a procedure for supporting the competence of theoretical training instructors;
- organization of advanced training for teachers, instructors and experts.

Table 3. Report on training at UkSATSE TCC in 2019

Specification of Training	Number of training groups	Number of trainees	Number of training hours along with self-study, where it is included in the programme
Training of ATCOs and ATM personnel	83	509	4135
Training of CNS personnel	168	669	3994
Language training	52	303	3584
Aviation security training	160	2251	2204
Total:	**463**	**3732**	**13917**
Assessment of CNS ATM Personnel *	18	23	36
Testing on the UkSATSE scale	17	98	204
Total of: *:	**498**	**3853**	**14157**

Note: * number of persons who have been assessed only under CNS ATM personnel qualification training programs in different specializations according to the sent applications (in case of change of employee's specialization or in case of hiring) and were not foreseen by the schedule. The working hours of the assessment commission comprise on average 2 hours.

Medical and sanitary unit of RB Kyivcenteraero ensured implementation of the following measures:

- medical certification for JCMS personnel;
- development of medical certification of categories of aviation personnel (other than air traffic controllers), in particular - flight crews and flight attendants;
- medical inspection and provision of qualified medical help to employees of UkSATSE and other companies on contractual basis;
- taking preventative and anti-epidemic measures during fulfilment of tasks.

Separate structural unit «Aviation Training and Certification Centre» organised such activities:

- upgrade of the An-24/26/32 simulator project has been completed. The simulator was put into operation by the order of Separate structural unit «Aviation Training and Certification Centre» of 03.06.2019 No. 39;
- the material and technical base was updated, new hotel furniture was purchased, computer equipment was upgraded, and the library stock was replenished;
- in accordance with qualification requirements, training of teachers and instructors was conducted;
- the personnel training manual has been brought in line with the technical requirements and aviation procedures and submitted for consideration to the flight operation department of the State Aviation Administration;
- the certificate Part-147B (PART-147B) for providing services to the Ministry of Defence of Ukraine was received.

The Personnel Department has ensured the implementation of the following activities:

- support of the processes of providing the enterprise with the necessary qualification personnel: introduction of the system of professional selection, acceptance, adaptation and dismissal of the personnel of UkSATSE; provision of the processes of personnel records management and provision of statistical information;
- ensuring compliance of the organizational structure and staffing structure of the enterprise with the goals and objectives of UkSATSE;
- support for the following processes/programs: long-term and annual planning of the selection of air traffic controllers; marketing of the «Air traffic controller» profession; professional selection of candidates for positions «Air traffic controller - trainee» and «Air traffic controller»; transfer of Air traffic controllers from one to another ATM unit; maintaining of a separate module of the «Personnel» database in relation to the ATM qualification of personnel;
- implementation of a professional selection system of personnel that affects safety (air traffic controllers, Flight Control Officers in charge, instructors, ANS staff, military personnel of JCMS units);
- organization and provision of work of qualification commissions of UkSATSE.

Table 4. Information on human resources as of 31.12.2019

Employees	Number of persons
Regular staff	4367
Vacancies	299
Employed regular staff	355
Dismissed regular staff	426

4.2. Automation of the Enterprise Management Processes (MPA)

Main directions of work in the previous year

- implementation of a corporate system of electronic document management for UkSATSE, an information system for the exchange of flight data between UkSATSE and the central route charges office of EUROCONTROL, a database of ground-based CNS facilities;
- maintenance of information systems «Corporate Electronic Document Circulation of UkSATSE», "Subsystem of monitoring and analysis of characteristics of the integrated management system of UkSATSE", "Accounting of UkSATSE IT-infrastructure elements", "Air navigation charges", automation of business processes of human resources management (database of ATS personnel, specialized web resource and database of candidates for the position of «Air Traffic controller-trainee», database regarding human factor within the Air Traffic Services, official website of UkSATSE, etc.);
- modernization of existing information systems software on request of other structural units;
- administration of UkSATSE corporate telecommunication network, network equipment of structured cable network; corporate email system; corporate domain controllers, corporate system catalogue (Active Directory), server operating systems and services, virtual environment, server equipment and data storage systems, BOSCH conference systems of UkSATSE administration, etc.;
- administration of UkSATSE computer systems of users and office equipment, organization of user workplaces (installation, configuration, relocation), consulting and technical support of information systems users (fulfilment of service requests);
- provision of UkSATSE's needs for spare parts, accessories, consumables for server and network equipment, UPS, computer systems and office equipment users, licensed software (intangible assets and software subscription);
- organization/provision of maintenance, as well as organization of server and network equipment repair, UPS, user's CS and office equipment;
- preparation of tender documentation and participation in procurement in accordance with Section 8 of the UkSATSE Investment Plan for 2019.

Conclusions and recommendations on improving activities in the specified area

The main issues that complicate the implementation informational technologies include the following:

- complexity of implementation and integration of modern software platforms of corporate informational technologies;
- imperfection of national legislation, which complicates application of typical functionality of software platforms;
- imperfection of UkSATSE's target business model, insufficient formalization and standardization of business processes;
- rapid dynamics of informational technologies changes and high cost of their implementation.

Possible ways to solve informational technologies development problems are:

- determination and justification of UkSATSE's indicators of target condition in the planned perspective, to which in particular, depend the content, boundaries and needs of IT projects resource support;
- centralization of corporate IT resources.

4.3. Engineering support of Air navigation facilities operation (ENG)

Main directions of work in the previous year

In 2019, the main areas of work of the Chief Engineer Service were: renewal of autonomous power supply sources stock of the CNS and ATS facilities of UkSATSE:

- technical upgrade and reconstruction of engineering support means and engineering network for the UkSATSE facilities;
- continued gradual replacement of existing lighting devices and introduction of alternative lighting devices with LED-lamps and LED-lamps into the existing lighting devices at the CNS and ERP facilities in the subdivisions of UkSATSE in order to reduce electricity consumption;
- continuation of technical re-equipment and reconstruction of power supply networks and electrical installations, engineering support means of UkSATSE TRLK-10 facilities;
- analysis of possibility / feasibility of energy supply of objects in UkSATSE subdivisions from alternative sources for premises heating, lighting and water heating and determination of the list of such objects. Determination of the necessity and phased introduction into operation of alternative and renewable energy sources to ensure the operation of engineering support of facilities in UkSATSE units;
- carrying out activities on preparation and bringing into compliance with the contractual relations on electricity supply of UkSATSE objects with the requirements of a new model of the electricity market and compliance with the requirements of the Law of Ukraine «On the electricity market», as well as with the requirements of the Rules of the electricity retail market, approved by the decree of the National Commission, which performs state regulation in the field of energy and communal services, of 14.03.2018 No. 312.

Conclusions and recommendations on improving activities in the specified area

The Chief Engineer Service and Engineering Support Units during 2019 focused on the following key activities:

- ensuring of reliable and uninterrupted functioning of the life support engineering systems and sustainable supply of electricity in the UkSATSE units;
- renewal of autonomous power supply sources stock of the CNS and ATS facilities of UkSATSE units;
- participation in the technical re-equipment and reconstruction of existing CNS and ATS facilities, construction of new CNS and ATS facilities according to the plans of Enterprise.

In 2019, as a result of significant work carried out by the Chief Engineer's Service together with the engineering support subdivisions of RBs, contractual relations on electricity supply of UkSATSE objects have been brought in line with the requirements of a new model of the electricity market, the requirements of the Law of Ukraine «On the electricity market» and the Rules of the electricity retail market approved by the Decree of the National Commission, which performs state regulation in the energy and utilities sectors, of 14.03.2018 No. 312.

There were no interruptions in power supply and disconnections from the centralized power supply networks of UkSATSE subdivisions due to improper fulfilment of requirements of the new power market. Purchase of electricity for own consumption in UkSATSE is carried out with the participation of engineering support units of RBs in compliance with the requirements of the Law of Ukraine «On Public Procurement».

In 2019, due to the financial and economic crisis at the enterprise, the number of operating equipment, including engineering equipment, increased insignificantly, and the volume of work on the operation of engineering equipment did not increase significantly compared to 2018. Employees of the Chief Engineer Service were actively involved in the reconstruction of the existing ATS and CNS facilities and the construction of new facilities at the enterprise.

During the second half of 2019, the engineering units have been developing and implementing additional measures on energy saving and its efficient consumption in RBs, optimizing the operation and quantity of energy equipment in RBs according to the production needs of the enterprise and its financial capabilities.

For more effective performance of tasks which are assigned to the chief engineer service, it is necessary to introduce the complex approach on performance of all stages of works in carrying out the reconstruction of existing ATS and CNS objects and building new objects for the enterprise.

Taking into account the fact that one of the tasks of UkSATSE is organization of ATS electrical support and flight performance, the chief engineer service considers it appropriate:

- to reconsider the attitude of the specialists of some units of the administration office to the Chief engineer service (operation and construction engineering support units) as to the controlled one;
- to change the subordination of the service;
- to treat the service as one of the leading services (for example, service on operation of CNS means) that provides reliable functioning and development of the enterprise, realization of projects and the actions scheduled in the plans of the enterprise.

4.4. Major Construction and Overhaul (BLD)

Main directions of work in the previous year

- a working group was created on the implementation of the project «New construction of airfield control Tower in international airport Boryspil «with a complex of buildings and structures on the territory of Hora Village Council of Boryspil district of Kyiv region» according to the order of UkSATSE of 20.09.2019 No. 853;
- the location of Tower in international airport «Boryspil» has been determined, the order of Kyiv Regional State Administration of December 20, 2019 No. 737 on the distribution of the land area was received;
- approved the implementation plan of the project «New construction of airfield control Tower in IA Boryspil «with a complex of buildings and structures on the territory of Hora Village Council of Boryspil district of Kyiv region»;
- a working group was created to implement the project «New construction of a complex of buildings and structures for servicing air traffic at the international airport» of Odesa» CA Airport, Odesa-54, 65054, Ukraine» according to the order of UkSATSE of 12.04.2019 No. 338;
- there was received the section «Preparatory works of the stage «P» of the project «New construction of a complex of buildings and structures for servicing air traffic at Odesa international airport» CA Airport, Odesa-54, 65054, Ukraine, which was examined by the State Enterprise «Ukrgosstroiekspertyza» and received an expert assessment;
- new (updated) city planning conditions and restrictions were received.

Conclusions and recommendations on improving activities in the specified area

Conclusions:

- the results of open tenders for the purchase of works, where the main criterion is the price quotation, do not allow to choose a contractor with highly qualified personnel;
- the estimated cost of the construction object cannot be determined definitively due to the lack of cost of technological equipment.

Proposals:

- to develop typical draft contracts for design and survey and construction and installation works at the Enterprise;
- in order to ensure the interests of the state enterprise, it is obligatory to specify in the contracts the requirement on:
- the amount and conditions of securing the participant's offer;
- the amount and conditions of contract security;
- confirmation of financial solvency;
- to include in the Capital Investment Plan projects on realization of construction objects for the next year, which as of October 01 of this year are provided with the approved design documentation;
- taking into account the functions and tasks of UkSATSE, in order to unify both engineering and technological equipment, to be determined at the level of enterprise administration / management body regarding the list of manufacturers / suppliers / contractors;
- in order to prevent the loss of funds of the state enterprise, to cooperate exclusively with state-owned banking institutions.

4.5. INTERNATIONAL ACTIVITIES (INT)

Main directions of work in the previous year

The international activity of UkSATSE was carried out in the following directions:

- participation in the work of international aviation organizations such as ICAO, EUROCONTROL and CANSO;
- participation in ICAO conferences and working groups (joint meeting of All-Weather Operations Group (AWOG) and EUROCONTROL Landing and Take-Off Task Force (LATO), Aeronautical Fixed Services Group (AFSG / 23), meeting of the Route Development Group – Eastern Part of the ICAO EUR Region (RDGE), meeting of the Air Navigation Systems Implementation Group (ANSISG) to support the implementation of ANS ICAO, ICAO EUR System Wide Information Management Project Team (SWIM / PT) meeting, meeting of the Project Group for the Implementation of Meteorological Services in the Eastern European Region of ICAO (PT EAST), Regional Conference on Aviation Security (ENAVSECG), meeting of the Enhanced Interregional Task Force on ATS Route Development (AIRARD), meeting of the Working Group on ATS Route Development in the Eastern European Region of ICAO (RDGE), 40th Session of the ICAO Assembly, Regional Workshop on Aviation Security and Facilitation and First Meeting of the European Aviation System Planning Group (EASPG / 1))CANSO (working meeting and negotiations with the ICAO Air Navigation Safety Bureau management and the 66th meeting of the Europe CANSO CEO Committee (EC3/66) and CANSO Europe Coordination Meeting (CECM);
- participation in EUROCONTROL conferences and working groups (working group of the EUROCONTROL Enlarged Committee for Route Charges, working meetings with representatives of the Central Route Charges Office (CRCO) on the issues of technical integration of Ukraine into the EUROCONTROL's Common Route Charges System, sessions of the EUROCONTROL Enlarged Committee for Route Charges, meeting of the EUROCONTROL Network Directors of Operations (NDOP), Aeronautical Information Management - System Wide Information Management Working Group (AIM-SWIM Team), Surveillance Steering Group (SUR SG), Airport Operations Working Group (AOT), RNP Approach Implementation Support Group (RAISG), Air Navigation Services Board (ANSB/35), CEO Safety Conference, EUROCONTROL working group of National Route Charges offices, etc.);
- negotiation process and participation in the event of special priority - in the sixth meeting of the ICAO ad hoc coordination group on normalization of air traffic flows in international airspace over the Black Sea (BSTF/06): participation in conciliation consultations and direct negotiations in the multilateral format;
- cooperation with foreign companies - manufacturers of air navigation equipment, foreign companies providing services in the field of CNS, namely: «ATM Consulting 2016 Ltd.», «Indra», «Leonardo S.p.A.», «AERODATA AG», «ERA s.r.o.», «S.I.T.T.I. SpA», «INDRA», «ICZ a.s.», «Thales», «APAC», «Helios Technology Limited», «Egis», «iBross», «Easat Radar Systems Limited», as well as representatives of the EBRD and EIB for the stages of contracts for the supply of CNS equipment at the expense of bank loans;
- cooperation and development of cooperation with European and world ANS providers in the areas of efficient airspace use (BULATSA (Bulgaria), ANS provider of the Slovak Republic (LPS SR)), Civil-Military Coordination and operation of the safety management system;
- consultation meetings with the world's leading airlines - users of the airspace of Ukraine (Qatar Airways), taking into account the perspective of the airspace of Ukraine due to the improvement of the ATS route network and with the representatives of the U.S. Federal Aviation Administration to discuss the status of ANS and ensuring safety in the airspace of Ukraine, as well as proposals for revision of SFAR113 by the U.S. Federal Aviation Administration;
- arrangement of training courses for the Enterprise staff in EUROCONTROL Institute of Air Navigation Services (IANS), simulator training for pilots of UkSATSE flight calibration service at Finnish Aviation Academy;
- receiving advisory services for UkSATSE air traffic controllers at the MLS International College (Great Britain);
- participation in annual conferences of the International Federation of Air Traffic Controllers Associations (IFATCA) and International Federation of Air Traffic Safety Electronics Associations (IFATSEA) and in Air Traffic Controllers European Unions Coordination (ATCEUC).

The main activity areas in 2019 were the following:

- organisation of business trips abroad for UkSATSE employees;
- selection and preparation of documents for submission to visa centers and Embassies of some countries for the obtaining visas for UkSATSE specialists who serve on business trips in accordance with UkSATSE orders;
- written English translations as well as notary verified translations;
- organisation and arrangement of training courses for the UkSATSE employees in IANS;
- organisation and arrangement of advisory services for UkSATSE air traffic controllers at the MLS International College (Great Britain);
- organisation of reception of the foreign delegations, groups and

individual foreigners;
- financial accountability for the services provided (reception of the foreign delegations, etc.);
- preparation of draft agreements and the supporting documentation for conclusion of agreements;
- provision of translation services on request of the appropriate units of the Enterprise;
- support the English version of UkSATSE website;
- provision of oral translation services for foreign delegations;
- maintaining minutes of meetings with foreign representatives.

Conclusions and recommendations on improving activities in the specified area

4.5.2.1 During 2019, the activities of the International Department were focused on the following main directions:
- coordination of international cooperation of UkSATSE with international aviation organizations, ANS providers of other countries, authorized aviation administrations of other countries, suppliers of air navigation equipment and other stakeholders;
- enhancing the international prestige of UkSATSE among the authorized participants in the international air transport market through consistent and steady adherence to the regulatory requirements, regulatory documents and recommended practices of ICAO and other European and international civil aviation authorities;
- participation in the arrangement of preparation of documentation for payment of UkSATSE's/ Ukraine's membership fees to international organizations.

4.5.2.2. Recommendations:
- to strictly comply with procedures of organization of official foreign business trips of UkSATSE employees, approved by the order of UkSATSE of 23.11.2018 No. 803, when arranging official foreign business trips taking into account potential changes originated from the Ministry of Foreign Affairs of Ukraine and others;
- to strictly observe the procedures for receiving foreign delegations, groups and individual foreigners at UkSATSE, approved by the order of UkSATSE of 30.11.2018 No. 847, when organizing the reception of foreign delegations, groups and individual foreigners at UkSATSE;
- to ensure the implementation of the provisions of the order of UkSATSE of December 18, 2017 No. 502 «On work with international and foreign organizations and institutions», which relate to the competence of the international department:

1. to submit proposals to the plan of work with international organizations for the current year until 04 November of current year;
2. to prepare the report on the work with international organizations accomplished in the current year, by the 25th of December of the current year;
3. to submit proposals to the workplans with international organizations for next year by the 25th of November of the current year;

- due to the change of visa-free travel rules to the European Union as of 2021 and the introduction of the European Travel Information and Authorization System (ETIAS), there shall be developed a procedure/regulations to organize the receipt of prior travel authorization/travel abroad with the submission of online applications;
- to purchase a specialized computer aided tool «SDL Trados Group Share 2019» in order to enhance productivity and optimize efficiency of work at all stages of translation of documents, to form own translation base, as well as to create a unique bilingual (English-Ukrainian/Ukrainian-English) dictionary of terms related to the sphere of UkSATSE activity, which will allow to organize joint work on translation projects and to safely exchange files, terminology and information.

4.6. Information Policy (INF)

Main directions of work in the previous year

- formation and maintenance of positive image of the enterprise and its management among internal and external audience;
- ensuring effective communication with the media;
- creation of a reliable source of information on the activity and life of the working collective for the employees of the enterprise.

Conclusions and recommendations on improving activities in the specified area

To develop the information policy of the Enterprise it is necessary to ensure the implementation of communication strategy of the Enterprise, taking into account modern trends in the media market. Effective information support of the core business of the Enterprise provides for a constant increase in the efficiency of external and internal communications. It is important to extend the awareness of the staff about the activities of various departments of the Enterprise in the conditions of active development of the information-oriented society.

4.7. Economics and Finances

Results of UkSATSE activity can be described by two groups of indicators.

The first group is “effectiveness”, the level of realization of the planned activity and reaching of the planned results. The indicators are given in Figure 5 and Table 5;

The second group is “efficiency”, the correlation between the reached result and the resources used. The indicators are given in Table 6.

Fig.5 Air Traffic intensity in FIRs of Ukraine (2019)

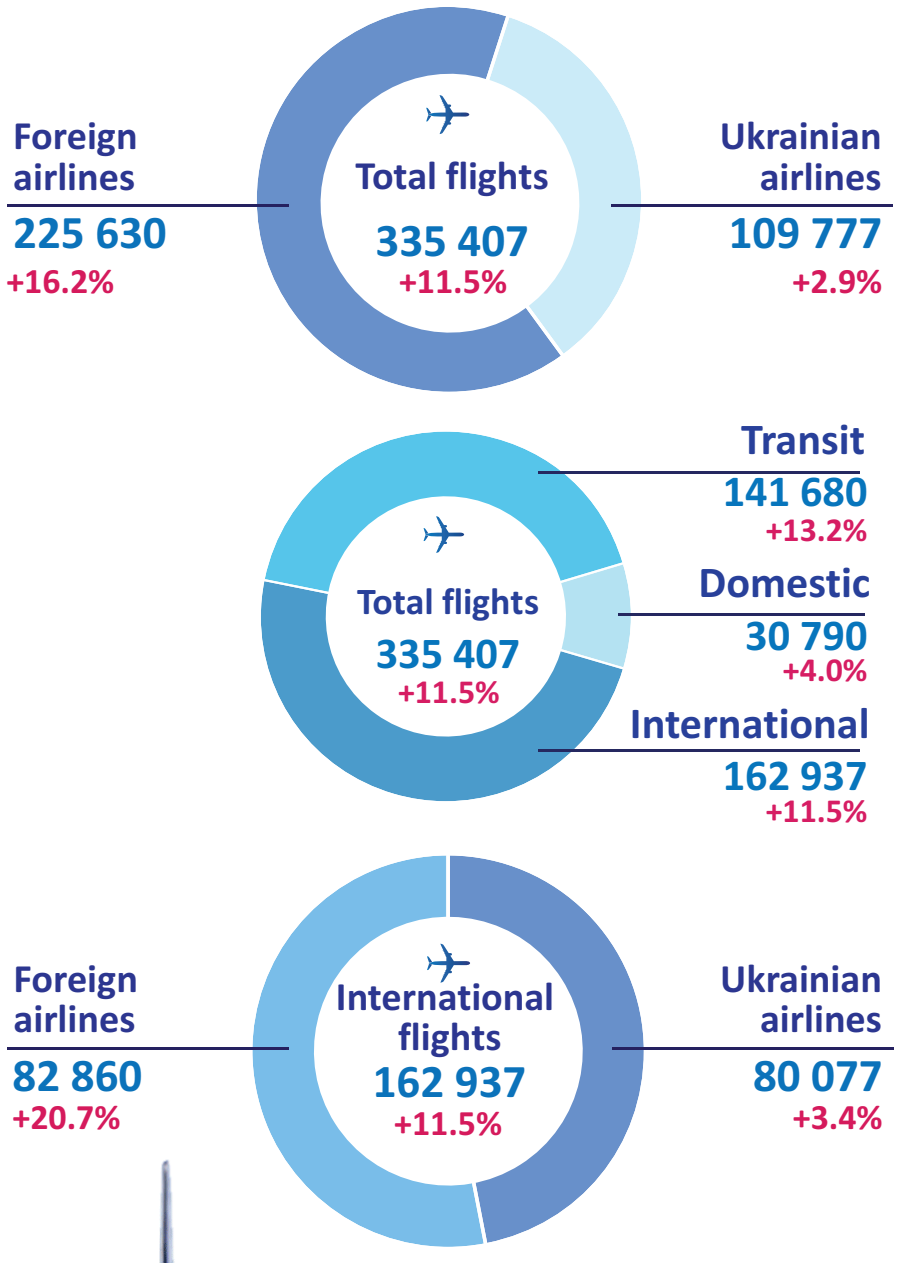


Table 5. UkSATSE finance indicators in 2019

Main finance indicators	Fact 2019 (thousand UAH)
Revenue (revenue from sales)	3 528 928
VAT	2 881
Net income (net revenue from sales)	3 526 047
Other operational income	204 877
Other income	38 004
Other financial income	86 773
Total income	**4 187 659**
Cost of sales	3 369 666
Administrative costs	300 773
Other operational costs	1 468 400
Financial costs	11 451
Other costs	30 204
Other costs	**5 180 494**
Financial result of regular activity before taxation	- 1 324 793
Income tax	331 958
Net profit/loss	**- 992 835**

Table 6. Balance of the Enterprise as of December 31, 2019

Assets	Line Code	At the beginning of reporting period	At the end of reporting period
1	2	3	4
I. Non-current assets			
Intangible assets:	1000	20 991	21 554
original value	1001	34 558	66 042
accumulated depreciation	1002	13 567	44 488
Incomplete capital investments	1005	767 805	888 549
Capital assets:	1010	3 599 375	3 470 547
original cost value	1011	8 839 376	9 335 263
amortization	1012	5 240 001	5 864 716
Investment property:	1015	0	0
original cost value	1016	0	0
amortization	1017	0	0
Long-term biological assets	1020	0	0
Long-term financial investments: which are accounted by equity participation in other enterprises	1030	0	0
other financial investments	1035	0	0
Non-current receivables	1040	17 681	17 515
Deferred tax assets	1045	0	322 266
Other intangible assets	1090	0	0
Total by section I	**1095**	**4 405 852**	**4 720 431**
II. Current assets			
Inventory	1100	45 724	35 975
Stocks of input	1101	45 511	35 743
Work in progress	1102	0	0
Final product	1103	0	0
Products	1104	213	232
Current biological assets	1110	0	0

Accounts receivable for products, works, services	1125	619 618	502 147
Settlements receivable from:			
issued advance payments	1130	55 796	32 753
budget receivables	1135	35 892	38 655
including income tax	1136	34 598	37 315
accrued revenue	1140	0	0
internal settlements	1145	0	0
Other current receivables	1155	44 368	113 632
Current financial investments	1160	0	0
Money and its equivalents	1165	1 639 107	494 224
Expenditures of future periods	1170	18 150	4 431
Other current assets	1190	14 634	450
Total by section II	**1195**	**2 473 289**	**1 222 267**
III. Non-current assets, kept for sale, and disposal (drop out) groups	**1200**	0	**0**
Balance	**1300**	**6 879 141**	**5 942 698**
I. Own capital			
Registered capital	1400	261 060	286 364
Revaluation surplus capital	1405	1 730 124	1 715 455
Additional capital	1410	4 385 931	3 459 071
Capital reserve	1415	17 430	17 430
Retained profit (uncovered loss)	1420	0	0
Unpaid capital	1425	0	0
Withdrawn capital	1430	0	0
Total by section I	**1495**	**6 394 545**	**5 478 320**
Long-term liabilities and coverage			
Deferred tax liabilities	1500	62 392	0
Long-term bank loans	1510	174 316	134 850
Other long-term liabilities	1515	2 616	2 180
Long-term coverage	1520	0	0
Long-term coverage of staff costs	1521	0	0
Target financing	1525	0	0
Total by section II	**1595**	**239 324**	**137 030**
III. Current liabilities and coverage			
Short-term bank credits	1600	0	0
Promissory notes issued	1605	0	0
Current debt payable for:			
long-term liabilities	1610	0	24 312
products, work, services	1615	50 569	49 528
budget settlements	1620	15 560	19 153
including from income tax	1621	0	0
insurance settlements	1625	11 967	15 958
wage settlements	1630	61 902	78 921
advance payments received	1635	1 580	2 168
stakeholders	1640	0	0
internal settlements	1645	0	0
Current coverage	1660	84 524	125 136
Income of future periods	1665	656	255
Other current liabilities	1690	18 514	11 917
Total by section III	**1695**	**245 272**	**327 348**
IV. Liabilities connected with non-current assets held for sale, and disposal (drop out) groups	**1700**	**0**	**0**
Balance	**1900**	**6 879 141**	**5 942 698**

5. CHANGES IN THE ATM SYSTEM IN 2019

Changes in the UkSATSE ATM system introduced in 2019:

- the work of Tower Kirovograd has been terminated;
- work at Tower Uzhhorod has been organized;
- the work of the control body of the Uzhhorod approach has been terminated;
- regional FRA H24 was introduced within FRA KIDRO (UTA Kyiv, UTA Dnipro-North, UTA Dnipro-South (DVS)) within vertical limits;
- radio beacons have been decommissioned at the FIXED NON-DIRECTIONAL RADIO BEACON «Pii» and «Krasnoborka» facilities;
- ADF-80K automatic direction finder at Kirovograd airfield was decommissioned;
- airfield observation radars DRL-7cm has been decommissioned at Ivano-Frankivsk and Uzhhorod airfields;
- the SP-75 ceased to be used as intended at Vinnitsia and Ivano-Frankivsk airfields and ADF-75 at Kharkiv airfield;
- the upgraded PSR TRLK-10TS (TRLK-3 Bar), MSSR SIR-S (TRLK-2 Dubno) and DME equipment were put into operation at the Transcarpathian ATC unit;
- seven amendments to the Aeronautical Information Publication of Ukraine (AIP Ukraine) regarding changes in its structure were introduced (as of 28.03.2019, 25.04.2019, 23.05.2019, 20.06.2019, 15.08.2019, 10.10.2019 and 07.11. 2019).

6. INFORMATION ABOUT ACTIVITIES IN THE FRAMEWORKS OF THE FORMAL CONSULTATION PROCESS WITH USERS OF ANS

In 2019, the department of the Airspace organization and management of ANS continued the work with the Airspace users on their involvement in the performance of airlines flights in the airspace under the responsibility of Ukraine.

It should be noted that among the significant factors affecting the performance of international and transit flights in the airspace under the responsibility of Ukraine are the following:

- revision of SFAR113 of the Federal Aviation Administration (FAA) of the USA regarding the ban on flights in the eastern part of the airspace under the responsibility of Ukraine and, as a consequence, the expansion of the airspace under the responsibility of Ukraine, available for flights of civil aircraft carriers with registration in the U.S. and the code -sharing partners, as well as granting permission to perform flights to/from the airfields «Kharkiv», «Dnipro» and «Zaporizhzhia», which were also previously subject to the ban;
- publication of ICAO letter No. EUR/NAT 18-0590.TEC (NAE/CUP) of 03.12.2018 on updating information regarding FIR Simferopol and FIR Dnipro. This letter cancels ICAO letters of 02.04.2014 No. EUR/NAT 14-0243.TEC (FOL / CUP) and of 18.08.2015 No. EUR/NAT
- 15-0420.TEC (FOL/CUP). In a letter dated 03.12.2018 ICAO reminds the operators of the aircraft on procedures established by Ukraine to gradually restore the availability of airspace over the high seas within the FIR Simferopol. ICAO once again states that the responsibility for the provision of ATS according to ICAO Doc 7754 is delegated to Ukraine and recommends air carriers to reassess the risks of flights through the airspace within the FIR Simferopol.

In this context, in 2019, the work on informing potential users of the airspace under the responsibility of Ukraine about the above-mentioned changes was continued. In the course of 2019, letters with relevant proposals for more efficient performance of flights in Ukrainian airspace have been sent to airlines such as Emirates Airline, Lufthansa, Qatar Airways, Etihad Airways, British Airways, Oman Air, Singapore Airways, Thai Airways, Flydubai, Air India, Ryanair, United Airlines, Air Baltic, Polskie Linie Lotnicze (LOT), Air Astana, Azerbaijan Airlines and others.

In the course of 2019, correspondence was conducted with national ANS providers (ANSPs)/international organizations/aviation authorities of Europe and the U.S. (ICAO, EUROCONTROL, FAA, EASA, IATA, etc.) in order to provide the rationale for providing ANS and ensuring safety, in particular, to remove restrictions on flights of airlines in the airspace under the responsibility of Ukraine.

During 2019 at the meetings of the permanent working groups of ICAO, EUROCONTROL (RNDSG, RDGE, BSTF / 6, AIRARD-TF, EASPG, ASMSG, MILHaG, etc.) there were held consultations with the representatives of airlines on the implementation (restoration) of airline flights in the airspace under the responsibility of Ukraine, as well as work to improve the organization and airspace management, civil-military complex and harmonization of publications of aeronautical information publications to increase the attractiveness of the airspace and redistribution of air traffic flows in the airspace of Ukraine to attract new carriers.

7. CONCLUSIONS

In general, according to the results of fulfilment of tasks foreseen in the annual 2019 plan, the following results were achieved:

- measures have been taken to improve the structure of the Airspace under the responsibility of Ukraine;
- the quality of the ANS improved;
- modernization of the UkSATSE CNS ensured;
- the level of quality and competitiveness of the services provided by the enterprise increased;
- enhanced productivity level ensured;
- the resource potential of the enterprise used as full as possible.

The enterprise organized a flexible use of the Airspace at all levels of production and operation processes in the interests of its users in accordance with the programs of EUROCONTROL, ensured safe and efficient ANS for the civil and state Aircraft.

Annex 1. List of UkSATSE's middle level Strategic Objectives

The following middle-level strategic objectives (MLSO) have been identified for the implementation of the high-level strategic objective (HLSO) - **HLSO01 (Flight Safety: development and maintenance of mature, reliable and effective Safety Management System:**

MLSO01_01: to fully support the organization of effective feedback with users of Air Navigation Services within the framework of UkSATSE Integrated Management System.

MLSO01_02: to improve the rules and procedures for civil-military coordination and to ensure the further development of the ICMS.

MLSO01_03: to develop the CNS infrastructure in order to increase its operational efficiency, ensure compatibility with the corresponding infrastructure of the European Union states.

MLSO01_04: to develop an integrated management system and its components, taking into account modern advanced technologies, automation of the processes for collecting, analyzing and classifying flight safety accidents based on the requirements of ICAO, Eurocontrol and the European Union.

MLSO01_05: to ensure protection of the UkSATSE ANS facilities, means and services from Acts of unlawful interference (AUI), as well as critical aviation information systems of the enterprise, the intervention to which is equivalent to AUI.

MLSO01_06: to ensure automation of UkSATSE business processes in the field of corporate management, organization of production and collective cooperation (including external).

MLSO01_07: to expand the list of additional services provided on a commercial basis, within the competence of the enterprise, obtain relevant certificates and accreditation in international institutions.

MLSO01_08: to implement measures to expand and harmonize the means of ensuring the flight safety.

MLSO01_09: to implement a leasing system for fixed assets and auxiliary services outsourcing performed by third parties/institutions on a contractual basis.

The following middle-level strategic objectives (MLSO) have been identified for the implementation of the high-level strategic objective (HLSO) - **HLSO02 (Satisfaction of the Airspace users' needs.. Strengthening the of UkSATSE position as a reliable ANS provider in the European region.):**

MLSO02_01: to meet the requirements of the aeronautical system and the ANS as much as possible.

MLSO02_02: to carry out a constant search and development of ways of formation of strong competitive positions in attracting domestic and transit air flows.

MLSO02_03: to constantly maintain and strengthen the financial stability of the enterprise.

MLSO02_04: to develop and implement in practice the concept of UkSATSE's information policy.

The following middle-level strategic objectives (MLSO) have been identified for the implementation of the high-level strategic objective (HLSO) - **HLSO03 (Production efficiency. Approaching of UkSATSE to the European average Key Performance Indicators (KPI) of ANSP):**

MLSO03_01: to increase the efficiency and maturity of the management processes of productive and non-productive UkSATSE activities through the introduction of a quality management system and a process approach in all administrative and business levels of the enterprise

MLSO03_02: to ensure compliance of the UkSATSE personnel policy to the international standards, national legislation and best practices in human resources management;

MLSO03_03: to ensure the implementation of efficient operations within terminal area;

MLSO03_04: to ensure implementation of effective flight trajectories of aircraft and network of ATS routes;

MLSO03_05: to improve the ATS procedures used by ATS units of UkSATSE in accordance with SARPs and requirements of the European Union.

MLSO03_06: to define rational correlation of quality of services and their price as the basic principle of formation of financial prospects of the enterprise.

The following middle-level strategic objectives (MLSO) have been identified for the implementation of the high-level strategic objective (HLSO) - **HLSO04 (Reduction of the effects on the environment. Maintaining and promoting further integration of the Air Navigation System of Ukraine to European with regard to environmental protection).**

MLSO04_01: to actively contribute to the improvement of the regulatory framework of Ukraine in terms of regulating the air navigation system's activity to bring national legislation in line with the requirements of ICAO, Eurocontrol and the European Union and effectively implement best practices of the leading countries in the field of the ANS.

MLSO04_02: to increase participation in international programs and projects, actively protect the interests of the enterprise using the mechanisms of influence of international aviation organizations.

MLSO04_03: to implement a unified approach to ensure monitoring and control of the negative impact of the aviation activity of the enterprise on the environment.

Annex 2. English abbreviations

AFIS	Aerodrome flight information service
AFTN	Aeronautical fixed telecommunication network
AIP	Aironautical Information Publication
AMHS	ATS Message Handling System
ANSB	Air Navigation Services Board
AOM	Airspace Organisation and Management
ASM	Airspace management
ASMSG	Airspace Management Sub-Group
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air traffic flow management
ATIS	Automatic terminal information service
ATS	Air traffic services
BSTF	Black Sea Task Force
CANSO	Civil Air Navigation Services Organisation
CTR	Control zone
DME	Distance measuring equipment
DVOR	Doppler Very high frequency omni-range
EASA	European Aviation Safety Agency
ERNIP	European Route Network Improvement Plan
FAA	Federal Aviation Administration
FRA	Free Route Airspace
GAT	General Air Traffic
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ILS	Snstrument landing system
LSSIP	Local Single Sky ImPlementation
NDB	Non-directional radio beacon
NDOP	Network Directors of Operations Forum
NETOPS	Network Operations Team
NM	Network Manager
OAT	Operational Air Traffic
RDGE	Route Development Group – Eastern Part of the ICAO EUR Region
RNDSG	Route Development Network Sub-group
PBN	Performance-based navigation
TMA	Terminal area
VoIP	Voice over IP
VOLMET	Meteorological information for aircraft in flight
VOR	Very high frequency omni-range

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