



Ukrainian Aerospace and Aviation Market Overview*

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*Contains statistical information of the models and types of aircraft and space vehicles manufactured by the Ukrainian industry.

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I. General Market Overview

A. Aviation industry

The aircraft industry of Ukraine contains a number of the enterprises and companies; the most well-known among them are the following: the state

enterprise ANTK Antonov, Kyiv Aviation Plant "AVIANT", Kharkiv State Aircraft Production Enterprise (KSAPE) and Kyiv Aircraft Repair Plant 410 Civil Aviation (KARP410CA). All of these belong to the **State Aircraft Manufacturing Corporate Group "Antonov"**.

Ukrainian aviation industry traditionally specializes in development and production of passenger and military transport aircraft (as well as special modifications of the subsequent models). Significant experience in this branch is accumulated by the Antonov Aircraft Scientific and Technical Complex (Antonov ASTC) and plants located in Kyiv and Kharkiv. Nevertheless, it is quite naturally that these projects are far from the equal degree of publicity in the world. For instance, in the field of military transport aviation mainly An-22 "Antey", An-124 "Ruslan", An-225 "Mriya" and, at last, An-70 aircraft are widely known. Meanwhile, great work in connection with designing, production and modernization of other military transport and special aircraft is carried out also by enterprises of the "Antonov" State Aircraft Manufacturing Concern (Antonov SAMC).

ANTONOV Aeronautical Scientific/Technical Complex has its own Design Bureau, wide complex of laboratories, experimental plant and the Flight and Test base which make it possible to solve any task on aircraft development including its certification, as well as co-operation in field of manufacture, operational support and follow-on of all the Antonov aircraft types.

ANTONOV Aeronautical Scientific/Technical Complex is the eminent aircraft designer of over one hundred types and modifications of aircraft of various classes and purposes have been designed, including:

AN-2 multipurpose aircraft, the father of the large family of ANTONOV aircraft; AN-8, AN-12, AN-22 Antei, AN-26, AN-32, AN-72, AN-74T, AN-124 and AN-124-100 Ruslan, AN-225 Mriya, AN-70, AN-3T cargo aircraft; AN-10, AN-14, AN-24, AN-140, AN-148 passenger aircraft; AN-28, AN-38-100, AN-38-200, AN-74TK-100, AN-74TK-200 and AN-74TK-300 convertible cargo/passenger aircraft; special-purpose aircraft, including: AN-2M and AN-3 agricultural aircraft, AN-2B seaplane, AN-30 aerial photography aircraft, AN-30M "sky-cleaner", AN-26Pand AN-32P fire-fighters, AN-26M rescue aircraft, AN-74 polar aircraft, AN-72 patrol aircraft, AN-71 AEW aircraft, etc. In addition, several types of gliders, hang-gliders and motor hang-gliders have also being developed.

The characteristic advantages of ANTONOV aircraft include structural reliability and economic efficiency, flexibility of transport operations, ability to use unpaved airfields and easy maintenance. Due to these qualities, over 1500 Antonov aircraft have been exported to more than 70 countries. In total, over 22,000 aircraft have been built.

Nowadays, the ANTONOV Complex is engaged in designing and building new aircraft prototypes modifying earlier designs, providing operational and product support and engineering work on extending the service life of existing aircraft. It also provides services such as basic and conversion training for flight and maintenance crews and international air charter transportation, particularly of oversized cargoes. On-site training of local personnel is available for selected aircraft. Antonov also participates in international cooperation in the field of aircraft and equipment design and manufacture as well as the development of land transit vehicles.

ANTONOV Complex has invested heavily in computer-aided techniques for design and analysis work thereby creating a powerful engineering and research potential. In-house wind tunnel facilities enable the testing of aircraft models. All aircraft types, including such giants as the Ruslan and Mriya, can be subjected to structural tests to determine their service lives in one of the largest fatigue test laboratories in Europe. Finally, Antonov completes the development cycle of the aircraft with flight test programs to demonstrate the compliance of the aircraft with airworthiness requirements and the customer's specifications.

In the aircrafts designing, their modifications, projects-implementation on upgrading of the operated aircrafts the "Antonov" company conducts an open policy in utilization of the aggregates, devices and components of the top world's manufacturers of the aviation products, e.g. "TALES", "Pratt&Whithney" etc.

Series manufacturing of Antonov aircrafts in Ukraine is realized by two plants: **AVIANT and Kharkiv State Aircraft Production Enterprise.**

KSAPE is specialized in the manufacturing of aircraft since 1926. At present, the main production items of the plant are An-74 and An-140 aircrafts in various models.

Kyiv Aviation Plant "AVIANT" is currently specialized in production of the An-32, An-70, An-148 aircrafts. The plant possesses resources and technology capability to assemble not only mid-sized, but also heavy (transport) planes.

KARP-410CA is the enterprise closing a production cycle for support of the complete period of an operation life of "Antonov" aircrafts. The basic specialization of the plant is repairing and modernization of the An-24, An-26, An-30, An-32, An-72 and An-74 aircrafts.

"Antonov" Corporate Group Enterprises have certificates of the Aviation register of Ukraine, the International Aviation Committee, Federal Service of the air transport of Russia, the certificate on compliance with the quality system for standard ISO 9002, the certificate of NATO AQA0-120, etc.

«Scientific production company «Avionika» LTD, Joint Stock Company «Scientific and Technical Enterprise «Electronprylad», Joint Stock Company «Aviakontrol», «Radioizmeritel» Plant, State enterprise Research Institute «Buran», Joint Stock Company «Kyiv Plant «Radar» and more than 40 other Ukrainian companies are industrial partners of aircraft plants in producing programs.

Besides, Ukrainian aircraft engineering includes the companies engaged in designing and manufacturing of the light and extra light aircrafts:
„SKYETON” AIRCRAFT INDUSTRIAL COMPANY; DB Aerocopter Ltd.; Plant “RSM”; „AEROPRAKT” LTD; „KB «Vertical» Ltd.; State enterprise «Experimental Design Bureau of Aviation of the General Setting».

The growth of the market of the light and extra light aircrafts manufactured in Ukraine comprises 15-20 % per year that ensures the development of corresponding production sector and the further prospect of economic activities.

Ukrainian companies **“Motor Sich” JSC and “Progress” Zaporizhya Machine-Building Design Bureau** are the leading enterprises of aircraft manufacturing on the CIS territory. They were recently amalgamated in the “Ivchenko” corporation. The Progress ZMDB, with over 65 years of existence, has significant experience in designing, refinement, certification and accompanying of serial production both aircraft engines of various types (first piston and later gas-turbine) and ground-based power plants.

Motor Sich JSC specialises in production, repair and technical support of the “flaming motors” It celebrated 100th anniversary in 2007. Engines “by Motor Sich” are installed on almost 90 types of aircraft and missiles which are operating in more than 100 countries of the world. Among production of the “Motor Sich” are turbo-jet engines for training and cargo aircraft, as well as for unmanned aerial vehicles and guided missiles, jet-prop and turbo-shaft engines (TSE) for military and civil aviation; auxiliary power units (APU); gas turbines for ground-based power plants and even the wind farms.

State Enterprise Kharkiv Machinery Plant FED, SE KHARKIV AGGREGATE DESIGN BUREAU, JSC «Dnepropetrovsk Aggregate Plant», JSC “Volchansk aggregate plant” are the main participants of producing the components and aggregates for aircraft engines.

B. Space Industry

Ukrainian space industry is known first of all as the world's largest player in designing and manufacturing of the launch-vehicles and satellites.

At present, those are the launch-vehicles CYCLONE, ZENIT, DNEPR and SICH-series satellites. The **Yuzhnoye State Design Office** carries out design works

for the launch-vehicles and space crafts, while the M. Makarov Yuzhny Machine-Building Plant (Yuzhmash) covers the manufacturing phase.

Yuzhnoye SDO is a powerful design company which in cooperation with its partners provides turnkey developments for complicated high-tech projects. The main directions of the Yuzhnoye's activities remain the development operation of the space-rocket technology. Launch vehicles, spacecraft and rocket engines developed by Yuzhnoye meet the highest criteria of the modern science.

O. Makarov Pivdenny Machine Building Plant Industrial Association' State Enterprise is one of the leading Ukrainian enterprises in the fields of rocketry production including for the defence, scientific, and other application technologies.

Launches of Ukrainian LV

	Zenit-3SLB	Zenit-3SL	Zenit-2	Cyclone-2	Cyclone-3	Dnepr	Total	Total, Worldwide	Ukraine to World ratio, %
1991			1	1	8		10	94	10,6
1992			4		5		9	97	9,3
1993			2	4	4		10	83	12,0
1994			4	1	7		12	93	12,9
1995			1	2	1		4	80	5,0
1996			1	1	1		3	77	3,9
1997			1	1	1		3	89	3,4
1998			2		1		3	82	3,7
1999		2	1	1		1	5	79	6,3
2000		3	2		1	1	7	84	8,3
2001		2	1	1	2		6	59	10,2
2002		1				1	2	65	3,1
2003		3					3	63	4,8
2004		3	1	1	1	1	7	54	13,0
2005		4				1	5	55	9,0
2006		5		1		2	8	66	12,1
2007		1	1			3	5	68	7,4
2008	1	5				2	8	69	11,6
2009	1				1		2		
Всього	2	29	22	14	33	12	112		
%	1,8	25,9	19,6	12,5	29,5	10,7			

The following enterprises participate in manufacturing and designing of the launch-vehicles and satellites:

Arsenal Central Design Bureau State Enterprise is a leader in developing and manufacturing of optical and other equipment for space, aviation, ground-based technology, systems of military and civil applications. It specialises in the development and production of airborne aiming and targeting system, optical seekers for Air-Air missiles and air defense missile systems, orientation and navigation devices including gyrocompasses and laser gyros, orientation devices and system for space- rocket complexes, space remote Earth sensing systems, space vehicle orientation devices, photolenses.

Kyivprylad Industrial Association specialises in the design and production of on-board and ground control systems. This company took part in the development and production of devices and equipment for Bion, Foton, Interkosmos, Kosmos, Soyuz-TM, Progress, Energiya-Buran, Proton, Gorizont, Ekran, Okean-0, Sich, Alfa ISS, and other programmes.

State Enterprise Plant "Arsenal" is leader of optic and optoelectronic industry in Ukraine. It's producer of polifunctional optic for military and civil use.

Khartron JSC is the leading enterprise, in control system production for space rocketry and various industrial sectors. Control systems for a number of intercontinental ballistic missiles, Energiya, the most powerful launcher in the world, and Kosmos, Cyklon, Dnipro, Rokot, and Stryela light launchers were produced here. Launchers equipped with Khartron's control systems put into orbit more than 1000 space vehicles. Khartron's control systems were installed approximately at 100 Kosmos satellites, as well as units of the Mir orbital station and international space station.

Khartron was appointed a general supplier for reconstruction and enhancement of CAM systems at Ukrainian nuclear power plants. Manufacturing of equipment for modernisation of CAM systems at heat power plants as well as oil and gas transportation facilities is another example of Khartron's successful work. Finally, microprocessor systems for power facilities control, terminal air traffic control complexes, and rail mode automatics were developed at Khartron.

Kommunar Production Association is a producer of on-board control systems and on-ground electric checking starters for all versions of 'King Seven' launchers, by which, from 1961 and till now, launches of all manned and many other space vehicles are made, as well for Proton launcher, which can place into orbit various heavy spacecraft. Moreover, Komunar produced some devices for other producer's control systems, for Soyuz and Progress launchers, Salyut and Mir orbital stations.

Elmiz JSC is a modern enterprise producing electronic professional equipment and having at its disposal various types of up-to-date technologies related to mounting, assembly, off-line and on-line testing of all the radio equipment types. Skein spinning workshop is equipped with installations allowing production of electric devices from welders to 2 mm core control transformers. The plant includes production design and technology capabilities, as well as engineering supervision department, manned with skilled personnel.

Kurs Scientific and Industrial Complex JSC was established in 1998. Personnel of its design office have made important contributions to development of unique radio complexes (Igla, then Kurs) for search, mutual pointing, approach and docking of Mir, Soyuz, Progress space vehicles. The company was also involved in the development of navigation systems for strategic mobile missile complexes and engine control systems for the third stage of Zenit launcher.

C. Maintenance, Repair & Overhaul

Enterprises of Aerospace Industry of Ukraine specialized in repair and modernization of aviation technics (“Aviavoenremont” Concern of the Ministry of Defence of Ukraine) include:

“AVIAKON” Konotop aircraft repair plant, Evpatoria aircraft repair plant, “LSARP”Lviv state aircraft repair plant, “MiGRemont” Zaporozhya state aircraft repair plant, “NARP” Nikolaev aircraft repair plant, “ODESAVIAREMSERVIS” Odessa aircraft repair enterprise, Sevastopol aircraft enterprise, “ChARP” Chuguev aircraft repair plant, Lugansk aircraft repair plant, “MOTOR” Lutsk repair plant (engines). These enterprises have potential and possibilities for service all aircrafts and aircraft engines of the Air Force of Ukraine. They all have the certificate from Russian companies – producers of aviation techniques.

“AVIAKON” Konotop aircraft repair plant is a leading enterprise of aviation industry of Ukraine in field of repair, re-equipment and modernization of “Mi” mark helicopters of all types and modifications. At present time the main direction of the plant activity is overhaul and reconditioning repairs, re-equipment and modernization of attack and reconnaissance helicopters of Mi-24/25/35 family; transport, multipurpose and special helicopters of Mi-8/9/13/17/19 family; heavy transport Mi-26 and Mi-6 helicopters, as well as Mi-2 light transport and utility helicopters.

Modernization of helicopters is directed first at increasing of their survivability in the battle field (including also reduction of their vulnerability against firing of portable air-defense missile systems), firing power increasing (for combat helicopters and combat support helicopters), as well as providing of effective round-the-clock and all-weather operation of rotary-wing aircraft.

“LSARP” Lviv state aircraft repair plant is the leading enterprise responsible for technical support of operation and repair of MiG-29 aircraft belonging to the Air Force of Ukraine. The plant is cooperating with 22 countries of the world. The plant is capable of repair and modernization of MiG-21, MiG-23/27 and MiG-29 fighters of all modifications (number of this type aircraft overhauled and modernized at the LSARP by now exceeds 100 units), as well as a number of other types of combat aircraft.

“MiGRemont” Zaporozhya state aircraft repair plant. Beside the basic task (modernization and repair of Su-27 front-line fighters and Su-25 attack airplanes), the plant carries out the medium repair by technical state of fighter interceptors, reconnaissance and reconnaissance-bombing aircraft of MiG-25 type (with possible revision of air frame elements, airborne systems and separate aggregates of the aircraft repaired). The plant provides also technical operation support and warranty service of the aviation technics repaired.

“NARP” Nikolaev aircraft repair plant is one of the largest in Ukraine enterprise on repair of aviation and naval technics. The plant is specialized in overhaul and medium repairs of various types of aircraft and engines, ship gas-turbine plants and constituent parts to it. At present time the NARP carries out the repair of aircraft, engines and its aggregates for the AF and NAVY aviation of Ukraine, as well as for other CIS countries and NAVY aviation of the Republic of India. Such form of technical services offered by the enterprise, as a restoration of damaged aviation technics (including battle damages) at the customer’s bases. Besides, the plant is also ready to establish the joint ventures with foreign partners for repair of aviation and naval technics.

“ODESAVIAREMSERVIS”. Odessa aircraft repair enterprise is one of the oldest aviation enterprise of Ukraine. At present time it is specialized mainly on overhauls and modernization of MiG-21 and MiG-23/27 fighters of all modifications, as well as on overhaul of aviation engines.

Sevastopol aircraft enterprise specializes in repair of helicopters (Ka-25, Ka-27, Ka-28 and Ka-32, as well as Mi-2, Mi-8/17 and Mi-14), including repair of airframe, aircraft armament, avionics, instrument and electric equipment, as well as operation checking means.

ChARP” Chuquev aircraft repair plant. At present time the “ChARP” carries out the repair and modification of L-39 trainer combat aircraft and MiG-23 frontline fighters of various modifications (including trainer combat variants) by installation of modern target designation and aiming systems, aircraft equipping with GPS system, new flight parameters registration system, etc. Besides, the repair of aggregates and systems of other type of aircraft is carried out also (including MiG-21, MiG-27, MiG-29 and Su-27/30).

During existence of this plant the aviation technics from many countries was repaired by it. Moreover, having at its disposal a modern training base and skilled trainer team, the enterprise carries out the training of foreign specialists in repair and operation both aircraft and aircraft engines. The enterprise carries out the works on development of «Strepet-L/S/VM» unmanned aerial vehicles of its own design.

At present time the “ChARP” is able to carry out the following:

- supply the customer with repair and operating documents in four languages (Russian, English, French and Spanish);
- provide the technical support of aircraft and engine within warranty period of their operation;
- fulfill the delivery of spare parts for aircraft and engines;
- manufacture the ground service means for all types of aircraft.
- render the consulting services in organization of aircraft repair at the operator’s production base.

Ukrainian aviation industry include enterprises for designing and producing missile systems: State Joint Stock Holding Company ARTEM, State Kyiv Design Bureau “Luch”, State Enterprise Research and Production Company “Progress”, State Enterprise “Krasilivsky Aggregate Plant”, State Enterprise Zhuliany Machine-Building Plant «Vizar», Konstantinovka State Scientific Industrial Enterprise “KVAR SIT”, Research & Development Company ADRON are necessary for re-equipment and modernization military aircraft.

D. Technological/research capabilities of Ukrainian organisations, laboratories, universities, scientists

The main technological organizations in Ukraine, which provide the services for aviation- and space industries, have different specializations:

JSC Ukrainian Research Institute of Aviation Technology (UkrRIAT) is the main organization of Ukraine in the field of material science and technology of aircraft production. The Institute unites specialists of the highest qualification in different branches of production, who are the most prepared experts to resolve the question of production cooperation organization and realization of the investment project in the aircraft construction and machine-building industry. Resolving the problems of bringing to correspondence European and Ukrainian standards and nor in the sphere of aviation technologies, systems and equipment, the Institute renders consultations in the field of application of devices, sophisticate technological equipment and other product of foreign enterprises be Ukrainian manufacturers of aviation products.

YUZHGIPRONIIAVIAPROM Southern State Design and research Institute Of Aviation Industry – is developer of complex projects on creation of new

capacities, reconstruction and technical re-equipping of aviation hardware production (aircraft plants, airborne).

Public Joint Stock Company «Ukrainian research institute of manufacturing engineer» («UKRNIITM») is the head organization of Ukraine in the direction of complex providing of the manufacturing engineering, namely in the production of rocket-space technique and wares of the national – economic purposes of the Ukraine. Institute has a considerable potential in the elaboration of the unique technologies of engineering, especially in area of the equipment of units and details production from composite materials, galvanic coverings, non-destructive test, welding, machining, cleanness and hermiticity support.

State Dniprovsky Design Institute is is the head organization of Ukraine it is directed toward designing machine building and professional equipment building enterprises.

State Research and Engineering Center for Space Technique Certification is the head organization of Ukraine in the direction of space equipment certification.

Technological research institute of instrumentation provides technological maintenance of designing of space equipment, developing and manufacturing of the engineering, devices and materials for instrument making.

JSC Radmir Radio Measurement Scientific And Research Institute is the main enterprise for the Ukrainian on-ground automated spacecraft control complex. Institute is the head organization of Ukraine for development and production of control, data transfer systems for spacecraft.

Soyuz Scientific, Research and Design Institute is a specialised organisation for development and construction of special and departmental telecommunication and information control systems.

Fundamental scientific researches for the aviation and space-rocket industry are executed by the institutes of the National Academy of Sciences of Ukraine: Institute of Technical Mechanics under NAS and National Space Agency of Ukraine, G. S. Pisarenko Institute for Problems of Strength, Institute of Physics, V. Ye. Lashkaryov Institute of Semiconductor Physics, G. V. Kurdyumov Institute for Metal Physics, Ye. O. Paton Electric Welding Institute, I. M. Frantsevich Institute for Problems of Materials Sciences, V. N. Bakul Institute for Superhard Materials.

Experts for the aviation and space-rocket industry are educated at: The National Aviation University of Ukraine, National Technical University "Kyiv Polytechnic Institute", Dnipropetrovsk National University, National Aerospace University, "Kharkiv Aviation Institute".

E. Recent aerospace legislation

The Parliament of Ukraine recently passed a Law on Space making the industry top priority for this country. This means that the financing and guarantees for the relevant Government programs will be secured. In order to prepare for the EURO 2012 football tournament Ukraine needs to build its own communication satellite and a lot of resources will be allocated towards this project and well as modernisation of the ground satellite navigation infrastructure.

II. Ukraine's cooperation with other countries of the world

Aviation industry projects

Ukraine has concluded the intergovernmental cooperation agreements with Germany, France, Russia, China, Belarus, Poland, Vietnam, Turkey, Israel and many other countries. It ensures the state support for industrial cooperation in the field of high technologies.

The main projects of the aviation industry of Ukraine are the programs for manufacturing of the aircrafts: An-148, An-140, An-74, An-70, manufacturing resumption of An-124-100 («RUSLAN»), modernization of the operated fleet of "Antonov" cargo aircrafts.

Domestic market of Ukraine consumes from 5 to 10 % of a products output of the aviation enterprises; the other production volume is delivered to the foreign customers and partners. It advances necessity to form the readiness not only to sell the end products, to organize cooperative production, but also to establish the out-of-Ukraine aviation manufacturing (Russia: the Voronezh joint-stock aircraft constructing company (An-148), Samara aircraft plant "Aviakor" (An-140), Ulyanovsk aircraft plant "Aviastar" (An-124), Omsk aircraft plant (An-70), Iran: Aircraft company HESA (An-140), China: AVIC (Y-7, MA60 and MA600)), etc. Requirements of the customers stimulate preparing of the various modifications of the base aircraft versions.

Space industry projects

THE STRUCTURE OF SPACE INDUSTRY OF UKRAINE IS COMPOSED OF GOAL-ORIENTED SPACE PROGRAMS:

- Scientific space research
- Remote sensing of the Earth

- Satellite telecommunication systems
- Development of the ground-based infrastructure for navigation and special information system
- Space activities in the interests of national security and defence
- Space complexes
- Development of base elements and advanced space technologies
- Development of research, test and production base of the space sector

Integration in the EU is driving the strategic developments in the space sector in Ukraine. Basic aspects of cooperation with the EU include:

1. Development of joint projects aimed at restructuring of Ukrainian space industry in the context of cooperation in the field of high technology and industrial conversion;
2. Development of Global Navigation Satellite system;
3. Development of Cooperation in space science, life sciences and micro gravitation, earth exploration from space;
4. Exchange of information on Earth remote sensing in case of emergency;
5. Providing data on monitoring of space environment and seismic observations;
6. Data sharing received from space vehicles of Ukraine and those of other EU countries, and the exchange of data received from man-made satellites.

At present time the attention of “Yuzhnoe” SDB and “Yuzhnyi” machine-building plant, which is the Ukrainian national manufacturer of space rocket equipment, is concentrated on realization of the “Cyclon-4” project. Universal “Cyclon-4” booster rocket is also intended for operational high-precision putting of the space apparatus into low circular, sun synchronous and high elliptical (including transfer-to-geostationary) orbits. During the development of this project the main aim was posed: to develop the “export oriented” (for utilization from foreign cosmodromes) space rocket system (SRS) on the base of “Cyclon-3” BR, but with new “Ros-1” control system. Nevertheless in practice the upgrading of the system moves forward to a great extent. Now the “Cyclon-4” is not only most modern and perfect, but also most powerful BR in its family. The booster rocket obtained new RD-861Zh liquid-propellant rocket engine (LPRE) for III stage with possibility of multiple (up to 5 times) launch and increased thrust (7,796 kgf), more fuel quantity in tanks of III stage, nose fairing (useful load compartment) of new design. A number of other important improvements in design and onboard equipment of BR has been carried also.

One more branch of the “Cyclon” family may be considered with a good reason the “Dnepr” system. “Symbolically light” silo launching “Dnepr” BR is the result of conversion of heavy P-36M ICBM (SS-18 Satan, which is well-known as RS-20A

and 15A14). nose cone”) from the working orbit after separation of all space equipment.

Dnepr-1” BR has very high accuracy of putting of the payload into the scheduled orbit. By orbit altitude it is equal to ± 4.0 km (2.5 miles), by inclination ± 2.4 angl.min (0.04 deg) and by right ascension ± 3 angl.min (0.05 deg). Its flight reliability is also high and is equal to 97 % according to the statistics of launches of R-36M, R-36M UTTKh (RS-20B) and “Voevoda” R-36M2 (RS-20B) ICBM. As regards the “Dnepr” BR namely, 11 from 12 of its launches during 1999 – 2008 were carried out absolutely successfully. One more unique feature of this BR is possibility of “cluster” launching of satellites: up to 10 at the same time (not counting the micro-satellites attached not to the suspension points of space nose cone, but to the “mother’s” satellites. Adaptation of the carrier for simultaneous putting into orbit of 20 and even 36 AES is possible, if necessary.

At present time the “personal satellite record” (which at the same time is, obviously, also world record in this field) of “Dnepr” BR is 14 satellites per one launch (on April 17, 2007 it was successfully put into orbit such satellites as Egyptsat-1, Saudisat-3, five satellites of Saudicomosat family and seven research micro-satellites developed in different universities of the world. For the first time in history in June 2004 it was carried out the precision launching of group of satellites (DEMETER and some of mini-AES) into the solar-synchronous orbit with the “Dnepr” BR. This event has wide response among the users and operators of launch service market and permit to enlarge the circle of users interested in the BR. Three years later, on June 2007, it was the first launch of the “Dnepr” modification with elongated nose cone which was developed by the “Yuzhnoe” SDB and manufactured by the “Yuzhnyi” machine-building plant by the order of “Kosmotras” company for launching of large dimensions space apparatus (length more than 5 m and diameter up to 2.7 m): the German AES TerraSAR-X was successfully launched into the solar-synchronous orbit from the Baykonur cosmodrome. And last for the time being launch of “Dnepr” BR was carried out on October 1, 2008: on this day Ukrainian-Russian rocket was successfully put into orbit the Thailand THEOS Earth remote sensing satellite.

The Ukrainian space rocket family includes also “Zenith-2” middle class space BR, some versions of the “Zenith-3” (also middle class) used in frames of «Sea Launch» and «Land Launch» programs, and a number of projects of aerial BR starting.

Brazil is one of the major partners of Ukraine in the field of space recently. The developed international-legal base for realization of the joint project on development of the launch vehicle “Cyclone-4” at Alcantara Launching Center has been established. In 2004, realization of “Cyclone-4” program came into a practical phase. Realization of this large-scale project is a priority for the subsequent development of the space industry of Ukraine as it will allow

developing a launching center for Ukrainian launch-vehicle at the space port that has a favorable geographical position. The negotiations with Brazil concerning cooperation under the other joint projects, including development of the space system of the Earth remote sensing, modernization of Brazilian launch-vehicle VLS, implementation of scientific projects have begun.

Priority areas of cooperation with the Russian Federation include fulfillment of works under the joint projects of space-rocket systems development, conducting of scientific researches and experiments, and also works in the field of satellite navigation.

The Framework agreement in the exploration and peaceful use of outer space has been signed between the Government of Ukraine and the Government of the United States of America. The agreement has established legal basis for cooperation development between the both Ukrainian and American enterprises and the companies in the field of space.

Cooperation of Ukraine with China is carried out on the basis of the intergovernmental working agreement on the exploration and peaceful use of outer space, dated 04.12.1995 and the Plan of Ukrainian-Chinese cooperation for 2006-2010. The plan contains 29 long-term Ukrainian-Chinese projects on the joint development of space engineering, realization of scientific programs, in particular, creation of monitoring grouping of earthquakes and studying of the „space weather”, development of remote-sensing instruments of the Earth. In the past years the cooperation in the field of space with the Arabian Republic of Egypt, Republic of Korea, India, Turkey and other countries has quickened. In particular, there has been signed the Agreement between the Government of Ukraine and the Government of India on cooperation in the exploration and peaceful use of outer space. These frameworks foresee the joint projects implementation in development of the elements of space-rocket engineering.

Cooperation with Canada in the S&T area

Cooperation with Canada in the field of industrial production is limited due to the lack of cooperative history between Ukrainian and Canadian enterprises. Utilization of the different technical standards is not an obstacle in cooperation for Ukrainian enterprises. In the last 15 years they have acquired experience in fulfillment of the works and industrial orders under the technical projects of foreign customers.

At the same time, there is a basis for development of industrial cooperation in manufacturing of the aircrafts and engines as the share of Ukrainian enterprises in production of such products does not exceed 50%. It gives the chance to optimize a choice for control systems, constructional materials, communication networks, elements of avionics and to involve the Canadian companies in solving of such issues.

The possibility of the joint technical training, certification and advancement of "Antonov" aircrafts on the North - American market provides a special interest to Ukraine.

Ukraine possesses capabilities for elaboration of scientific principles for development of new technologies in the field of new materials, optoelectronics, processing of materials, energy transformation, and use of electromagnetic fields. It is reasonable to restore the closed cycle of development and practical use of intellectual production in the industry. Such projects can be the most effective in the field of aviation and space industry.

The Ukrainian coordinator for such projects in the aviation industry can be JSC Ukrainian Research Institute of Aviation Technologies.

Ukrkosmos was established in 1996 for implementation of integrated technical policy in satellite technologies, creation of and operation by Integrated Satellite System for Information Transfer (YSSPI), and acting as a customer and co-ordinator of related works. The job of high priority for Ukrkosmos is providing with appropriate YSSPI resources for the needs of special and governmental communication systems. Ukrkosmos State Enterprise is a Ukrainian participant for the Exploitation Agreements of INTELSAT and INMARSAT international organizations.

Science & Technology Centre of Ukraine (STCU). Through its primary mission of non-proliferation of WMD (weapons of mass destruction) expertise, the STCU has compiled a treasure trove of experience and knowledge about many highly talented scientists and their technologies in Azerbaijan, Georgia, Moldova, Ukraine, and Uzbekistan. The Centre is ideally positioned to match this unexploited supply of scientific and technical expertise to meet your commercial or non-commercial needs. The STCU, itself, is a well-established, multilateral organization with over 12 years of operational experience that can help steer you through the uncertainties of the business and investment environments in these emerging economies. The STCU has:

- Legal status, diplomatic accreditation, tax and custom exceptions for financed projects and activities, all guaranteed under the intergovernmental agreement establishing the STCU;
- Proven experience in project management; in over 1175 research projects totaling approximately \$168 million USD
- Over 180 private sector and governmental agencies which have joined the STCU's Partnership program to finance their own, tailored S&T projects (totaling more than \$59 million USD) through the STCU

The STCU's staff of professionals is experienced in working with industry and business representatives, including protecting their business-sensitive

information and interests. In this way, the STCU can serve as a trustworthy and cost effective bridge to the yet-to-be tapped opportunities for contract research and technology development in Azerbaijan, Georgia, Moldova, Ukraine, and Uzbekistan.

III. Major Opportunities for Canadian Companies

The major opportunities for Canadian companies lie in the following areas:

- ✓ production expertise outsourcing
- ✓ joint production of components for aircraft industry
- ✓ joint space projects
- ✓ remote sensing and earth observation
- ✓ space materials science
- ✓ satellite systems
- ✓ export of avionics, simulators and aircraft systems
- ✓ composite materials

Import regulations of the aviation and space industry, certification, standards

The functioning of export control system of Ukraine is based on the national legislation of Ukraine and also on international agreement and arrangements in the sphere of non-proliferation of the weapons of mass destruction and conventional arms.

Ukraine is member of such international regimes of export control as Wassenaar Arrangement (control over international transfers of conventional arms and dual-use goods and technologies). Nuclear Suppliers Group, Missile Technology Control Regime. Besides, Ukraine adheres to the requirements and principles of Australia Group.

The realization of international transfers of goods, technologies and services subject to export control, is authorized under condition of reception by the subject of foreign trade activities the power to realize export and import of the military goods and permission for export, import and transit of the goods subject to export control. This subject of foreign trade activities shall give the information on end-use of the exported goods, technologies or services (International Import Certificate, End-user Certificate), in which the importer undertakes to use the received goods, service or technology only for the stated destination/In specific cases is carried out a pre-licensing inspection (that is before issuing permission) check and an inspection of delivery, and also an inspection of use of the goods, technologies or services imported from Ukraine for stated purposes.

Acting national and branch standards in the aviation and space industry of Ukraine are harmonized with the relevant standards of the Russian Federation. The new Ukrainian aircrafts have to obtain the Type Certificate of Aviation register of the CIS Intergovernmental aviation committee confirming the total conformity of the aircraft with the demands of AP-25 Air regulations (which is harmonized with CS-25 European standards).

Aviation Committee Aviation Register (IAC AR) is responsible for certification for granting authorization to develop civil aviation aircraft to Ukrainian aircraft enterprises.

Ministry for Industrial Policy Certification is responsible for certification for aviation and military production to enterprises in Ukraine. State Aviation Administration of Ukraine is responsible for certification for aircrafts to flight using in Ukraine.

National Space Agency of Ukraine is responsible for certification for granting authorization to develop spacecraft and spacecraft production in Ukraine.

V. Major sectoral trade promotion events

Canada-Ukraine Aerospace and Aviation Summit, September 29-30, 2009 “Exploring New Technology, Trade and Investment Opportunities”

A major trade promotion initiative organised by the Embassy of Canada in close collaboration with the Science and Technology Centre of Ukraine (STCU www.stcu.int) and key Ukrainian state organisations such as the National Space Agency of Ukraine, National Aviation University of Ukraine, several sectoral Ministries.

This 2-day event will consist of a plenary and sectoral sessions focussing on:

1. Aerospace
2. Maintenance, Repair and Overhaul
3. Aerodynamics
4. Composites and Advanced Materials
5. Outsourcing, Commercialization and Cooperation

Registration is open and sponsor packages still available. Interested Canadian firms are welcome to contact the Commercial Section of the Embassy of Canada in Ukraine, Yury Mardak, Trade Commissioner at yury.mardak@international.gc.ca.

NB! Preliminary Program is attached at the end of this Overview.

International Aerospace Salon "AviaSvit-XXI", Kyiv 2010
(<http://www.aviasvit.com.ua/en/about.php>)

- Exposition of modern aviation and space machinery, units and components, airport equipment and services, technological processes, equipment and materials for machine-building;
- Practical scientific conferences and seminars on vital aviation and space topics, science-absorbing machine-building issues, business meetings and round tables with participation of executives and representatives of state and commercial organizations, scientific institutions from Ukraine and abroad;
- Demonstration flights of aircraft, press conferences for journalists, presentations of exhibiting companies, show programmes;
- Expositions of enterprises, aviation show with demonstration flights of airplanes, gliders and other aircraft, press conferences and companies' presentations, excursions, business and cultural programmes. Modern samples of machinery and technology, retro aircraft and functioning models of airplanes;
- Scientific and technical symposiums and conferences, seminars and creative discussions, where tendencies and development trends of aviation and aeronautics in the XXI century are defined;
- The most trustworthy information at first hand about Ukrainian manufacturers and products for foreign partners.

USEFUL INDUSTRY WEB SITES:

www.stcu.int – Science & Technology Centre of Ukraine

www.nkau.gov.ua – National Space Agency of Ukraine

www.antonov.com – Antonov STCU

www.nau.edu.ua/en - National Aviation University of Ukraine

www.mintrans.gov.ua – Ministry of Transport of Ukraine

www.industry.kmu.gov.ua – Ministry of Industrial Policy of Ukraine

www.avia.gov.ua – State Aviation Administration of Ukraine

www.space.com.ua – Ukrainian aerospace portal

www.asavia.org (Russian language) – Association of Civil Aviation Industry Support

www.yuzhnoye.com – Design Bureau “Yuzhnoye”

www.kavr.com.ua – Konotop Aviation Repair Plant “Aviakon” of Concern AviaVoenRemont

CONTACT INFORMATION:

Yury Mardak
 Trade Commissioner
 Commercial Section
 Canadian Embassy in Ukraine
 31 Yaroslaviv Val St.

Kyiv 01901, Ukraine
yury.mardak@international.gc.ca
www.tradecommissioner.gc.ca/ua

ADDENDUM

Science & Technology Centre of Ukraine (STCU)

Landis Henry
Deputy Executive Director (Canada)
Kamenyariv St. 21
Kyiv, 03138 Ukraine
Tel: +380 44 490 7150
Fax: +380 44 490 7145
landis.henry@stcu.int
www.stcu.int

National Space Agency of Ukraine

Olexandr Zinchenko
General Director
8 Moskovska St.
01010 Kyiv, Ukraine
Tel: +38 044 281-6200
Fax: +38 044 281-6209
zinchenko@nkau.gov.ua
www.nkau.gov.ua

Antonov Aeronautical Scientific/Technical Complex

Dmytro Kiva
General Designer
1, Tupolev st.,
03062, Kyiv, Ukraine
Tel.: (+380 44) 454 31 49
Fax: (+380 44) 400 81 44
info@antonov.com
www.antonov.com

AVIANT Kyiv Aviation Plant

Valery Kozorezov
General Director
100/1 Peremohy Av.,
03062, Kyiv, Ukraine
Tel.: +380 44 454 52 01
Fax.: +380 44 442 62 13
info@aviant.ua

www.aviant.ua

Motor Sich Joint Stock Company

Vyacheslav Boguslayev
Chairman of the Board of Directors
15, 8th of March St.,
Zaporizhya, 69068, Ukraine
Tel: +38(061) 720-47-77
Fax: +38 (061) 720-50-00
motor@motor.comint.net
www.motorsich.com

**Production Amalgamation "Yuzhniy Machine-Building Plant" (Ukr.
"PivdenMash")**

Victor Shchegol
General Director
1, Krivorozliska St., Dnipropetrovsk,
49008, Ukraine
Tel.: 380 (44) 469-3519
Fax.: 380 (562) 343904
www.yuzhmash.com

State Design Bureau "Yuzhnoye" (in the Ukrainian language: "Pivdenne")

Stanislav Nikolayevich Konyukhov
General Director
3, Krivorozhska St., Dnipropetrovsk,
49008, Ukraine
Tel.: 380 (562) 420-022
Fax.: 380 (56) 770-0125
info@yuzhnoye.com
www.yuzhnoye.com

Kharkiv State Aircraft Manufacturing Enterprise

Anatoly Mialitsa
General Director
134, Sumska Str,
Kharkiv, 61023, Ukraine
Tel.: +38 (057) 700-34-39
Fax: +38 (057) 707-08-34
Info@ksamc.com
www.ksamc.com

"FED" Joint Stock Company

Aleksandr Andreyevich Zhdanov
President
132 Sumskaya Str.

Kharkiv, 61023, Ukraine
Tel.: 38 (0572) 40-22-01
Fax.: 38 (0572) 43-51-90
root@fed.tikom.net
www.fed.kharkov.ua

One of the leading firms of aircraft unit manufacturers in the CIS countries. The enterprise specialises in design, manufacture, service maintenance and repair of units for aerospace and machine-building application. It is the supplier of units for all CIS aircraft-building and aircraft overhaul companies. Has more than 50 years of experience in manufacturing of fuel-regulating equipment and hydrolic units. Currently, "FED" co-operates and delivers its products to 56 countries of the world and is able to produce fuel- and hydro-regulating equipment for all flying objects as well as for other branches of the machine-building industry.

Ukrainian Aviation Research Institute

Grigory Kryvov
Chairman of the Board
Tel.: 380 (44) 417-5046
Fax.: 380 (44) 417-3048

Develops technological projects for the plants, develops systems of production organisations and quality assurance, instructs personnel, organises special training, consultations and seminars etc.

Konotop Aircraft Repair Plant "Aviacon" (Concern AviaVoenRemont)

Oleg Yenin
Director
Tel: (+38 044) 502 6223
Fax.: (+38 044) 502 6201
27/6 Sholudenko St.
04116 Kyiv, Ukraine
www.kavr.com.ua

Research Institute "Kvant"

5 Dimitrov St.,
Kyiv, 03150, Ukraine
Tel.: 380 (44) 227-4056
Fax: 380 (44) 227-3257, 220-9351

Producer of special optical electronic jamming complex protecting military and civil objects against high accuracy weapons (missiles, shells and aviation bombs fitted with optical electronic (TV, thermal vision and semi-active) homing heads.

State Corporation "Vektor"

Leonid Zvorykin
General Director
19-21 Frunze St.
04080 Kyiv, Ukraine

Tel: +38 044 462-5367
Fax: +38 044 462-5364
vektor@dgtel.com.ua

Main organiser of the International Aviation Show Avia-Svit in Kyiv, Ukraine.

June 12 version

DRAFT WORKING PROGRAM

Canada-Ukraine Aerospace and Aviation Business Summit

**“Exploring New Technology, Trade and Investment
Opportunities”**

**September 29-30, 2009,
Kyiv, Ukraine**

[Program for Canadian participants]

Principal Organizers

Canadian Embassy – Kyiv, Ukraine
Science and Technology Centre in Ukraine

Funding Co-Sponsors

Export Development Canada (tbc)
MDA Space Communications

Partners

Aerospace Industries Association of Canada
National Space Agency of Ukraine
Canadian Space Agency
National Aviation University of Ukraine
National Research Council of Canada
Ministry of Transport of Ukraine,
Ministry of Economy of Ukraine
Canada Eurasia Russia Business Association
Canada Ukraine Chamber of Commerce
European Bank for Reconstruction and Development (tbc)
State Agency Vector

Accommodation Partners

Radisson SAS hotel

Sunday - Monday, September 28-29, 2009:

Arrival of Canadian companies' representatives in Kyiv. Embassy rate available at SAS Radisson Hotel on Yaroslaviv Val, two blocks from Embassy.

Monday September 29th

19:00 - 21:00 Welcoming reception and briefing for Canadian companies at the official residence of the Canadian Ambassador to Ukraine, G. Daniel Caron, Mykilsko-Botanichna St.

Tuesday, September 29, 2009:

Location: National Aviation University, Borshchanivtka St., Kyiv

08:00 Bus departs from Radisson hotel to the event venue

08:30 – 09:00 **Registration**

Opening Plenary Session [simultaneous translation (st)]

09:00 – 09:05 Chairman's Welcoming Remarks/review of program,
Michael Reshitnyk, Foreign Affairs and International Trade Canada

09:05 – 09:20 **Welcoming Remarks**

Canadian Ambassador to Ukraine, Mr. G. Daniel Caron
Ukrainian Ambassador to Canada, Mr. Ihor Ostash
Representative, National Aviation University

09:20 –10:20**Prespectives of Co-sponsors and Partners**

Representative, STCU
Export Development Canada (TBC)
National Research Council of Canada (tbc)
Representative, Ukrainian Ministry of Transport
Representative, Ukrainian Ministry of Economy

10:20 – 12:10 Ukrainian and Canadian Business Outlook (st)
Aerospace Industries Association of Canada (TBC)
Ukrainian representative (TBC)
Representative, National Space Agency of Ukraine
Representative, Canadian Space Agency (tbc)

[Buffer time included in above for additional speakers]]

12:10 – 12:30 Press Conference and opening of Business Information Display (companies are invited to display their brochure/materials/posters on tables and stands)

12:30 - 14:00 Lunch

14:00 – 17:00 Concurrent Workshop Sessions: (st)