

## South America's Orbital Tourism

[Soyuz Launches from Kourou, Zenit Launches from Alcantara]

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Tourists visit South America for many reasons. For exciting Carnival, they go to Rio. For breathtaking ruins, they visit Macchu Pichu. For exotic eco-tours of jungles with amazing flora and fauna, they visit the Amazon basin.

Within a few years, South American bound tourists may have an entirely new goal: they may be aiming to fly into outer space and visit orbital hotels or other destinations. They may board rockets that combine Rio's excitement, Peru's breathtaking vistas, and the Amazon's exotic environment into one literally out-of-this-world package – an orbital space expedition.

Visions of future “orbital tourism” remain mired in the practical question of just how these commercial space travelers will actual GET into orbit – a much, much harder goal than “merely” zooming 80 miles straight up (and back down) on the kinds of tourist vehicles now being developed. Those missions, exciting as they will be, can be made from small airfields and nearby airspace practically anywhere in the world.

But getting into orbit needs about a hundred times as much rocket power, and is about a hundred times as expensive. The spaceship needs to soar into space and pick up a horizontal speed of about 18,000 miles per hour. Once that has been achieved, it literally “falls over the horizon” as the round Earth's surface recedes at the same rate as the spacecraft's path is pulled downwards – and the spacecraft is in orbit that can last for days, weeks, even years.

Recent developments in the expanding commercial space market have opened an entire new ‘front’ in the campaign to open more widely orbital space access. Where in the past, all human orbital missions came from either Cape Canaveral or from the ‘Baykonur cosmodrome’ in Central Asia (and a pair of flights from the Chinese spaceport at Jiuquan), several spaceports in South America are expanding their facilities with human transport ultimately in mind.

Already, two space ports have been built and one of them has been launching unmanned satellites for many years. In French Guyana, the ‘Kourou’ base (not far from the infamous Devil's Island prison) has hosted commercial space cargos aboard ‘Ariane’ rockets developed by European space organizations. In Brazil, the ‘Alcantara’ base has been the scene of several rocket failures, including a tragic pad accident that killed dozens of workers in 2002.

The key to bringing human orbital flight to these two locations is a series of commercial deals with Russian and Ukrainian rocket manufacturers, by which launch pads for their upgraded rockets will be built, first to earn money from commercial customers with

scientific, communications, or other pay-as-you-launch payloads, but ultimately to allow improved Russian human space vehicles to blast off. And with the infrastructure for human spaceflight in place, other commercially-developed human orbital vehicles might choose one of these bases as their own “home spaceports” in the next decade.

The value to “space tourism” is that facilities and vehicles built and paid for based on non-tourism commercial activities will become available, as an add-on activity, to support a wider, easier, and above all cheaper route into orbital space for private travelers. It won’t become available immediately – we’re talking probably in the next decade – but by the time hundreds (perhaps a lot more) of “space tourists” have made their “up-down” short space hops (and many of them, more than once) and are looking around for the next thrill, the next destination, the next challenge, by then the South American spaceports will be ready.

Actually, human orbital space missions from Kourou were once on the official agenda of the European Space Agency. In the 1980’s, France led a project to build a human winged spaceplane named “Hermes” (pronounced like the famous scarves). It was supposed to be a two-person spaceship launched aboard an expendable Ariane rocket, to visit space stations or perform space experiments and repairs. And all these missions were supposed to be cheaper and easier than with NASA’s space shuttle.

But ultimately, as the Europeans tried to actually fabricate the hardware to build a real spaceship, they found they couldn’t make it work. A reusable system was too bulky, and later designs included a throw-away section containing most of the crew’s equipment. Hermes grew too heavy for the intended launch vehicle, and its payload capabilities shrank to basically two pilots with attaché cases in their laps. In the end, sanity – and logical financial analysis – prevailed, and the project was cancelled. French and other European astronauts flew into space and to the International Space Station, but only as passengers on Russian rockets or the US space shuttle.

Hermes, however, did leave a legacy of studies concerning human launchings from Kourou. At the top of the problem list was what to do during a launch abort, when a rocket failure forced the spaceship to either ditch at sea, or try to turn around and limp back to Kourou (as the space shuttle can do, theoretically, from Cape Canaveral).

The expense of deploying a string of recovery ships from one side of the Atlantic to the other was prohibitive, but if the downed spaceship (or its crew) could hold out on the water for a day or two, there was plenty of commercial ocean traffic that could reach them and pluck them to safety. More troublesome – and amusing – was the problem faced by a Hermes spaceplane trying to glide back to Kourou and land at the base’s long runway. Much of the year it would be covered with swarming, mating frogs, which would be reduced by the spaceplane’s landing gear to a sheet of green lubricant that would have led to the craft swerving off or overshooting the pavement.

None of this mattered to the Russians when, about eight years ago, they first suggested to the French government that they together should build a new launch pad at Kourou for a tried-and-true Russian rocket – so that they both could make money of it. The rocket was

called the 'Soyuz', which is the same name as the three-seater human spacecraft that now regularly carries people back and forth to the space station. The Russians also explored building launch pads in northern Australia or on a Pacific Island, before settling on the South American deal.

Russia disclosed plans – eventually accomplished last year – to upgrade the rocket, making it more powerful while becoming easier to operate both from the two spaceports used by Russia (Baykonur, and a military base north of Moscow called 'Plesetsk') and from anywhere else a launch pad could be built. Since the Russians were having to deal with an independent country, Kazakhstan, where Baykonur was now located, and since the Plesetsk base was too far north for some important space missions, they had been looking for a new launch site closer to the equator. The Europeans, meanwhile, had been looking for a launch vehicle of "medium class" (about six to eight tons of payloads into orbit) for their own commercial space operations. It was a marriage made, or at least honeymooned, in heaven.

But it was justified on Earth – or in particular, by Earth's spin. Launch sites near the equator have two significant advantages for launching satellites into the "cash orbit" used by most paying customers – the 24-hour "synchronous" path that allows a payload to appear to dwell in the sky, not moving at all. It actually is moving, but if it is far enough from Earth – about 24,000 miles – it circles the planet at the same rate as the Earth spins, this creating the very profitable illusion of a stationary observation or radio relay point.

But to do this perfectly, it also must be circling earth directly over the equator. If the rocket has blasted off from somewhere far from the equator – say, in northern Russia – its path crosses the equator at a steep angle. The carrier rocket must then "turn the corner" by expending expensive rocket fuel. But if the rocket took off FROM a spot near the equator, there is no corner to be turned, the cost of this maneuver drops close to zero.

In addition, Earth's eastward spin – about a thousand miles per hour – gives a bonus boost to any rocket heading due east, as required for this "cash orbit". This means that the same rocket that could deliver a standard payload from Russia could deliver a much bigger one (more than twice as heavy) from a point near the equator. It's the reason that France built the Kourou base where it did, in the first place, and why Russia later wanted to move in, so as to cash in.

The project was formalized by an intergovernmental agreement between Russia and France, signed in November 2003. It was estimated that the total up-front cost would amount to 344 million euros, and the Russians were so eager for the deal, they even put in some of their own money – about 130 million euros. And they came up with the money.

As construction now moves into high gear, up to 200 Russian specialists are working at Kourou. Vladimir Klimov, the "first deputy general director" of the Barmin General Machine-Building Design Bureau that has built all Russian missile launch pads for the last fifty years, told newsmen that the pad facilities would be designed to be operated by a launch team of 98 people who would fly in from Russia for the 'launch campaign' lasting

a month or two – and that a skeleton staff of 15 specialists would be permanently in residence between launch campaigns.

Currently, the Russian ‘Soyuz’ booster is fabricated in five long cylinders (and several shorter ones) that are transported by rail from the plant in Samara (on the Volga River) to the launch sites (either Baykonur or Plesetsk). For Kourou, the booster segments will be loaded on what the Russians call a special "river-sea" ship, on which they can navigate the Volga and the extensive canal system in southern Russia until they reach the Black Sea, and then head of South America. Reportedly, the first of these ships is already under construction at a Chinese dockyard. But another Russian expert said that a French transport would be leased for a 12-day voyage from St. Petersburg (where the booster would arrive by train) to Kourou. Possibly, both routes could be used, especially if launch rates increase.

Along with the standard booster upgrades recently introduced, use of the Kourou base will demand additional modifications to the booster. "French Guiana has specific weather conditions," a Russian official told newsmen in 2003. "It is hot and humid there, in addition to seasons of rains -- that is why the rockets need to be modified."

What about human passengers? Alexander Medvedchikov, Deputy Director of the Russian space agency, told a Moscow press briefing in May 2005 that while it would be "premature" to speak of human space flights from Kourou now, he did not reject such an opportunity in future. "We should test it all and do all calculations," he said. Other Russian officials concurred – human flight was not the primary intent of the project, but designers had been told not to forestall the possibility of adding that capability in the future.

The first Soyuz launch from Kourou is now planned for the end of 2008. Viktor Remishevsky, the deputy head of Russia’s space agency, said earlier that "there are already four orders for blast-offs of Soyuz carriers from Kourou" – and more are being negotiated. All of them – so far – are unmanned missions.

In this context, Russian news reports in January 2007 take on wide significance. On January 18<sup>th</sup>, a TASS News Agency dispatch from Russia’s Baykonur space center began with an eye-opening announcement: "Talks are in progress to make a Russian-European manned spacecraft on the basis of an updated Soyuz spaceship to be launched from the Kourou cosmodrome in French Guiana," according to Nikolai Sevastyanov, the president and general designer of the ‘Energia Space Corporation’ – the Russian corporation that builds all Russian human space vehicles. "The European Space Agency has taken a decision on this project and already appropriated 20 million euros this year for preliminary preparation of the project," he added.

Sevastianov noted that ESA had already decided to use upgraded Soyuz launch vehicles for launching spacecraft from Kourou. "Thus, it would be advisable to maintain the same launch architecture for orbiting European [human] spacecraft from Kourou," he said.

The bottom line is that within two years the Russians will attain the capability of launching Soyuz boosters – and any of its standard payloads, including a human spacecraft – from Kourou. For the right price, future human missions could visit the current space station, or any other orbiting facility that may be built in orbit in coming years, in practically any orbit around Earth. Because these would be “add-on” missions, their “marginal cost” would be much lower than for any system built from scratch to put tourists into orbit.

Another angle that could drive the price down even further is good old-fashioned competition. Ukraine has been building a space booster of its own – called the “Zenith” – and it is even more powerful than the “Soyuz”. Allied with Western space corporations, Ukraine has been launching “Zenith” rockets with commercial communications satellites from a point on the equator for almost ten years.

The “point” is actually a ship, based in California, that sails southward with the rocket and payload and fires it once it gets in position. Called “Sea Launch”, it’s a neat idea, but is only marginally profitable.

So Ukraine has now reached an agreement with Brazil to build a launch pad for “Zenith” rockets at the Alcantara base, and has been shipping structural elements for the pad to Brazil. Meanwhile, “Sea Launch” is considering the option of sailing its ocean-going platform into the Atlantic and anchoring it off Alcantara – a ready-made floating launch site – to operate permanently from there. It would make reloading with new missiles a lot easier, and might make the commercial operation more profitable.

Either way, the “Zenith” booster – which was designed in the 1980s to carry small Soviet spaceplanes with cosmonauts – will soon also become available for commercial launchings from South America. The next step, for “Zenith” as well as for “Soyuz”, is upgrading to human flights.

At that point – perhaps within four or five years – a whole new highway to the high frontier will open, from an unexpected direction. And public access to orbit, at a relentlessly diminishing ticket price, will become more and more attainable.

Russia Beginning To Build Launch Complex in French Guiana  
CEP20031225000074 Moscow ITAR-TASS in English 1135 GMT 25 Dec 03  
By Yelena Rubtsova, Vladimir Golovchansky

MOSCOW, December 25 (Itar-Tass) - Russia is beginning to build the first launch complex for "Soyuz" rockets outside the Commonwealth of Independent States (CIS). It is sited in French Guyana. Implementation of the joint project with the European Space Agency (ESA) to launch Russian "Soyuz" rockets from the Kourou equatorial cosmodrome is to begin already next February.

Head of the ESA Office in Russian Alain Fournier-Sicre told Itar-Tass that "the ESA Council will determine by February 4 the concrete amount of investments by each country taking part in the project". In his opinion, the final sum of financing will top 314 million euros, which the ministers of the ESA countries had endorsed last May.

After the conclusion of a contract between Rosaviakosmos and the French Ariene Space Consortium, about 120 million euros will be remitted to the Russian enterprises, taking part in the construction of the launch complex, in the production and modernisation of "Soyuz" rockets. "The contract will be concluded as a follow-up of the Russo-French intergovernmental agreement, which was signed in Paris last November and laid the legal foundation for launchings of 'Soyuz' rockets from the Kourou cosmodrome," Rosaviakosmos officials recalled.

The first "Soyuz" launch is planned for December 2006. In expert opinion, Russian industry may get by 2015 more than one billion euros from the implementation of the project. First Deputy Constructor-General of the Barmin General Engineering Design Bureau Vladimir Klimov told Itar-Tass: "According to the concluded agreement, the Russian side is to deliver technological equipment for the launch complex and is responsible for its assembly and operation".

It is also the responsibility of the Russian side to set up an assembly shop, where equipment and boosters of "Soyuz" rockets, as well as the entire launch complex will be adapted to the local climate conditions and to the safety requirements of the tropical cosmodrome. For instance, the launching and board equipment of the control systems will be touched-up to meet the Kourou conditions. The flight tests of the new rocket control

system is to begin at Plesetsk and Baikonur cosmodromes at the end of 2004.

The Russian equipment and carrier-rockets will be delivered on French ships of the "River-Sea" type. "The first ship with equipment for the launch complex is expected to sail from St. Petersburg in September 2005. The trip will take twelve days," Klimov stated. New systems, which take into account the many-years-long experience of the Baikonur cosmodrome, will be used during the construction of the launch complex on the equator. About two hundred Russian specialists will work on the project in French Guyana at the initial stage.

"The agreement to launch 'Soyuz' rockets from the equator, allowing to increase the orbited payload from 1.5 to four tons, opens up a new commercial niche for those rockets," Rosaviakosmos officials explained. So far, mainly low-orbit launches were made by means of "Soyuz" rockets, whereas high-orbit launches are now predominant on the commercial market. It will be possible to launch from the Kourou cosmodrome to high-altitude orbits different-purpose space vehicles by means of Russian boosters.

Russia: Extra Cost of Soyuz Launch From Kourou Justified by Quality of Facility  
CEP20040205000348 Moscow ITAR-TASS in Russian 0003 GMT 05 Feb 04

Paris, 5 February: The first launch of a Russian Soyuz rocket from Kourou "will be a development flight" necessary "for the attestation of the launch complex", the director-general of Starsem, Viktor Nikolayev, said in an exclusive interview with an ITAR-TASS correspondent in Paris today. Starsem is the enterprise in charge of coordination and cooperation between the Russian and French sides on the "Soyuz-Kourou" project.

"An attractive price is being offered to the [prospective] client because such launches involve [the customer in] extra costs for insurance." So far Starsem has not named a country or company which might conclude a contract for the Soyuz's "pioneering" flight from Kourou.

The Russian rocket is capable of placing a 3-tonne payload into geo-transitional orbits from the new launch site," the specialist noted. "On average, this represents two substantial spacecraft. However, we have not yet studied the possibility of a double payload but in principle this is possible," Nikolayev added.

He said the cost of commercial launches from Kourou would be higher than from Baykonur since the use of Kourou "involves European organizations and there is the cost of transportation".

"But this is infrastructure which the clients know well and Kourou has some of the best infrastructure in the world," the head of Starsem stressed. "The quality of the services provided there is high and that is quite important. The price reflects the quality and it is reasonable," Viktor Nikolayev concluded. "But the competition with other countries will be quite tough," he added.

The first launch of the modernized Russian Soyuz rocket from Kourou is planned for 2006.

Russia , ESA To Launch Soyuz Rockets From Kourou Pad in French Guiana  
CEP20040205000063 Moscow RenTV in Russian 0630 GMT 05 Feb 04

Russia will have another launch site. The council of European Space Agency member states is starting a new project: the launch of Russian Soyuz carrier rockets from the Kourou space site in French Guiana.

It means that Russia might give up Baykonur [launching site in Kazakhstan], the Russian newspaper Gazeta has said. Its exploitation costs Russia \$115 million annually. Also, as little as 1.5 t of cargo can be brought to the orbit from Baykonur. Kourou's closeness to the equator makes it possible to increase the load to 4 t.

According to estimates, Russia will save at least \$200 million using Kourou for commercial purposes.

Three hundred and fourteen million euros are to be allocated for the construction of the site. France is to bear half of the costs and Germany, Switzerland and other countries will pay the rest. The first launch is scheduled for 2006.

Russia Not Planning To Launch Manned Spacecraft From Kourou  
CEP20040217000066 Moscow ITAR-TASS in English 1026 GMT 17 Feb 04

MOSCOW, February 17 (Itar-Tass) - Russia so far does not plan launching a manned craft from the Kourou space centre in South America, the director general of the Russian Aerospace Agency, Yuri Koptev, said.

He told at a news conference on Tuesday that "such theme is not in our plans because of high costs of reequipping the pad for all necessary requirements, first of all ensuring safety of a crew in contingencies".

Russia will launch a modified Soyuz rocket from Kourou by the end of 2006, Koptev said.

The Soyuz-2 booster rocket has been adapted to tropical conditions of the Kourou space centre in French Guiana.

However, there will be one or two launches of the new rocket from Russia's northern cosmodrome Plesetsk before it blasts off from Kourou, Koptev said.

He added that the Soyuz-Kourou project would not affect the programme of launches from the Baikonur cosmodrome and expand Russia's presence at the international market.



The launches from the Kourou space centre, which is close to the equator with its catapult effect, will allow sending in orbit payloads of 3 to 3.2 tonnes, as against 1-1.5 tonnes that can be delivered in space from Baikonur and Plesetsk, Koptev said.

The first launch from Plesetsk is scheduled for the end of this year. Intensive work is going on at the cosmodrome to prepare a launch pad for Soyuz-2, the first deputy designer-general of the Design Office of General Machine-Building, Vladimir Klimov, told Itar-Tass.

Specialists of the Science and Production Association of Automation have completed the testing of the

Work Begins on Launch Site for Russian Rockets in French Guiana

CEP20040205000278 Moscow ITAR-TASS in Russian 1310 GMT 05 Feb 04

Paris, 5 February: The "Russian launch site" for Soyuz carrier rockets at Kourou [French Guiana], construction of which is due to begin in the coming months, will occupy an area of around 2 km together with infrastructure. "They have already begun to clear the jungle, and full-scale work will begin shortly," Starsem General Director Viktor Nikolayev told ITAR-TASS. The Starsem consortium is providing liaison between the Russian and French sides in the Soyuz-Kourou project.

The Soyuz launch site will be designed jointly, he said. The French side will be represented by the CNES space agency, the Arianspace commercial launch services company and Starsem, and the Russian side - by the state rocket and space construction centre TsCKB Progress (Samara), the general machine-building construction bureau and the Lavochkin scientific production association (Khimki).

"As an intermediary stage on the way to Soyuz-2, the first launch of a Soyuz with new control and telemetric systems, redesigned engines for the first and second stages, will take place at the end of this year from Plesetsk, but without a large fairing," Nikolaev said. "Then we will launch a European meteorological device from Baykonur with a large fairing."

"A test launch from Baykonur will take place when the new engine for the third modernized stage of the Soyuz is ready," Nikolayev said.

The Russian-French Starsem enterprise was created in July 1996 for the commercial use of Russian Soyuz carrier rockets.

On the evening of 4 February, the council of the European Space Agency gave the go-ahead for financing the Soyuz-Kourou project. The total cost will be 314m euros, and 83 per cent of that sum has already been confirmed. According to ESA rules, the practical implementation of a project may begin if the member countries have accepted 80 percent of its budget.

rocket's onboard control systems, the association's deputy director general Lev Belsky told Itar-Tass.

The systems will be sent to Progress plant of the city of Samara by the middle of this year.

The assembled rocket will be transported to Plesetsk by the end of the year for the flight test, Belsky said.

A feature of this test will be that Soyuz-2 will deliver a payload in orbit during its first flight.

#### Russian Experts Leave for Kourou Space Center

CEP20040220000067 Moscow Interfax in English 0948 GMT 20 Feb 04

MOSCOW. Feb 20 (Interfax) - A group of Russian experts on Friday left for the Kourou space center in French Guiana to discuss matters related to the project for launching Soyuz rockets from the island.

"The main task is to consider the deployment of the Soyuz-ST infrastructure on Kourou. Russian specialists will remain at the space center until February 28," a spokesman for the Russian Aerospace Agency told Interfax.

Earlier, Deputy Director of the Federal Space Center Yevgeny Chyorny, who also left for Kourou, said that experts would visit the future Soyuz launch site, work out the succession of comprehensive tests of the launch vehicle and a timetable for launch operations. He expected the group to see the mounting of an Ariane launch vehicle and its launch.

On February 5 in Paris, the council of European Space Agency countries made a final decision on funding the project for launching Soyuz rockets from Kourou.

The initial understanding on the project was reached in May 2003. European partners plan to assign 314 million euros for construction of the launch site and preparation of the launches.

Some countries have already announced the size of their involvement in the project. For instance, France will cover 50 percent of the spending, Germany 6 percent, and Switzerland 1-2 percent. The other participants are Italy, Spain and Belgium.

For Russia, the project is a chance to occupy a niche in the world market for space launches, as Europe does not have a similar medium class launch vehicle. Soyuz launches from Kourou will also allow the launch vehicle to carry payloads of 4 tonnes into geostationary orbits, instead of the 1.5 tonnes carried from Baikonur, because Kourou lies close to the equator.

The first launch of an upgraded Soyuz-STK rocket with a digital control system is

expected at the end of 2006 or early 2007.

The space center in Kourou is owned by the ESA and leased by the French national space agency. Most ESA flights are conducted from it, including all Ariane LV launches.

Russia Seeking To Launch Rockets From French Guiana  
CEP20040221000073 Moscow Interfax in English 1434 GMT 21 Feb 04

MOSCOW. Feb 21 (Interfax) - Russian and European specialists are discussing a project to launch Russian space rockets from the Kourou space center in French Guiana, the first flight being due in two years' time.

The talks, held at the Kourou space center, would focus on the construction of the infrastructure for launching Soyuz-ST rockets, which will put satellites in a geostationary orbit, a Russian Aviation and Space Agency representative told Interfax.

The European Space Agency member countries, meeting in Paris on February 5, approved the budget for the project, ESA representative in Russia Alain Fournier-Sicre told Interfax.

The project is based on an agreement reached at a meeting of ESA member countries in May 2003. Europe plans to allocate 314 million euros for the construction of the launch pad and for launch organization.

Europe has no medium class rocket similar to the Soyuz, which, due to Kourou's closeness to the Equator, can take a payload of 4 tonnes into space if launched from the center in French Guiana compared with a maximum of 1.5 tonnes it can carry today, when it blasts off from the Baikonur cosmodrome in Kazakhstan.

Russia is to build a launch complex near the town of Sinnamary.

The first launch of a digital-controlled Soyuz-STK is scheduled for late in 2006 or early in 2007.

The Russian rockets would run on French fuel in order to speed up flight preparations. All the fuel ingredients are manufactured at Kourou, from where French Ariane launcher rockets fly regularly.

[Description of Source: Moscow Interfax in English -- non-government information agency known for its aggressive reporting, extensive economic coverage, and good coverage of Russia's regions]

Russian Space Chief Says First Launch From Kourou Will be in 2006  
CEP20040222000020 Moscow Ekho Moskvyy Radio in Russian 0900 GMT 22 Feb 04

[Announcer] A Russian delegation is visiting the construction site of the future Russian cosmodrome in Kourou in South America. Experts say that digging work and blasting of granite will start there soon. Construction work will probably begin in the summer. Nadezhda Pravdina has the details.

[Correspondent] The first launch of the modernized Russian Soyuz rocket from the Kourou cosmodrome in South America will take place before the end of 2006, Rosaviakosmos [Russian Aviation and Space Agency] head Yuriy Koptev said. He said that before this, a launch vehicle modified for the tropical conditions at the Kourou cosmodrome in French Guiana would be tested at the Plesetsk cosmodrome. He also said that the Soyuz-Kourou project would not harm launches from the Baykonur cosmodrome in any way. Russia is not currently planning to launch piloted craft from the Kourou equatorial cosmodrome.

I remind you that the European Space Agency allocated Russia 121m euros to modernize the Soyuz and construct the necessary infrastructure on the ground. The visit by Russian experts will last until 29 February.

Working Meeting on Soyuz-Kourou Project To Take Place on 2 Mar 04  
CEP20040227000392 Moscow ITAR-TASS in English 2102 GMT 27 Feb 04  
By Andrei Yarushin

PARIS, February 27 (Itar-Tass) -- The next working meeting on the Soyuz-Kourou project will take place in Moscow on Tuesday, March 2, and Russian specialists, currently staying at the spaceport in French Guiana, will not wait for the Ariane-5 launch, General Director of the Starsem Russian-French joint venture Viktor Nikolayev told Itar-Tass on Friday.

The Ariane-5, which will bring the Rosetta station to the comet, will not be ready for launch before March 2.

"The visit to Kourou was timed to coincide with the Ariane-5 launch, and it was the first working meeting after the European Space Agency's approval of Soyuz launches from the French spaceport in early February," Nikolayev said.

"We are working on contracts, which will specify the entire range of Russian works in Kourou. That has to be done by June, because project funding via the European Investment Bank would be ready by then," he said.

While in Kourou the Russian specialists have solved a number of practical aspects of future launches, the first of which is scheduled for 2006. They have also visited the future construction site of a Soyuz launcher in Kourou.

The Russian delegation is made up of representatives of the Russian Aerospace Agency,

the Barmin General Machine Building Design Bureau, the Baikonur Federal Space Center, the Lavochkin Center, and the TCKB-Progress Aerospace Center.

The Russian spaceport in Kourou will be approximately 1.8-2 kilometers long and one kilometer wide. Russia wants to launch about 30 modernized Soyuz rockets from there.

Russia, Europe Reach Consensus on Soyuz-Kourou Space Project  
CEP20040301000290 Moscow ITAR-TASS in Russian 1145 GMT 01 Mar 04

Moscow, 1 March: Russia and Europe have reached a consensus on the disputed issues of the Soyuz-Kourou project, and funding of the construction of a Soyuz launch system at the cosmodrome in French Guyana will start in the middle of April, Vladimir Klimov, the deputy chief designer of the [Barmin] General Machine-Building Design Bureau, told an ITAR-TASS correspondent today [1 March] on his return from this equatorial cosmodrome. "We reached basic agreements on most of the disputed problems at the talks in Kourou," he said.

Klimov said that "the issue of the construction of a servicing tower for the booster rockets remains unsolved at the moment" and that this will be the main issue at the meeting of Russian and European specialists to be held this week in Moscow. "All the details of the project will be sorted out by the end of April and contracts will be signed between Rosaviakosmos [Russian Aviation and Space Agency] and the European Space Agency (ESA) and incorporated into the project by the Russian enterprises," Klimov believes. "However, our French partners have already taken it upon themselves to start funding the work by the middle of April, without waiting for contracts to be signed," Klimov said. He said this decision "was confirmed by the heads of the ESA, France's National Centre for Space Research (CNES) and Arianspace, which is handling construction of the infrastructure of the launch system at the cosmodrome".

The budget for the Soyuz-Kourou project was increased this year from 314 to 320-325 million euros, Russia accounting for 121 million of this, the head of Rosaviakosmos, Yuriy Koptev, said. The first launch of the modernized Soyuz-2 from Kourou is planned for December 2006.

Russia: Engineers Return to Baikonur From Kourou Launch Center  
CEP20040304000301 Moscow Interfax in English 1645 GMT 04 Mar 04

BAIKONUR. March 4 (Interfax-Kazakhstan) - A team of Russian engineers has returned to Baikonur after a visit to the Kourou launch center in French Guyana where they discussed the construction of a launch center for Soyuz booster rockets.

A working group visited the site of the future launch center and discussed comprehensive tests of the rocket and a schedule for their launches, Yevgeny Chyorny,

deputy director of the Federal Space Center Baikonur, told Interfax.

Pegs have been hammered in the area of the future launch center, he said.

The European Space Agency member nation council decided in Paris on February 5 to start the Soyuz project in Kourou. The European partners plan to provide 314 million euros for the construction of launching pads for Soyuzes in Kourou and for preparing the launches. Launches of modernized Soyuz-STK boosters with digital control systems are scheduled to begin in early 2007.

Russian engineers will build launching pads for Soyuzes near the town of Sinnamari. Kourou is ideal for launching low orbit satellites because of its proximity to the equator which allows for the full use of the earth's rotation. The launching site is owned by the ESA which has rented it out to the French space agency CNES. Most ESA satellites, in particular all Aryan boosters, have been launched from Kourou.

Russia, France Fail To Reach Agreement on Kourou Space Project  
CEP20040305000279 Moscow ITAR-TASS in Russian 1302 GMT 05 Mar 04

Moscow, 5 March: Russia and France have not yet decided what type of service tower to build at the Kourou spaceport in French Guiana for Russia's Soyuz launch vehicles. An ITAR-TASS correspondent was informed of this today by the first deputy chief designer of the General Machine-Building Design Bureau, Vladimir Klimov. "At their meeting in Moscow, which has now ended, the Russian and French specialists did not reach agreement on this issue," he stressed.

Klimov said the experts from the two countries had compiled a so-called comparative chart of three possible types of service tower - mobile vertical, stationary vertical and stationary horizontal. "The table lists the main 'pluses' and 'minuses' of each option - technical advantages, cost, volume of construction and assembly work, and other factors," he explained. Some 80 per cent of the table was completed at the meeting. The outstanding section - relating to the cost of the work - will be filled out over the next 10 days.

"The French specialists will work out how much it will cost to build the mobile tower and we will present figures for the horizontal tower. We will do the calculations for the stationary vertical tower together, since the French would build the column, while Russia would be responsible for the mobile platforms with equipment," Klimov said.

The final meeting of the Russian and French specialists on the service tower will take place on 15-18 March in Moscow, he said.

The first launch of a Soyuz rocket from the equatorial spaceport in Kourou is scheduled for 2006.

Russia: 'Offspring' of Gagarin's Rocket To Be Launched From Kourou  
CEP20040309000121 Moscow ITAR-TASS in English 0004 GMT 09 Mar 04

MOSCOW, March 9 (Itar-Tass) - An "offspring" of Gagarin's rocket is to be launched from the equatorial cosmodrome in French Guyana, Itar-Tass was told at Rosaviakosmos (Russian Aerospace Agency) on Tuesday [9 March].

The first start of a modified Russian Soyuz-2 booster is scheduled, according to the Soyuz-Kourou project, for December 2006. It is to be tried and tested first at the Plesetsk cosmodrome this summer.

The Soyuz-2 is a modification of the famous Soyuz carrier-rocket, which has 1,700 successful launchings to its record, Rosaviakosmos officials noted.

"We are pleased with the fact that an 'offspring' of Gagarin's rocket will be launched from the Kourou cosmodrome in 2006," Director-General of the European Space Agency (ESA) Jean-Jacques Dordain told Itar-Tass in Paris.

Yuri Gagarin's first-ever space flight was "a revolutionary event and its importance for the development of our civilisation can hardly be overestimated", he noted. "Mankind's great dream to overcome terrestrial gravitation and to fly up to the stars came true on that day," Dordain stated.

Today, the space competition "is successfully embodied in ESA-Russia cooperation", Dordain added. "This cooperation is rapidly developing: we are now partners in the International Space Station project and our astronauts are being orbited by means of Russian Soyuz rockets," the ESA director-general noted. On April 2, "we shall celebrate the fifteenth anniversary of ESA-Russia cooperation," he stated.

"Yuri Gagarin's first space flight was one more triumph of the Soviet Union," Professor of Birmingham University Julian Cuperon told Itar-Tass in London. These space accomplishments promoted the expansion of Sovietology studies and increased the number of people wishing to learn the Russian language, the professor stressed.

Russian Firm Invites Europeans To Launch Joint Manned Missions From French Guiana  
CEP20040319000296 Moscow ITAR-TASS in English 0041 GMT 19 Mar 04

By Yelena Zubtsova, Vladimir Partugimov

KOROLEV (Moscow Region), March 19 (Itar-Tass) - The Energia Space Corporation has invited the European Space Agency to cooperate in launching manned spaceships off the Kourou cosmodrome, in French Guiana. "If we pooled our efforts, we would have good opportunities for launching and operating manned spaceships," Nikolai Zelenshchikov, first deputy director-general of Energia, said at a meeting with Russian and foreign journalists on Friday.

According to his information, "Energia is developing a new booster rocket, which was given the name of Onega. We are planning to put it in operation in 2007. We could place in orbit the Clipper, a spaceship of a new generation, with the help of the Onega." The Clipper, a shuttle spaceship, has already been developed by Energia specialists. With sufficient financing, five years will be needed for building it, Zelenshchikov continued. According to Zelenshchikov, the production capacities of Energia make it possible not only to meet its commitments for the building of manned Soyuz spaceships and Progress cargo spaceships for the International Space Station, but also to design new spacecraft.

"The adjustment to the Onega spaceships of the Soyuz space-launch complex, which is being built in Kourou, will not need really big investments," Zelenshchikov said.

The building of a space-launch complex for Russian Soyuz booster rockets will be started at the Kourou cosmodrome this year. The first launch of the Soyuz-2 spaceship off the Kourou cosmodrome is scheduled for December 2006.

Russia Drops Idea of Dummy Maiden Launch From Latin American Spaceport  
CEP20040429000288 Moscow RIA-Novosti in Russian 1020 GMT 29 Apr 04  
Moscow, 29 April: The first experimental launch of a Russian Soyuz-ST booster rocket from the Kourou spaceport in French Guiana is scheduled to take place on 1 December 2006 with a real satellite, not a dummy, as was originally planned.

This has been disclosed by Viktor Nikolayev, the managing director of the Russian-French joint venture Starsem, which is in charge of all promotion of Russia's Soyuz booster rocket on the international launch market.

"We are seeking a real payload (a satellite) for the first experimental launch, so we do not have to launch a metallic dummy, and we will definitely find such a satellite," he said.

Nikolayev also noted that in order to win the exclusive contract for Soyuz-ST launches from Kourou, European partners are allocating 31 million euros for the modernization of the Russian launch vehicle. "This sum has been earmarked as the European contribution to the modernization of the Soyuz rocket," he said.

The total amount that Europe is allocating to the Russian partners is 121 million euros.

The work of clearing the terrain for the Russian launch pad is continuing right now at the Kourou spaceport. However, it is still premature to say that construction of the launch pad has started, Nikolayev pointed out.

"We received a report that said 'Hooray, we have started construction,' but the photograph only showed the cabin of a stationary digger," he joked.



[Description of Source: Moscow RIA-Novosti in Russian -- government information agency, part of the state media holding company]

#### Position of Russian Side on Soyuz-Kourou Project Viewed

CEP20040429000258 Moscow ITAR-TASS in Russian 1030 GMT 29 Apr 04

Moscow, 29 April: The position of the Russian side on the Soyuz-Kourou project is being specified at a meeting between the heads of the European and Russian space agencies, an ITAR-TASS correspondent was told today by a member of the European delegation. "Financial issues are not being touched upon, only the political aspects," he noted.

"In June we should be ready for signing the main contract between the Federal Space Agency (FKA) and the European Space Agency (ESA) on building the launch complex for the Russian Soyuz rockets at the French space complex at Kourou," managing director of the Starsem company Viktor Nikolayev told ITAR-TASS. He said the contract could not be signed until the ESA had confirmed the finance plan for the project. Russian firms will receive 121m euros of the 344m allocated for the project, he said. Of these funds, 100m will be spent on the launch complex and 21m invested in completion and testing of the modified Soyuz-ST rockets. "The Russian lead companies are prepared to wait for the signing of the contract, but the cooperation has to be paid for now," Nikolayev emphasized. He said that negotiations were currently underway with the Arianespace company on an advance payment of 10m euros to pay for the project materials produced by Russian companies.

The first launch of the modified Soyuz-ST rocket from the equatorial space centre in French Guiana is scheduled for 1 December 2006.

#### Starsen Looking for Satellite for Soyuz Test Launch from Kourou

CEP20040429000154 Moscow Agentstvo Voyennykh Novostey WWW-Text in English 1119 GMT 29 Apr 04

MOSCOW. April 29 (Interfax-AVN) - The Starsen Company is looking for a satellite a Soyuz rocket can put into orbit in the first experimental launch from the Kourou spaceport in French Guiana, Starsen General Director Viktor Nikolayev said on Thursday. Starsen offers commercial launching services for Soyuz rockets. He said the European partners "have decided to assign EUR121m to Russia for building a launching pad and an infrastructure in Kourou, and EUR31m from that sum will be invested in the modernization of Soyuz rockets." A Kourou launching pad for Russian Soyuz rockets is being prepared, Nikolayev said. "The work has just begun. The facilities will be commissioned in December 2006 in line with the schedule," Nikolayev said.

#### Russia Starts Work To Build Rocket Launch Complex in French Guiana

CEP20040513000048 Moscow ITAR-TASS in Russian 0939 GMT 13 May 04

Berlin, 13 May: Russia has started work to build a new launch complex for Russian Soyuz rockets at the Kourou spaceport in French Guiana. It is expected to enter into operation in 2006. Russia's Federal Space Agency [FSA] head Anatoliy Perminov said this in an exclusive interview with ITAR-TASS at the International Aerospace Exhibition ILA-2004 currently under way in Berlin with 43 participating states.

"We have started work to create the launching complex for Soyuz -2 rockets before all details have been coordinated and the contract has been signed. It was necessary to do this so as not to let red tape set back the implementation of the project," Perminov said.

He also said that "specialists of both states have mapped out the main ways to carry out this project, as partial funding has been opened for the part of work being done at Russian enterprises."

According to European Space Agency head Jean-Jacques Dordain, the ceremony of laying the foundation stone of the launch complex will take place at the Kourou cosmodrome on 23 July, Perminov said.

#### Russia, Europe to Resolve Soyuz-Kourou Financial Questions

CEP20040628000281 Moscow ITAR-TASS in English 1656 GMT 28 Jun 04

MOSCOW, June 28 (Itar-Tass) -- Russia and Europe will resolve all financial questions pertaining to Soyuz launches from French Guyana in the near future, the head of the Federal Space Agency, Anatoly Perminov, said.

He told a briefing on Monday, "Negotiations are under way on the final financing of the Soyuz-Kourou project. I think all these questions will be resolved in the very near future, in June and July."

"The Soyuz family carrier modified for this equatorial cosmodrome will be flight tested in the fourth quarter of this year at the Plesetsk cosmodrome," Perminov said.

"Both the carrier and the entire ground infrastructure was modernised over the last two and a half years," he added.

In his words, the construction of a launching pad for the Russian carrier at Kourou will begin shortly. "The first launch is scheduled for 2006. A marketing campaign to find contracts began in February of this year and as far as I know, there are already the first contractors for Soyuz services," Perminov said.

He stressed, "The commissioning of the new facility at Kourou will give all countries, including Latin American ones, big opportunities for launching spacecraft, both their own ones and within the framework of international cooperation in South America, including through Russia's participation."

"It will no longer be necessary to carry them across the ocean," he explained.

The overall cost of the Russian-European Soyuz-Kourou project is 344 million euros, of which 121 million euros will be disbursed to pay the participating Russian industrial enterprises.

Russia, Europe Pave Way for Construction of Launching Pad in French Guiana  
CEP20050119000027 Moscow ITAR-TASS in English 0807 GMT 19 Jan 05

MOSCOW, January 19 (Itar-Tass) -- Russia and Europe have paved the way to the construction of a launching pad for Russian Soyuz spaceships at Kourou cosmodrome in French Guiana.

Chief of the Russian Space Agency (Roscosmos) Anatoly Perminov and Chief of the European Space Agency Jean -Jacques Dordain have signed an agreement in Moscow on Wednesday on long-term cooperation in development, construction and launching carrier rockets with the Soyuz- Kourou project as the first step.

Roscosmos spokesman Vyacheslav Davidenko told Tass that the agreement envisages that the necessary infrastructure should be created at the space center in French Guiana for space launchings of Russian-made Soyuz carrier- rockets.

The overall cost of the project was put at 344 million euros with Russia's share of around 130 million.

A first space launching from the Kourou launching pad might be made in December 2006.

French ministers sign papers for use of Soyuz launcher at Kourou space centre  
EUP20050321000142 Paris AFP (Domestic Service) in French 1015 GMT 21 Mar 05  
French ministers sign papers for use of Soyuz launcher at Kourou space centre

Text of report by French news agency AFP

Paris, 21 March: Jean-Pierre Raffarin presided over the signing at the Hotel Matignon [prime minister's office] today, Monday, of four deeds which will enable the Soyuz launcher to be sited at the Kourou space centre in French Guiana, including a loan from the European Investment Bank for 121m euros guaranteed by France.

The four agreements were signed variously by Mr Raffarin and ministers Thierry Breton (finance minister) and Francois d'Aubert (minister for research), managing director of the European Space Agency Jean-Jacques Dordain, managing director of Arianespace Jean-Yves Le Gall and the deputy chairman of the European Investment Bank, Philippe de Fontaine Vive Curtaz.

The launch of the Soyuz from the Kourou base is aimed at filling the void left when the Ariane-4 rockets were retired, by taking geostationary payloads of up to 3.2 tonnes.

The Soyuz rockets, supplied by the Russians, will require a new launch pad to be built in Kourou. The cost of the programme is put at 344m euros.

The first Soyuz launch from Kourou is scheduled for 2008, according to Arianespace, which will thus have three rockets at its disposal: the new Russian medium-lift Soyuz-2, the European heavy rocket, Ariane-5, which is already in service, and the European light launcher, Vega, which is in the process of development.

Russian Space Agency, French Firm Agree To Launch Soyuz Rockets  
CEP20050411000286 Moscow Mayak Radio in Russian 1400 GMT 11 Apr 05

[Presenter] An agreement to build a launch pad for Soyuz boosters at Kourou spaceport in French Guiana was signed today by the head of Roskosmos [Russian Federal Space Agency], Anatoliy Perminov, and the president of the Arianespace French company, Jean-Yves Le Gall.

The talks on the use of Russian Soyuzs at Kourou have been going on since May 2003. They were difficult, mostly because the European Space Agency could not at all find money for the project, but now the funding problems have been resolved. The total cost of the project amounts to 344 million euros. Russia will get about 130 million from this sum. And the first launch of a Soyuz from Kourou is scheduled for 2008.

Sergey Gololobov has the details.

[Correspondent] According to the contract, Russia will build a launch pad for its Soyuzs at Kourou. Moreover, the rockets themselves will also be modernized. The European Space Agency will have to build infrastructure. Road to the future launch site are already being built in Guiana's tropical forest. Buildings are being constructed and communication lines are being laid. The European agency needs this project very much. It does not have its own boosters of a medium class and their development is a lengthy and expensive process. The use of Russia's Soyuzs at Kourou should become a good solution to the problem. They are the most reliable and quite ecological because they fly using simple paraffin and oxygen.

This project is also very attractive for our country, the head of Roskosmos, Anatoliy Perminov, said.

[Perminov] The Russian side will obtain a workload at enterprises of the rocket and space industry and, obviously, additional opportunities for not simply maintaining, but also developing production.

[Correspondent] The Russian side will have to resolve a range of interesting engineering problems to build the launch pad at Kourou. So, for example, at our cosmodromes, rockets which are already in their starting positions are serviced in the open air, but Europeans expressed the desire that Soyuzs be placed in a special tower, the director-

general of the design office of general machine building, (?Yuriy Barnin), said.

[Barnin] This is first of all dictated by peculiarities of the climate and the specific character of working with payload. When it is installed, a service tower will come on it and all further work on the rocket will be carried out under a roof. Before the launch, the service tower will obviously drive away and the rocket will be standing in precisely the same way as it does at Baykonur and Plesetsk.

At our sites, a spacecraft is being assembled horizontally on an assembly platform and then the fully assembled rocket is put vertically at the starting position. In Guiana, the spacecraft will be assembled on a rocket that is already standing vertically in the starting position. So then, it is a different technology.

[Correspondent] Have they simply decided that it is better that way?

[Barnin] No, this is also dictated by the peculiarities of some of their payloads which cannot be integrated with a booster rocket horizontally.

[Correspondent] Moreover, because of the proximity of Kourou spaceport to the equator, the payload of Soyuzs will increase by 100 percent. And according to their parameters, they will become very close to heavy carriers, the director-general of the central specialized design office in Samara, Aleksandr Kirillin, has said.

[Kirillin] As far as its contents is concerned, the Soyuz-ST rocket, which will be launched from the spaceport at Kourou, is completely different from the rocket which is currently used. Both regarding its control system and regarding its telemetry, it will be adapted to the launching conditions of the spaceport at Kourou.

[Correspondent] For the time being, according to the European agency's plans, two to four Soyuzs will be launched annually from the spaceport at Kourou. And the first three contracts on launches have already been signed.

Russian Space Agency Lands Contract to Develop Soyuz Rocket Complex in Kourou, French Guiana

CEP20050412000191 Moscow Kommersant in Russian 12 Apr 05

[Article by Ivan Safronov: "Roskosmos Waits out 121 Million Contract: to Develop Soyuz Complex in French Guiana"]

Yesterday in Moscow a [Translator's note: all monetary amounts are preceded by a letter "v" in the original] 121 million contract was signed between the RF Federal Space Agency and Europe's Arianespace, which will invest these resources into the development of the Soyuz-ST launch vehicle and the launch and technical complexes for it at the Kourou Cosmodrome (French Guiana). Their erection will require another 223 million. The first Soyuz-ST launching from Kourou is to occur in 2008.

In the opinion of Roskosmos [Russian Space Agency] head Anatoliy Perminov the

document signed yesterday opens the road for practical realization of the "Soyuz in Kourou" project. The idea for this project was ventured back in 1998 at the TsSKB-Progress Rocket and Space Center (Samara), which is employed in the development and production of Soyuz and Molniya launch vehicles. The fact is that these vehicles are to be replaced in the future in Russia by a new space rocket, the Angara-A3. The Space Center imeni Khrunichev (Moscow) embarked on its development in 1995 in response to a presidential edict. The proposal from Samara enjoyed support from the Russian-European company Starsem (35 percent of its shares belong to the European corporation EADS, 25 percent belong to Roskosmos, 25 percent belong to TsSKB-Progress, and 15 percent belong to Arianespace), which is employed in the marketing of Soyuz launch vehicles on the world market. It should be noted that before 2003, Starsem was under the direction of Jean-Yves Le Gall, who now heads Arianespace. The Europeans, who are using launch vehicles of the Ariane series in Kourou, hope to take not less than 5-8 percent of the world market of space launchings, mainly from its competitor, the American corporation Lockheed Martin. The fact is that should launchings of Soyuz rockets commence from Kourou, which is located almost on the equator, they will become competitive with the Protons launching from Baikonur. And to market Proton, Angara, and Atlas series launch vehicles on the world market, Lockheed Martin created the company ILS jointly with the Khrunichev Center. ILS now dominates the world market, carrying out more than 50 percent of commercial launchings.

Despite the political support to the project from the presidents of Russia and France, however, "Soyuz in Kourou" encountered a funding problem: the needed 344 million could not be gathered together in 2003-2005. It should be noted that Moscow had initially refused to share the risk, and to participate in the project's funding. Consequently Paris ended up seeking the funds. As a result the French government not only had to guarantee the repayment of a 121 million credit to the European Investment Bank (BEI), issued by this bank to Arianespace to pay for the work of Russian firms, but also to allocate about 129 million to the Kourou Cosmodrome from the 223 million necessary for erection of the launch and technical complexes for the Soyuz-ST. Italy, Belgium, Germany, Spain, and Switzerland promised to jointly invest another 55 million, and the remaining 39 million were allocated by the European Commission.

According to information obtained by Kommersant, the first resources out of the 121 million will pass into the accounts of the enterprises developing the Soyuz-ST launch vehicle, the Fregat booster unit, and the launch and technical complexes as early as in May 2005: the TsSKB-Progress Rocket and Space Center (Samara), the Scientific-Production Association imeni Lavochkin (Khimki, Moscow Oblast), and the General Machine Building Design Bureau (Moscow).

Photo by Valeriy Melnikov [not reproduced]: Arianespace head Jean-Yves Le Gall (left) and Roskosmos head Anatoliy Perminov are seeking additional possibilities for crowding out their competitors.

Russian Federal Space Agency Establishes Soyuz-Kourou Control Body  
CEP20050621026005 Moscow Agentstvo Voyennykh Novostey WWW-Text in English  
1315 GMT 21 Jun 05

MOSCOW. June 21 (Interfax-AVN) - The head of the Russian Federal Space Agency has ordered establishing a coordination and control group, tasked with fulfilling the Soyuz project at the French Guiana space center," the Federal Space Agency press-service told Interfax-Military News Agency on Tuesday.

According to the press-service, the coordination and control group comprises heads of directorates, responsible for fulfilling the project, representatives of participating enterprises, and other experts.

The agreement on employing Russian Soyuz carrier rockets at the Kourou space center in French Guiana was reached at the meeting of the European Space Agency (ESA) Council in May 2003. The overall cost of the project amounts to 344 million Euro, with 121 million Euro allocated for financing participation of the Russian side.

By participating in the Soyuz project at the Kourou Space Center, Russia may secure the empty niche in the international space launch market. At the present time Europe has no medium carrier rockets, offered by Russia.

Soyuz launches from Kourou will allow Russia to increase the payload, carried by the carrier rocket three-fold from 1.5 tons to four tons, since Kourou is situated closer to the equator.

The first launch of the upgraded Soyuz-2 carrier rocket, fitted with a digital control system, is slated for early 2007.

The Kourou Space Center falls under the French jurisdiction, while main launch pads belong to ESA.

Russia Ready To Join In Building Launch Pad In French Guiana  
CEP20051213950040 Moscow ITAR-TASS in English 1354 GMT 13 Dec 05  
MOSCOW, December 13 (Itar-Tass) - Russian specialists are ready to join any time in the construction of a launch complex for Soyuz booster rockets in French Guiana. "We work on schedule adopted under the Russian-European contract, and we are ready to join in the construction of the complex as soon as the European partners complete the construction of the cosmodrome's infrastructure," Vladimir Klimov, the first deputy chief designer of the Design Bureau of General Machine Building (KBMO), told Itar-Tass on Tuesday.

The KBMO is the main Russian agency whose responsibilities include the Soyuz-Kourou project. The construction of the launch complex and of the service tower is within its responsibilities.

Klimov said the Russian-European conference in Moscow last week discussed Russia's remarks and proposals to the European design plans and specifications.

The French space agency CNES announced that the work to build the infrastructure for the launch complex for Soyuz booster rockets would begin in late December, Itar-Tass reported from Paris. The Europeans have at last decided who would mainly execute its part of the work at Kourou cosmodrome, and experts of KBMO now expect the pace of building the infrastructure in French Guiana to pick up.

CNES and Vinci Construction Grands Projects Company representing the industrial group-subcontractor of Soyuz -infrastructure signed the contract valued at 135 million euro.

Russian enterprises have carried out large work under Soyuz-Kourou project, Klimov noted. The partners have made the ultimate decision on the kind of the service tower to be built. Soyuz booster rockets will be readied for the launching within a mobile tower patterned on the lower tier of Eiffel Tower. The sets, materials and coating for technological equipment were selected taking into account the specific condition of the tropical and marine climate.

Soyuz-Kourou project is being implemented on the basis of the intergovernmental agreement between Russia and France signed in November 2003. From this 344 million euro project Russia will get some 130 million euro.

The first launching of a Soyuz booster rocket from Kourou cosmodrome is scheduled for 2008. Russian boosters will be carried to French Guiana by special "river-sea" ships.

Russia, France Agree on First Soyuz Launches From Kourou  
CEP20060214027153 Moscow ITAR-TASS in English 1552 GMT 14 Feb 06  
MOSCOW, February 14 (Itar-Tass) -- The Russian Federal Space Agency and the French Arianespace have agreed to make the first four launches of Soyuz-ST rockets from the Kourou spaceport in French Guiana starting from November 2008.

"Federal Space Agency head Anatoly Perminov and Arianespace Director General Jean-Yves de Gall signed the document," a source at the Federal Space Service told Itar-Tass.

Starting from 2008, Russia and France will have a new joint launch pad. Arianespace has signed several contracts on launching satellites onboard the Russian rockets.



At present Starsem joint venture between Russia and France makes launches from Baikonur. There have been 15 successful launches, and another six are scheduled for 2006 and 2007.

#### ESA To Use Russian Soyuz For Satellites, Not Manned Flights

CEP20060303950006 Moscow ITAR-TASS in English 0133 GMT 03 Mar 06  
NEW YORK, March 3 (Itar-Tass) -- The European Space Agency (ESA) so far is planning to use Russian Soyuz boosters to launch satellites from the Kourou cosmodrome in French Guiana, but not for manned flights.

However, "never say never," ESA Director General Jean-Jacques Dordain told a press conference in the John Kennedy Space center on Cape Canaveral on Thursday.

He said ESA so far has no plans to launch manned spacecraft from Kourou.

Together with the Russian Space Agency ESA is currently creating a launching pad for Soyuz on Kourou, but "the talk is only about satellite launches", Dordain said.

The use of Russian Soyuz is scheduled to begin in 2008. So far the European Ariane rockets have been used in Kourou.

#### Upgraded Soyuz-2 To Be Used For Russian Military Launches

CEP20060505027089 Moscow Agentstvo Voyennykh Novostey WWW-Text in English 0456 GMT 04 May 06

Plesetsk Cosmodrome (Arkhangelsk Region), 4 May: The Soyuz-2 carrier rocket of the new generation will launch into orbit a military spacecraft before the end of the year, Col-Gen Vladimir Popovkin, commander of the Space Troops, has told journalists.

"At the end of the year a fundamentally new military spacecraft will be put into orbit by the Soyuz-2 carrier rocket from Plesetsk cosmodrome," Popovkin, who attended the launch of a military satellite on Wednesday [3 May], said.

According to Popovkin, the tests of the new satellite with a digital control system will continue during the two Soyuz-2 launches planned for 2006 from the Baykonur (Kazakhstan) and the Plesetsk space launch sites.

"Only one rocket was launched with a cargo mockup (in November 2004 - Interfax-AVN). All the others are using the real payload, which means that we are beginning to use it," the commander said.

According to him, during the launches they plan to receive statistics "needed for the rocket to go into service".

In his turn, Ravil Akhmetov, general designer at the Progress construction and design

bureau (Samara), told journalists that Soyuz-2-1A launched from Baykonur in July will put into orbit the European MetOp meteorological satellite and the Soyuz-2-1B rocket will launch the Koro spacecraft in October.

"The 1B rocket differs from 1A in a greater thrust of the mid-stage engine, and thus, a greater payload orbited," the designer said.

Akhmetov said the Soyuz-2-1A variant will be used for Soyuz 2 rocket launches from the Kourou space centre in French Guiana (Latin America). "This version is best suited for orbiting the greatest payload from Kourou," Akhmetov said.

Russia's contribution to Kourou space project exceeding 120 million euros  
CEP20061024950137 Moscow Interfax in English 1146 GMT 24 Oct 06  
RUSSIA-SPACE-KOUROU-FUNDING

RUSSIA-SPACE-KOUROU-FUNDING Russia's contribution to Kourou project  
exceeding  
120 million euros

MOSCOW. Oct 24 (Interfax-AVN) - Russia will invest 121 million euros in the project of constructing the Kourou Space Center in French Guiana to launch Soyuz spacecraft into space, deputy head of the Russian Federal Space Agency Viktor Remishevsky told a news conference at the Interfax main office in Moscow on Tuesday.

"The overall cost of the project amounts to over 400 million euros," Remishevsky said.

The Soyuz at Kourou project is pursued by the Federal Space Agency jointly with the European Space Agency (ESA). The space center will be able to launch spacecraft with the help of the Russian Soyuz launch vehicles.

According to Remishevsky, the first Soyuz may be launched from the Kourou space center in late 2008 or early 2009.

"As a rule, such projects start returning interest in a decade at the earliest," Remishevsky said. At the same time, according to him, it will take at least five launches a year to make the project profitable.

Remishevsky pointed out that the parties had already secured four contracts on Soyuz launches from Kourou. "Naturally, launch vehicles will not be launched into space, until the space center has been constructed," he said.

Remishevsky said that a number of facilities were under construction at the Kourou space center in French Guiana, with the work conducted by the French Space Agency. Russia will start delivering space equipment to Kourou in 2007,

he said. 1546 241006 MSK

#### Russia Carrier Rocket Could Be Launched From Kourou In 2009

CEP20061024950200 Moscow ITAR-TASS in English 1314 GMT 24 Oct 06  
MOSCOW, October 24 (Itar-Tass) - The first launch of Russia's carrier rocket Soyuz from the Kourou spaceport in French Guiana could take place in late 2008 or at the beginning of 2009, the Russian space agency Roskosmos' deputy director Viktor Remeshevsky said.

He told reporters on Tuesday that there were four orders for Soyuz launches from Kourou, "but, naturally, the rockets will not fly until the launch pad is ready".

"The Soyuz-Kourou project is being implemented jointly by Roskosmos and the European Space Agency. Its realization will allow making launches of spacecraft with the help of Russian rockets of the Soyuz family," Remeshevsky said.

"As a rule, such projects pay not earlier than in ten years, but it is necessary to make not less than five launches a year for that," he said.

"The general cost of the project is above 400 million euros."

Remeshevsky said that the Russian side would invest 121 million euros in the project to create a complex for launches of Soyuz rockets from the Kourou cosmodrome.

A pit for the launch pad has been already dug and the construction of several launch infrastructure facilities begun at Kourou.

The French space agency commissioned these operations.

Russia's deliveries of equipment to the Kourou spaceport will begin next year, Remeshevsky said.

#### Russia's Soyuz To Be Launched From Kourou In Late 2008-Early 2009

CEP20061117950058 Moscow ITAR-TASS in English 0845 GMT 17 Nov 06  
MOSCOW, November 17 (Itar-Tass) - The first launch of Russia's booster Soyuz-ST from the equatorial cosmodrome Kourou in French Guiana is scheduled for late 2008-early 2009, the deputy head of the Russian Federal Space Agency, Viktor Remishevsky, said.

"The preparatory works of a launching pad and a booster proceed as scheduled," he said.

Funding for launches of Russian spacecraft from Kourou up EUR8.5 mln  
CEP20061117950154 Moscow Agentstvo Voyennykh Novostey WWW-Text in English  
1025 GMT 17 Nov 06

Funding for launches of Russian spacecraft from French Guiana spaceport up EUR8.5 mln (17.11.06 13:19:57)

Funding for launches of Russian spacecraft from French Guiana spaceport up EUR8.5 mln (17.11.06 13:19:57)

MOSCOW. Nov 17 (Interfax-AVN) - The funding for the project of deploying infrastructure to launch Soyuz-ST space vehicles from the Kourou spaceport in French Guiana has been increased by 8.5 million euros, deputy director of the Russian Federal Space Agency Viktor Remishevsky told a news conference at the Interfax main office in Moscow.

"The ESA has resolved to allocate additional 8.5 million euros for the construction of the mobile maintenance turret in Guiana under a separate contract," Remishevsky said.

The Russian side has already received 121 million euros from the ESA for the deployment of the infrastructure and equipment, and modernization of the Soyuz-2.1a space vehicle.

"Soyuz-ST to be launched from Kourou is an adjusted Soyuz-2.1.a being built by Russian companies at their own expenses," he said.

According to him, the development and construction of the mobile maintenance turret for Russian launch vehicles is vested in an Italian firm, which means that the total allocations for the Russian segment of the program reached about 130 million euros.

Remishevsky added that the mobile maintenance turret was included as an article of the project in view of the climate in French Guiana which is totally different from that in Plesetsk and Baikonur. "The launch facilities are quite the same as those normally used to launch Soyuz rockets, with the only distinction being the maintenance turret that will protect equipment and technicians from tropical showers," he emphasized. Back &copy;2006 Interfax-Military News Agency, All rights reserved. News and other data on this web site are provided for information purposes only, and are not intended for republication or redistribution. Republication or redistribution of Interfax content, including by framing or similar means, is expressly prohibited without the prior written consent of Interfax-Military News Agency.

Russia: 10-12 Soyuz-2 To Be Produced Annually For Kourou Project  
CEP20061117950308 Moscow ITAR-TASS in English 1759 GMT 17 Nov 06  
MOSCOW, November 17 (Itar-Tass) -- TsSKB-Progress will annually produce ten to twelve Soyuz-2 rockets as soon as the Russian-French Soyuz Kourou project is launched, Arianespace President - Director General Jean-Yves le Gall told a Friday press conference.

He said he had never doubted success of Russian rocket launches.

France and Russia equally share the risks of the Soyuz-ST launch center in French Guiana, le Gall said.

"We will launch rockets from Kourou for increasing the Soyuz payload, not for pleasure," he said. Commercial launches of Soyuz rockets from Baikonur may also go on, he said.

Bright Prospects Forecast For Ukrainian-Brazilian Carrier Rocket  
CEP20051020027081 Kiev Defense-Express WWW-Text in Russian 17 Oct 05  
Unattributed report: "Cyclone-4 will take off in 2007 - NSAU general director"

The launch of the new Ukrainian carrier rocket Tsiklon-4, being created in the framework of the Ukrainian-Brazilian project, Cyclone-4-Alcantara will take place in 2007. This was stated during a joint news conference of the leaders of the space agencies of Ukraine and Brazil within the framework of a visit by a Brazilian space delegation to Ukraine, by the general director of the National Space Agency of Ukraine (NSAU), Yuriy Alekseyev, a Defense Express correspondent reports on 17 October.

He said that the launch of the rocket may be either a "trial" launch (without a commercial payload) or a commercial one. This will depend on what results are achieved during development of the rocket in ground conditions. If the ground development provides a 100 per cent safety and quality result for the future launch, the Cyclone-4 CR may take off with a payload, Alekseyev stressed. He said that it may be either a Ukrainian or a Brazilian space device. "It is important for us to make a quality and reliable rocket," he said.

To date, Alekseyev said, the creators of the new carrier rocket are somewhat behind schedule, but during 2006 work rates will increase. The creation of all the blueprints of the Cyclone-4 has now been completed at the Pivdenne [Rus: Yuzhnoye] State Design

Bureau (SDB) and they have been handed over for manufacture to the Pivdenmash [Rus: Yuzhmash] production association and other plants taking part in the project.

In the first quarter of 2006 the Pivdenne SDB intends to produce an experimental example of the third stage of the new carrier rocket and put it through fire testing. At present some parts of the rocket have already been manufactured and they are undergoing static and dynamic testing. For his part, the president of the Brazilian Space Agency (BSA), Sergio Gaudenzi, said that the Cyclone-4 had enormous exceptional advantages. The rocket is not expensive - thanks to the proximity to the equator, it uses 30 per cent less energy on launch than other rockets. In connection with this, the new carrier rocket will be able to put into orbit satellites with greater weight cheaper than what is now offered by current participants on the space services market. The head of the BSA assessed the market for space device launches, in which the Cyclone-4 will be operating, at 10bn dollars.

At the same time, the head of the NSAU stressed that as regards launch cost (the cost of 1 kg of freight taken into space), the Cyclone-4 today is the most attractive in the segment of medium carrier rockets.

Answering a question about how attractive the services being offered by Ukraine and Brazil would be in comparison with those offered by the Russia-France tandem (the project for launching the new Russian Soyuz-2 rocket from the cosmodrome in French Guyana, Kourou), Alekseyev stressed that first you have to look at the rival rocket in action and then make an assessment. "We should organize a competition, but at the same time help each other," the NSAU chief said. He recalled that Russian enterprises were cooperating with Ukrainian and Brazilian ones on the Cyclone-4-Alcantara project. At the same time, Alekseyev said that some Ukrainian plants were also taking part in the Russo-French program.

Ukraine-Brazil space project still promising despite delays

CEP20060606950160 Kiev Defense-Express WWW-Text in Russian 0000 GMT 19 May 06

Ukraine-Brazil space project still promising despite delays

The Cyclone-Alcantara space project, involving Ukrainian booster rockets and a Brazilian launch site, remains promising despite the lack of funding and long delays, a Ukrainian web site has said. The Ukrainian-Brazilian joint venture has so far failed to agree its founding documents. Meanwhile, a Russian-French competitor space project is making progress and Russia is keen to talk Brazil into abandoning space cooperation with Ukraine. However, the Ukrainian project is cheaper and Brazil has opted for Ukraine. Therefore, the project is likely to be implemented, the web site said. The following is the text of an article by Olha Kalynovska entitled "Cyclone-4: the best unrealized launcher" and published by the Ukrainian Defense-Express website on 19 May; subheadings

inserted editorially:

### Strengths of Ukraine-Brazil project

The Ukrainian-Brazilian project to orbit a Ukrainian Cyclone-4 booster rocket from Brazil's Alcantara launch centre has been a central priority for Ukraine's space industry for many years. This is the third project which promises to become the second or even first largest one in the commercial history of Ukraine's space industry, experts say. No-one can tell when this may happen though.

In theory, this project has great advantages over other similar ones. Its main strength is that the Alcantara launch centre is close to the equator. This proximity enables the launcher to orbit 30-40 per cent more payload by the use of an extra component of the Earth rotation velocity in this area. Thus the Brazilian launch centre can launch its customers' spacecraft at half-price compared with ordinary launch sites. In addition, Alcantara offers its customers a wide range of launch azimuths. Lastly, favourable climatic conditions, low population density in the region, easy delivery of booster rockets, spacecraft and equipment by sea and by air also promise to add popularity to the launch complex.

As regards the new rocket, the Cyclone-4 epitomizes the best achievements of the Pivdenne design bureau over the many years it has been building spacecraft, according to its designer-general Stanislav Konyukhov.

The designed characteristics of the Cyclone-4 enable it to take up to 5.5 tonnes of payload into a circular low earth orbit (LEO) and up to 1.7 tonnes into a geosynchronous transfer orbit (GTO). This is achieved by the use of a third stage having a triple load of propellant components (compared with the third stage of the Cyclone-3) and due to high energy-mass perfection which enables the rocket to improve its energy performance and reduce its longitudinal load factor. The engine of the third stage of the booster rocket has a multiple start feature which creates qualitatively new opportunities which can be used in the group orbiting of spacecraft. The Cyclone-4 is complete with a high-precision control system using the Global Positioning System (GPS).

It is a great advantage of the new rocket that all operation with it on the launch complex is automated, which ensures absolute safety for personnel. The Cyclone-4 was designed with special attention being given to environmental safety: its technical solutions make impossible any emission of toxic propellant components into the environment at all phases of the operation of the complex.

### Partners' responsibilities

The sides have distributed their responsibilities under the project in the following way. Ukraine has bound itself to design the booster rocket and the ground equipment for the rocket complex. More than 50 Ukrainian space enterprises are involved in this work. Among them are the National Academy of Sciences of Ukraine with a number of its institutes, the Novokramatorsk works, the research institute for electronic measurements

in Kharkiv, the vehicle assembly plant in Odessa, the chemical works in Pavlohrad, the Antekskhimavtomatika science and production enterprise for chemical equipment in Severodonetsk], the CheZaRa company in Chernihiv and others. Russian plants are also involved in the project.

Under the field supervision of Ukrainian specialists, the Brazilian side has committed itself to building and assembling facilities for the installation of production equipment and general engineering systems to adapt the Cyclone-4 space complex to Alcantara. Brazilians will also create a transport infrastructure to carry rockets from the seaport to the launching pad. Overall financial investments are estimated at 180m dollars with the Ukrainian and Brazilian sides paying 90m each. The Ukrainian government has decided to involve foreign funds and taken 150m dollars in an international credit against government guarantees. Yet specialists say too scanty resources have been planned for the project. A Ukrainian-Brazilian joint venture, Alcantara-Cyclone-Space, will be running the project at every stage. The venture will get the exclusive right to employ the new booster. The project participants expect to have six to 10 Cyclone-4 launches annually. The sides have spent more than one year trying to get the joint venture founding documents approved. The Brazilian side has failed so far to select its subcontractor and clear all legislative obstacles.

The production sector has nothing to boast either. According to the latest data from the Brazilian side, they have just decided on the location of the Ukrainian booster base. There is nothing to be heard about efforts being launched to build the ground infrastructure. The Ukrainian side is moving to its goal at a faster pace failing nonetheless to keep to the time frame. The first launch was originally expected to take place by the end of this year. Now even the next two or three years are called into question.

### Third parties' interests

Experts see the roots of this problem in Russia taking an active interest in Brazil since the Cyclone-4-Alcantara project got started. The thing is that Russia is Ukraine's main competitor over this project today. Russians are trying their hand at a joint project with France to launch a new Soyuz booster from the Kourou space centre in French Guiana. The Russian project has got off the ground despite serious problems, although they were less difficult than those facing the Ukrainian-Brazilian project.

They have got their first customers. It should not be ruled out that Russia may try to win over Brazil when the Soyuz-Kourou project has taken off. One Latin American state joining the project as a partner, some others will get involved automatically, in particular, Argentina which is already negotiating the development of its domestic space segment both with Ukraine and Russia.

Despite enormous problems facing the Cyclone-4-Alcantara project, there is one comfort. Having a choice, Brazil has opted for Ukraine. The Brazilian Space Agency once held talks with the US companies Lockheed, Boeing and Orbital Science and with Russia's Khrunichev rocket centre. The talks were terminated for various technical and commercial reasons. The Cyclone-4 appeared to be the best choice for Brazil in terms of



the class of spacecraft to be orbited and on all technical points. The Cyclone-4 is regarded as a high-reliability booster. Its high reliability is based on continuity: the Cyclone-4 was designed on the basis of the Cyclone-2 and Cyclone-3 boosters having a total of 224 launches to their credit with five failures.

Brazil's choice is attributable to the cost of project implementation. It is obviously much costlier in Russia than in Ukraine. Thus for instance, specialists of the Pivdenne design bureau have compared the Cyclone-4-Alcantara and the Soyuz-Kourou projects to find out that the relocation of the Russian Soyuz booster to the Kourou launch centre in French Guiana is twice as costly as adapting the Cyclone-4 booster to the Alcantara launch complex.