

Ambitious plans

If you are looking for companies with experience in the provision of services or the oil and gas industry, look no further than Russia's Gascom. Giovanni Verlini, Editor of *Satellite Evolution Asia*, spoke with Dmitry Sevastiyanov, Director General of Gascom.



Dmitry Sevastiyanov, Director General of Gascom

Established in 1992 as the satellite communications arm of the Russian energy giant Gazprom, Gascom is one of the most experienced satellite companies in the oil and gas sector.

Now, on the back of the strength enjoyed by the energy sector in recent years, Gascom is ready to embark on a series of projects that will enlarge its service portfolio to include remote sensing, earth observation, mobile telecommunications and Digital Audio Radio via Satellite (DARS).

Question: What is your personal background and experience in the satellite industry?

Dmitry Sevastiyanov: I joined Gascom in January 1994, where I started my career as an engineer. I then went on to become chief of department and eventually the company's chief engineer. On 22 June 2005, I was elected Director General of Gascom.

As chief engineer I was in charge of running the technical facilities of the company and was also responsible for running a number of programmes for Gazprom. In particular, we implemented projects such as a network of communications and teleconferencing technology over 40 locations. Another project was the implementation of digital TV.

Q: What is the history of Gascom? How did it develop to become the satellite communications company it is today?

DS: Gascom was established in 1992. Initially, our company was established with the aim of providing satellite communications services to Gazprom, our parent company. The aim was to provide communications services to those regions where Gazprom has interests, but where the infrastructure is

very poor. Interestingly, Gascom began by providing satellite communications services to Gazprom through leased capacity from RSCC, leasing transponders from the Horizont class of satellites. However, Gazprom was soon persuaded by the advantages of satcoms, and the company took a decision to set up its own satellite operator.

Gazprom's role in the development of the Gascom fleet was not limited to financing the project: it did not just buy the satellites, but took an active role in the research and development as well, which is one of the reasons why the Yamal programme has been so successful. Additionally, the second generation of Yamal satellites was developed as



Operators of Gascom Satellite Network Control Centre, Gascom Teleport #2, Koroliov, Moscow region. Photo courtesy of Gascom.

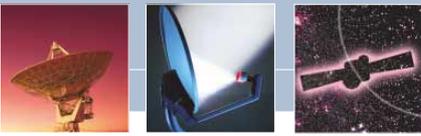


Photo courtesy of Gascom.

a project-financing programme, in Russia's first example of this type of financing.

Q: What is your current space capacity?

DS: At present, Gascom's space capacity consists of three satellites: the Yamal 100, and the Yamal 201 and 202 satellites. The Yamal 100 and Yamal 201 satellites are co-located at 90 degrees East, mainly serving the Russian market. Their footprints cover 95 percent of the Russian territory and 98 percent of the population.

The Yamal 202 satellite is located at 49 degrees east, covering an area that spans from Singapore to the UK, including north Africa, the Middle East and South Asia. Within this area live an estimated three billion people. Gascom also runs a mission control centre, a digital television (TV) centre, three teleports in the Moscow region, and an extensive network of peripheral satellite stations.

Q: What about Gascom's shareholders? Who owns Gascom?

DS: At present, 80 percent of Gascom belongs to Gazprom, S.P. Korolev Rocket and Space Corporation Energia, more commonly known as Energia, has a 16 per cent interest in the company. Energia is a leading Russian company in space and satellite manu-

facturing. Finally, four per cent of Gascom belongs to Gazprombank.

Q: What is your current service offering?

DS: Naturally, our background is that of providing satellite communications services to the oil and gas industry: one of our areas of expertise remains oil and gas, but we have also evolved from that. It is worth mentioning that while Gascom started as a service provider for Gazprom, the company now has developed as a service provider for other companies.

Amongst our current portfolio of clients are governmental agencies, commercial companies both Russian and foreign and TV stations. For example, over 60 TV channels are broadcast via our Yamal fleet.

This proves that the technical parameters of the Yamal satellites are in demand and that these spacecraft can be used for applications well beyond the gas industry.

Q: What is your service offering for the oil and gas industry?

DS: The first earth station we built and activated was established in the Yamal peninsula servicing gasfields such as Urengoy and Yamburg. Today, satellite communications services are used by Gazprom in all sorts of operations: from searching and drilling to

communications, monitoring and security. Gas extracting companies have satellite stations just like gas transportation companies do. For gas sales operations, the companies dealing with this area use satellite communications, while even financial transactions and deals made by Gazprombank are carried out through satellite communications. One of the new areas of activity for Gazprom is extracting gas from the sea shelf, and inside the Gazprom there are companies that use satellite communications for offshore exploration.

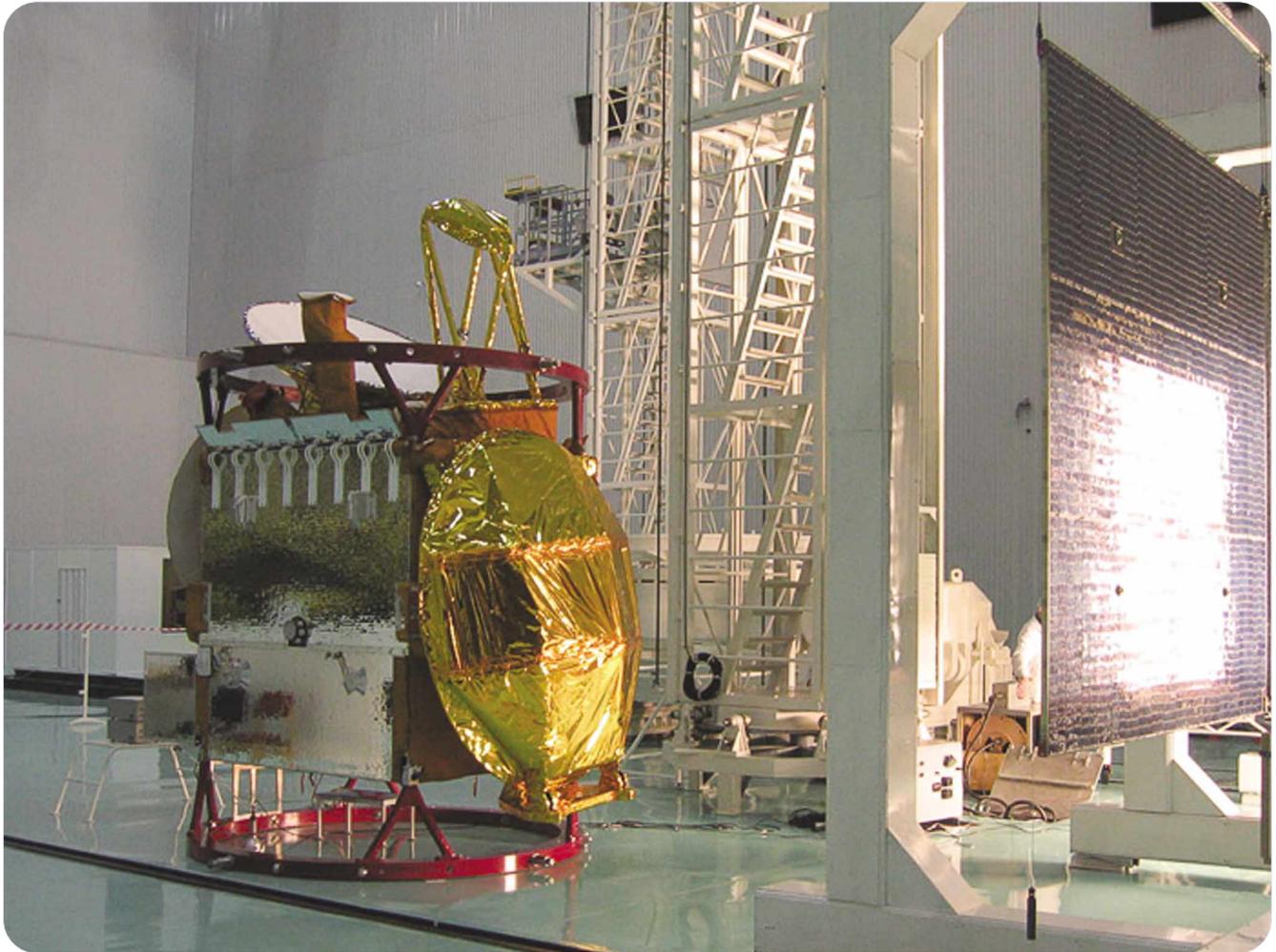
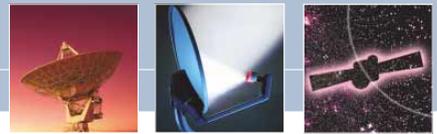
Besides, the satellite capacity of the Yamal fleet is being used by Russian oil companies such as LUKoil and Rosneft.

Q: What is next for Gascom?

DS: Gascom has only partially implemented its project to develop a space information system. We are now in the process of developing the Yamal 300 generation of satellites.

We are building two satellites: one of them, the Yamal 301, will be co-located with the Yamal 100 and 201 at 90 degrees east, while the second spacecraft, the Yamal 302, will be located at 55 degrees east. The launch of these two satellites is due in 2007.

The new satellites will be twice as powerful as the old generation of Yamals in C-band, while in Ku-band they will be 1,5 times



Solar arrays under Flash exposure test. Photo courtesy of Gascom.

more powerful. This will allow us to deploy smaller antenna dishes as well as increase their number on the field. The ultimate result will be that Gazprom and the other clients from the oil and gas industry will be more precise in controlling industry processes: from drilling and transportation to financial transactions, more terminals deployed on the field means the possibility of being more precise and accurate.

Q: Are your clients interested in the new generation of spacecraft?

DS: Absolutely yes. The Yamal 300 spacecraft are still being manufactured, but we have all the capacity already booked. According to the preliminary agreements that we have signed, one third of this capacity will be used by clients in the oil and gas industry.

Q: If I am not mistaken you also have plans for other types of services?

DS: Yes. With the SMOTR programme, we are developing an earth observation subsystem. This will be used for remote sensing, earth observation, mapping and monitoring

the gas infrastructure and gasfields.

Q: Can you please say more about this programme?

DS: This project comprises the development of four satellites in Low Earth Orbit (LEO), two radar and two optic satellites.

The SMOTR system will help Gazprom solve a number of problems: control of the area and the infrastructure of Gazprom, as well as the surveillance of gasfields against terrorist threats and for ecological reasons.

Q: Where are you with this project?

DS: The feasibility study is being completed, and we are now defining its finance scheme.

Q: What kind of financial commitment is required on your part for the development of the SMOTR system?

DS: We believe that the system will pay for itself once it is developed. We drafted a business plan for this project, and we think that it will be of interest not only for Gazprom but also for other companies working in this field that have similar requirements.

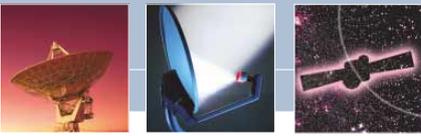
In particular we are currently discussing

with the Kazakh authorities their participation in this project. We are also talking to a number of foreign companies. We are of the opinion that this can be a project financing programme, as it has a solid and well-developed business plan.

Q: You also have a programme to develop a mobile communications system, I believe. Can you tell us a bit more about this one too?

DS: Yes, we have such a project: it is called

“According to the preliminary agreements that we have signed, one third of this capacity will be used by clients in the oil and gas industry.”



The road to 2015

By 2015 Gascom is going to evolve the existing Yamal Satellite Communications and TV Broadcasting System into an Integrated Yamal Space Information System, which will include three subsystems:

- Yamal — Geostationary Telecommunications Satellite subsystem;
- Smotr — Low-orbital Remote Sensing Satellite subsystem; and
- Polar Star — High-elliptical subsystem of Digital Audio Radio via Satellite (DARS), Mobile Communication and Notification

Yamal-300 Geostationary Telecommunication Satellites

Yamal-300 Satellites are designed to provide telecommunication services to a considerable part of Eastern hemisphere.

- Yamal-300 # 1 Satellite (in 90 degrees East orbital position) will give the existing customers of Yamal-200 satellite further development opportunities by repeating coverage zones; and
- Yamal-300 # 2 Satellite (in 55 degrees East orbital position) is destined to serve users of European part of Russia, Eastern Europe, Middle East and North Africa.

The main services that will be provided through the Yamal-300 satellite capacity include:

- Direct-to-Home TV (DTH), including High-Definition TV (HDTV);
- TV Distribution;
- Multi-service VSAT networks (Internet access, distance education, telemedicine, etc.);
- VSAT services in corporate and rural communication networks (telephony, data transmission, Internet access); and
- Backbone lines (point-to-point).

Yamal-300 Satellites are scheduled to be launched at the end of 2007

Basic Satellite Performances	Yamal-300 # 1	Yamal-300 # 2
Orbital Position	90 degrees East	55 degrees East
Satellite Mass (Kg)	1330	1330
Payload Power (W)	3600	3600
Frequency Band	C, Ku	Ku
Number of Transponders and Bandwidth MHz	9 X 72 (C)	
9 x 72 (Ku)	18 x 72 Ku	
Transponder power (W)	110 (C) 140 (Ku)	140 (ku)
Satellite Keeping Accuracy in latitude and longitude (deg)	0.05	0.05
Lifetime, years	14	14

Smotr Remote Sensing System

The Smotr System consists of four satellites on low sun-synchronous orbits. The satellites will be used for monitoring industrial infrastructure, especially in gas industry.

The main tasks of the Smotr System are:

- Monitoring of technical conditions of pipelines;
- Monitoring of gas infrastructure;
- Detection of harmful events and processes;
- Registration and tracking of real property;
- Monitoring of emergencies and evaluation of disaster results; and
- Prospecting of natural gas fields.

Basic performances of Smotr Satellites

Orbit Altitude	500 — 650 km
Mass of each Satellite	1200 — 1400 kg Average Power for Payload
up to 1kW Lifetime	up to 10 years

Polarstar. The system is based on three in-orbit satellites plus one spare on highly elliptical orbits. The main technical challenge of this project is to design and manufacture antennas that are large enough to communicate directly with handheld receivers. According to our plan, the antennas will have to be between 20 and 25 metres, and this

certainly represents a challenge.

Q: Who is designing the antennas?

DS: Energia Corporation, one of our partners in the project, is developing the antennas. When all the technical issues are solved we plan to assemble one such antenna on the International Space Station (ISS) for test-

ing purposes, and then place it on a Yamal satellite.

The aim of this project is to provide mobile satellite communications in the northern regions to handheld devices. Besides, we also aim to be able to provide digital audio broadcasting to hand-held terminals no larger than a mobile phone. ■