Belgian Dirk Frimout considers tenth anniversary of his Shuttle flight

First of a new generation

By Philip Corneille

When Belgium's second astronaut Frank de Winne blasts into space this autumn on a mission to the International Space Station it will be more than a decade since the flight of his fellow country-man Dirk Frimout. Unlike Frimout, who was a member of the STS-45 Space Shuttle crew, de Winne will ride into space on a Russian Soyuz TM craft. He is currently in training at Star City, Moscow.

Frimout recalls that one of his best memories of the flight in March 1992 was the feeling just eight minutes after launch when the engines fell silent and microgravity became a reality.

Born in Poperinge, Belgium, in 1941, Frimout's generation was the first to be able to study and work in space flight technology. "Sputnik 1 flew in space on my sixteenth birthday and I decided to orientate my university studies towards engineering and technology," he said.

He received a degree in electro-technical engineering and a doctorate in applied physics at the State University of Ghent, performing a post-doctorate at the University of Colorado, Laboratory of Atmospheric and Space Physics in 1972. At this time he also started to work with BIRA (Belgisch Instituut Ruimte Aeronomie) on atmospheric experiments carried by balloons and sounding rockets.

Frimout was senior engineer in the Payload Utilisation Department of the European Space Agency (ESA) and was responsible for European experiments for the Atlas-1 mission since 1985. He was selected as prime payload specialist in 1991, becoming the first Belgian astronaut to fly as payload specialist onboard the Space Shuttle Atlantis on STS-45 in March 1992.

After the mission he was awarded doctor honoris causa at the University of Ghent and he wrote a book entitled 'In search of the Blue planet', and worked in several high tech companies in telecommunications (Belgacom), computer speech synthesis and recognition (FLV), and biotechnology (Tibotec).

STS-45 Payload Specialist Dr Frimout donning his partial pressure launch/entry suit for the Atlas-1 mission. NASA

"The Space Shuttle era has enabled scientists and mission specialists to conduct experiments in space and I've had my chance to fly in space. After the mission, working for several telecommunication and bio-technology companies, means that high tech remained a common element in my life," said Frimout.

For anyone contemplating an astronaut career, he explained that there are no standard guidelines for becoming an astronaut, although a university degree in science or engineering plus a bit of luck are necessary stepping stones.

Budding astronauts will normally undergo an 18-month training period. "This period, however, is relative," said Frimout. "I was working for ESA and initially selected as back-up payload specialist in 1985 and prime payload specialist another five years later. During those five years I acquired all necessary knowledge on the experiments which were planned to fly in space and when the prime crew was finally was formed, we trained together at NASA for an intensive 18-month period.

"There were different aspects about the training - keeping physically fit, medical tests, theoretical courses, travelling between ESA & NASA facilities and public relations duties. I cannot point out what was the most difficult as I really enjoyed the training. There was a lot of work both on Shuttle procedures and scientific experiments but the stress of being injured or getting sick was always present.

While working on his doctorate thesis at BIRA he started research into different aspects of the

The official NASA crewphoto of space shuttle mission STS-45 (March 1992). Dr Dirk Frimout, the first Belgian astronaut is standing on the right. NASA

Stratosphere and Mesosphere. "By 1992 some of the scientific experiments of Atlas-1 (Atmospheric Laboratory for Applications and Science), like the ozone hole problem, became everyday topics," he said.

The ATLAS missions were designated part of NASA's Mission to Planet Earth, a large-scale, unified study of planet Earth as a single, dynamic system. Throughout the ATLAS series, scientists gathered information to gain a better understanding of how the atmosphere reacts to natural and human-induced atmospheric changes.

Dirk Frimout flew in space for the first time on the orbiter Atlantis for STS-45 between 23 March and 2 April 1992. ATLAS-1 was the first of several ATLAS Shuttle flights designed to cover an entire 11-year solar cycle, the regular period of energetic activity by the Sun.

Co- manifested with ATLAS-1 was the Shuttle Solar Backscatter Ultraviolet Instrument (SSBUV), which measured ozone concentrations. The 12 instruments conducted experiments to study the chemistry of the atmosphere, solar radiation, space plasma physics and ultraviolet astronomy. Afterwards, Atlas 2 (STS-56 in April 1993) and Atlas 3 (STS-66 in November 1994) continued the scientific work.

"Nowadays people keep reminding me of the fact that STS-45 was the first mission during which an experiment was intensively monitored in real-time by a team of experts on the ground," said Frimout.

"I'm glad to have taken the initiative for real-time support of the Solar Constant (SOLCON) experiment from scientists on the ground. It's important to get the correct information at the right time during the mission in order to allow the crew to take the appropriate actions. Especially on long-duration missions scientists might have to wait a long time before getting their hands on the data.

"The SOLCON experiment was measuring the total amount of light and energy emitted by the Sun, which is especially important in climate studies. Nowadays the real-time support by ground controllers for a manned space mission is common place and will certainly be an advantage to assist scientific research onboard the Space Station."

In the decade that has now passed since his flight, Frimout still remembers the experience of floating towards the cabin window to get his first view of the Earth below

"Candidate astronauts train for space missions in many ways, using parabolic flights and weightless environment water tanks, for example, but even these do not prepare you full for finally arriving in Earth orbit and experiencing microgravity," recalled Frimout.

Mealtime on the middeck of the Earth-orbiting shuttle Atlantis finds the blue shift crewmembers of the Atlas-1 mission adjusting to micro-gravity. NASA/KSC

"You learn to move around in a new and careful way. As you tend to float in a slightly bent position, it was very necessary to run on the treadmill and to do stretching exercises, even on a relatively short mission. But even so, such missions cannot be compared with the Russian long-duration flights where two hours of daily physical training were compulsory for the cosmonauts," he explained.

All astronauts report that seeing the Earth from space is a major part of the experience, and Dirk Frimout is no exception. "On many occasions I couldn't resist floating to a window whenever I had a few spare minutes. From an Earth orbit of 300 kilometres, it's not so difficult to identify where the Shuttle is.

"Lakes and rivers are important vantage points and, during the night, the lights of cities gave a very different perspective on our position. Seeing auroras was spectacular but the blue Earth was a fascinating view that I'll never forget and even nowadays there's always an event or a meeting reminding me of the mission," he added.

Since 1994, Dirk Frimout has been chairman of the Euro Space Foundation which encourages young people to take an interest in space flight.

"While young people tend to have a natural interest in the space programme, it is still of the utmost importance to motivate them to take up studies in science and technology in order to safeguard the future of our research centres and industry," he said.

"I would certainly emphasise the importance of academic results are important. For me space flight has opened up a new world of possibilities in science, technology as well as the spin-offs for everyday life."

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