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TIME IN SPACE

by STEVEN J. LUNDIN

A select few watches can accurately be called
"Out of this world"

Few wristwatches have had the "right stuff" to be chosen as official timepieces for the elite fellowship of the international astronaut corps. A wristwatch is arguably one of the most important devices on a spacecraft; beyond timing fuel purges and measuring mission elapsed time, it maintains an astronaut's psychological connection with Mother Earth. This fascinating history of time in space covers several decades, nations and virtually every major watch manufacturer on the planet.

On April 12, 1961, Russian Yuri Gagarin became the world's first space explorer. He wore a state-mandated hand wound, mechanical, 23

ruby jeweled Sturmanskiye model chronograph, manufactured in the Poljot watch factory. The watch was built out of tooling given to the Soviets by the Omega watch factory as part of the Lend-Lease program, following World War II. While the Poljot products were reliable and presumably accurate enough, Russian cosmonauts later coveted the Omega Speedmaster worn by their American counterparts.

It wasn't until February 20, 1962 that Astronaut John Glenn became the first American to execute a sustained earth orbit during his 4 hour 55 minute Mercury 6 flight in Friendship 7. Glenn was given the option to wear a watch and declined to do



Above: Marvin Martian character watch worn during shuttle mission STS-094

Opposite Page: The classic space watches. Art composed by Steven L. Lundin. Top left to right: Breitling Navitimer Cosmonaut, Sturmanskiye; Middle, left to right: Omega Speedmaster, Sekonda, Bulova, Bell&Ross; Bottom, left to right: Fortis, Omega X-33



Above: Soviet commemorative space watch worn on shuttle mission STS 094

so. President John F. Kennedy proclaimed Glenn a "national treasure," effectively taking him out of the space race for 36 years. Glenn, a marine aviator, would have worn a watch as a matter of routine during his military flying career.

On May 24, 1962, Scott Carpenter piloted Mercury 7 into space with a Swiss made Breitling Navitimer Cosmonaut on his wrist, becoming the first American Astronaut to wear a watch into space. The Breitling is the abacus of chronographs. It is a space-going version of the famous Navitimer, the

watch that set the standard for aviation timepieces. The solid, hand wound, 18 jeweled movement, four dial chronograph features a unique 24 hour indicator, easily read dial and water resistant case. It seemed a natural choice for NASA's pioneers of the final frontier. The watch that became the darling of the space program, however, was designed for sports car enthusiasts, not pilots.

The now legendary Omega Speedmaster Professional MK I made its 1957 debut as the wristwatch for the "man who reckons





Above: General Alexei Leonov wearing an Omega Flightmaster during the 1975 Apollo-Soyuz test project.

time in seconds." Advertising positioned the watch as a tool for the racetrack. On October 3, 1962, the Speedmaster made its maiden voyage into space during Walter Schirra's Mercury 8 flight. Schirra wore the watch as a back up to the spacecraft's on board timing devices and to provide short interval timing. The hand wound, mechanical, 17 jewel Speedmaster is a massive, four-dial chronograph with a tachymeter dial around its bezel. The black faced watch was chosen for its easy readability and ruggedness. Ironically, the watch was not used to time the speed of the fastest vehicle in the world.

On May 15, 1963, Astronaut Gordon Cooper flight-tested an Omega Speedmaster and a Bulova Accutron Astronaut during his 22 global orbits in Faith 7, the last of the Mercury missions. He would later write, "The Omega Speedmaster was selected by the Mercury Astronauts as a chrono-

graph...it won over all the competition by a wide margin." This clear snub of Bulova products would echo later sentiments of many NASA astronauts, who grew to view the Speedmaster as the only watch worthy of their wrists.

As the Gemini and Apollo missions began, NASA officials turned their attention to finding a suitable watch for Extra Vehicular Activities. In a letter drafted on September 21, 1964, Donald K Slayton, Director of Flight Crew Operations, outlined the search for NASA's "flight crew chronograph" as "...a comparative evaluation of the better quality 'off the shelf' chronographs under realistic operational conditions." Six waterproof, shock proof, anti-magnetic chronographs, including models from Rolex, Omega, Longines and Bulova, were purchased at a Houston jewelry store, and the testing began.

The selected chrono-

graphs were subjected to extremes of high and low temperatures (0-200 f), temperature-pressure, relative humidity, vacuum, shock, acceleration (12 g's), decompression high pressure and vibration. Only the Omega survived. On March 23, 1965, the Omega Speedmaster rode into space on the wrists of Gemini astronauts Gus Grissom and John Young as NASA's official chronograph. Grissom, Young and Chaffee later became the only astronauts to die in the history of the space program until the Challenger tragedy. They perished in a launch pad fire while testing Apollo 1.

Ed White made the Omega Speedmaster famous on June 3, 1965, when he wore it prominently velcroed across his wrist during the world's first spacewalk, on the Gemini IV mission. The photo made the cover of Life magazine and is instantly recognizable to this day. "Omega didn't even know that NASA was using the watch until they saw that photo," said former Apollo 13 astronaut

Jim Lovell in a 1999 interview. "I was issued an Omega and wore the same watch on four flights. Today I wear a Citizen chronograph," he adds. Lovell's own experience with the Speedmaster was meticulously recounted in Apollo 13, Ron Howard's award winning film. The pinnacle moment arrived for the Speedmaster on July 20, 1969, when Buzz Aldrin wore the watch on the Moon during the historic Apollo 11 mission. It was indelibly stamped with the moniker: "The Moon Watch."

Speedmasters continued to dominate the heavens through the 1970's, against the protests of General Omar Bradley and his Bulova watch company. Bulova officials charged that the Omega was not a 50 % American product and violated the "buy American" regulations established by the Senate. Bulova's heavy lobbying lead to a reappraisal of the Speedmaster as the official watch for Apollo 17, the final highly publicized, manned flight to the moon. Despite repeated testing against watches from



Above: General Yuri Glazkov hands the first Fortis Cosmonaut set to the crew of the 1994 Euromir mission.

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Breitling, Bulova, Elmore, Elgin, Forbes, Girard-Perregaux, Gruen, Hamilton, Heuer, Lejour, Longines-Wittnauer, Rolex, Seiko and Zodiac, the Speedmaster was chosen for the Apollo, Skylab and Shuttle missions. Through an extensive process of remanufacturing, the Speedmasters submitted to NASA were actually 51% American made.

Détente came in to the form of a watch during the 1970's, when Russian cosmonauts eagerly accepted Omega Speedmasters and Omega Flightmasters as gifts from their American counterparts during the Apollo-Soyuz program. The Russian cosmonaut typically wore a watch like the Sekonda, a 19 jewel, three dial, chronograph with a tachymeter indicator. It was during this period that other watches started appearing in space. "Astronauts had the option of wearing two watches in

space," observes Jim Lovell, "and lots of digital watches began riding up in the 1970's." Early digital offerings from Casio and Seiko represented man's newest technological expression and a natural companion to space travel.

The shuttle missions ushered in a new era at NASA, opening the door to astronauts from other countries. German astronaut Reinhart Furrer wore a Bell & Ross model Space One on the 1983 Spacelab One mission. This water resistant, day/date, four dial chronograph marked the first automatic watch to be taken into space, although it was not used during an EVA. The watch worked flawlessly, dissuading the fear that an automatic would fail in zero gravity. German astronaut Klaus Dietrich Flade later wore Space One while on the Russian MIR space station.

During the 1990's the



Above: Reinhart Furrer wearing the Bell & Ross Space One during the 1983 Spacelab mission.



Above: This interior view of the Apollo 11 Lunar Module (LM) shows astronaut Edwin E. Aldrin, Jr., lunar module pilot, displaying his timepiece. Time is a crucial factor in the success of every mission.

Russian space program reemerged from the shadows to capture the limelight with the EUROMIR space station. In the wake of the dissolution of the Soviet Union, with a fragmented nation and a weak economy, the program became one of Russia's most important public relations tools. In 1994 they chose the virtually indestructible Swiss-made Fortis automatic Cosmonaut Chronograph as the program's watch. This marked the first time that a cosmonaut officially wore a non-USSR made product into space.

The Cosmonaut Chronograph, designed specifically for space, withstood some of the most rigorous tests ever devised. During its testing at Russia's famous Star City, the Fortis was subject to temperatures from

-200 - +100 Celsius, 12g's acceleration, vacuum, high and low pressure and water resistance tests. Additionally, cosmonauts Talgat Musabayev and Yuri conducted a trial by fire appraisal under weightless conditions during docking maneuvers with the Space Shuttle Atlantis. The massive, four dial, day/date timepiece with a tachymeter bezel is the first automatic chronograph ever used during EVA's. The watch is so tough, cosmonauts are instructed to use it as a hammer in case of emergency.

Today's American astronauts wear two watches into space. "One watch isn't enough," says Space Shuttle commander Jerry Linenger, who spent several months on board MIR. "You need to have three things going at once...I plan on wearing no

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Above: Apollo 1 astronauts Grissom, White and Chaffe wearing Speedmasters.

watches after I return," he adds. NASA astronauts are given their choice of the Omega Speedmaster Professional, Casio G-Shock or Omega Speedmaster X-33 as their primary watch; the secondary watch being personal preference.

John Glenn, one of America's pioneer astronauts, wore the Omega X-33 on his historic 1998 return to space on board the Space Shuttle. The X-33 made its maiden voyage into space onboard the MIR and has been used regularly on shuttle missions since STS-89. This lightweight, water resistant, shock resistant, anti-magnetic chronograph displays both Greenwich Mean Time and Mission Elapsed Time on its unique combination traditional/digital dial. It features a built in display light, a

piercing 80-dB alarm and both quartz and mechanical automatic movements. This spacebred workhorse is already being touted as the "Mars" watch.

Today, virtually every type of watch imaginable has

made the trip into space, from an Elgin pocket watch, to cartoon character watches. The growing globalization of our space and technology programs, fueled by the rapid expansion of the Internet, provides a glimpse into what

future space explorers will wear as timepieces. 21st century astronauts, cosmonauts and euronauts may pilot anti-matter spacecraft beyond the boundaries of our solar system, accompanied by steady 1000 beats per day proposed as the new standard for internet world time.

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Above: Elgin pocket watch floating during shuttle mission STS-083.