

# Apollo-Soyuz: the end of the Cold War

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1. A bit of History.
2. Multi task training.
3. Tracking and control.
4. First international hug in Space.

## 1. A bit of History.

One of the stellar moments of Space investigation happened on July 1975 when, for the first time in history, astronauts and cosmonauts from the two great economical and military powers in the world, USA and USSR - fierce antagonists since the end of World War II, 30 years back-, shook hands in Earth orbit during the *Apollo-Soyuz* (ASTP) flight, while in control of the Fresnedillas Tracking Station (Madrid). ¡The Cold War had ended!

Decision for such a cosmic *rendezvous*, was signed May 24<sup>th</sup> 1972 in Moscow, between the USA president, Richard Nixon, and the USSR premier, Alexei Kosygin, endorsed by their respective Space Agencies. It was nonsense that astronauts and cosmonauts could not help each other in case of danger, as it is done by seamen all over the oceans of the world. The SOS sent by a shipwreck must always be answered at sea or sky.

To be honest with History, we must comment that, long before, on September 20th 1963, President John F. Kennedy addressed at the UN a surprising offering to the USSR's delegation: <<...of a joint expedition to



*the Moon...>> with the argument that <<...why, therefore, should man's first flight to the moon be a matter of national competition? Why should the United States and the Soviet Union, in preparing for such expeditions, become involved in immense duplications of research, construction, and expenditure?...>>.*



Was it that Premier Kruschev didn't want to share his ballistic and astronautical leadership? Was it because Kennedy was assassinated two months later (Nov 22nd 1963)? Whatever the reason, that promising offer of working together towards space investigation died before it was borne. Was it too premature?

## 2. Multi task training.

The crews selected for the historical rendezvous between *Apollo* and *Soyuz*, were: astronauts Thomas P. Sttaford, Donald K. Slayton and Vance D. Brand as the prime crew and Alan L. Bean, Jack R. Lousma and Ronald E. Evans as the backup crew for *Apollo* and Alexei Leonov and Valeri Kubasov as the prime crew and Anatoli Filipchenko and Nikolai Rukavishnikov as the backup crew for *Soyuz*.

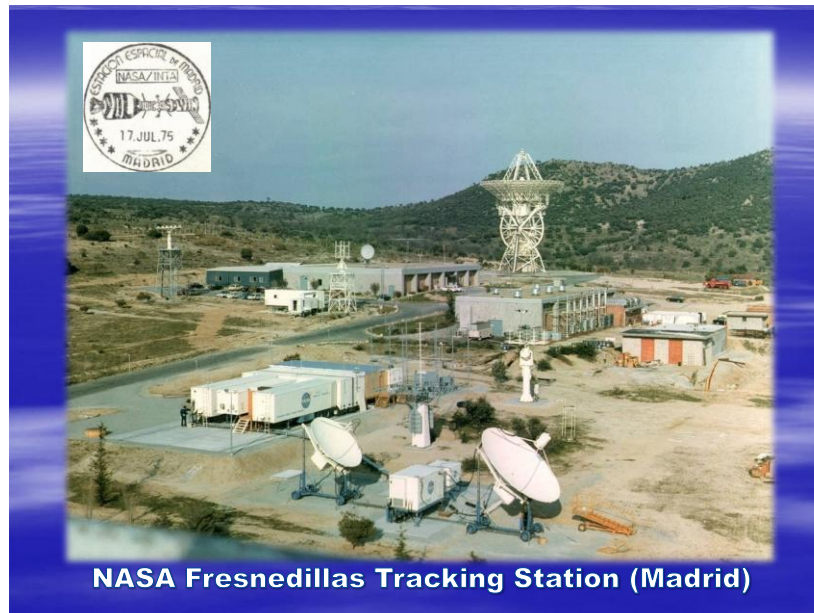


In order to prepare for this mission, a selected team of astronauts/cosmonauts, engineers and specialists had to travel and visit the different installations of the other country to get familiar with the unknown techniques of telemetry, communications and space navigation, among other difficulties. Obviously, the learning of Russian or English, depending on whom, was not the least problem to solve.

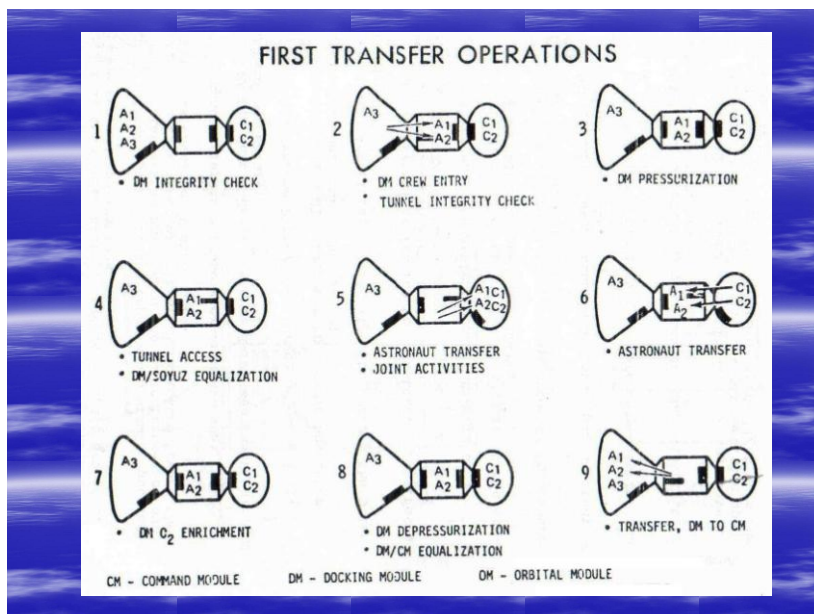
*Soyuz* spacecraft didn't have computers, information technology or any other digital equipment, and although they had TV equipment it was rather underdeveloped and with small resolution. Due to these limitations, NASA took on the responsibility of transmitting all TV by using American



equipment and making sure that the technical team to receive and archive all images coming from both vehicles was the one at the Spanish Station of Fresnedillas.

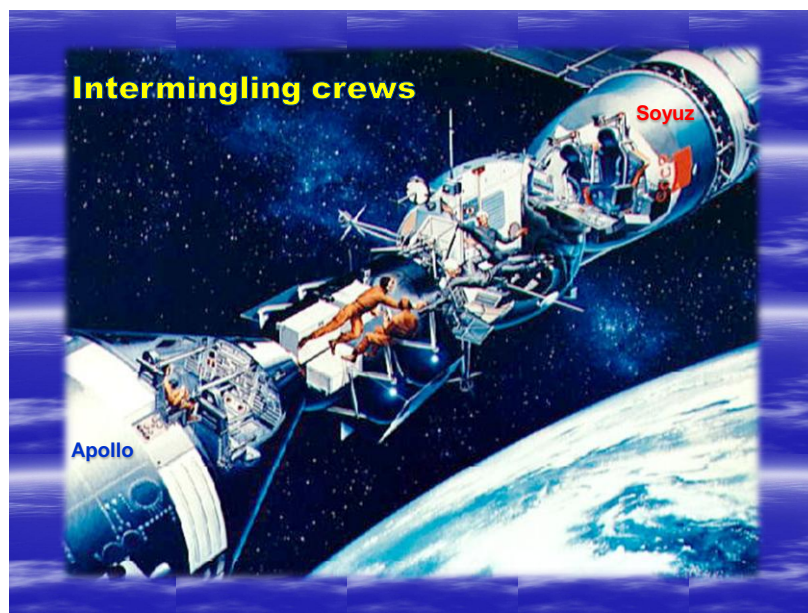


The decision taken by Nixon and Kosyguin was indeed the correct one, but it was also the beginning of countless technical problems which had to be solved in real time to be successful. USA and USSR had developed their space programs in parallel but indifferent to the other's achievements regarding space rocketry.



The detection and tracking system, calculation of orbital vectors, telemetry, module's environment, measuring system (meter, liter, kilograms, etc. of the Soviets vs. foot, gallons, pounds, etc. of the Americans), everything had to be adapted and standardized, not to speak about the language. To minimize this last issue, it was decided that, during the mission, Soviets would speak English while Americans would speak Russian.

It was a difficult task but in words of the Soyuz commander, Alexei Leonov: «...*Just the trying will make it worth...*». That's how the ASTP, or *Apollo Soyuz Test Project*, was born.



### 3. Tracking and control.

NASA, in agreement with the Soviet Science Academy, decided that the Tracking Station at Fresnedillas (Madrid) would be the centre point for communications in the ground. And so, in its premises, a mini tracking and control station equipped for the geosynchronous satellite ATS-6, located at an altitude of 32.000 km over the vertical of Kenya, was installed.

This augmented the conjoint view period with the Fresnedillas equipment to a 60% of the total. In other words, Fresnedillas had the control during 52 of the 87 minutes of the duration of an orbit around our planet.

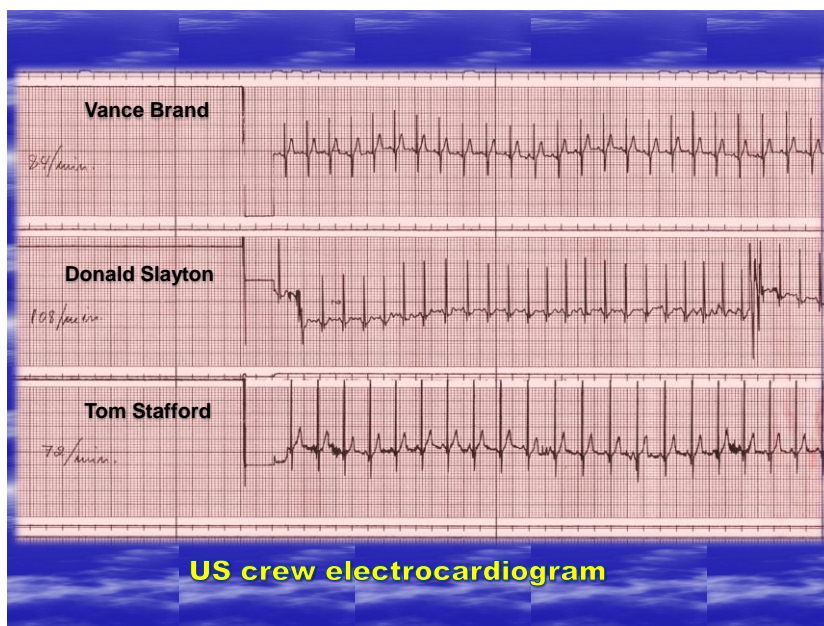
The rest of NASA's network was composed of 14 ground stations around the world, plus the tracking ship USNS *Vanguard* and 3 specialized



ARIA aircraft, to cover extensive ocean areas. USSR added 7 ground stations plus the tracking ships *Sergei Korolev* and *Cosmonaut Yuri Gagarin*.



Early in 1975, INTA-NASA selected a team of engineers and technicians from Fresnedillas to receive a training course, at the Madrid's USA Embassy, about the unknown interior of the space ship Soyuz, with emphasis in the differences in its navigation and communication equipment. The final success of the joint mission proved this to be a great idea.



#### 4. First international hug in space.

On July 15th 1975, *Soyuz 19* and *Apollo XVIII* were launched only 9 hours apart. After 2 days of getting their orbits closer, on the 17<sup>th</sup> they latched by using the new module (*Docking Module*) developed to that effect and, thereby, becoming a single ship.



It was the beginning of a new era, one where the recovery and rescue of any space ship could be accomplished if the "astronautical life boat" was available (DM).





Both ships were attached for a total of 44 hours orbiting our planet at a speed of 28.000 km/h and an altitude of 221 km. The crews proceeded to greet each other through the open hatches, giving presents typical of their respective countries. They interchanged medals, diplomas, awards and...whisky and vodka. Also, authentic national products; as in a picnic, the five space walkers brought down from their back packs a great variety of food to share in company.

The available room space was small enough so that the five crew members could not be in the same place at the same time, so they had to travel back and forth between both ships so that the olive (USA) and the green (USSR) overalls could intermingle.



Leonov and Kubasov, brought as a present 3 typical dishes cooked in 3 different Soviet tracking stations out of the 7 that supported ASTP: from Eupatoria (EUT), Ukraina, a soup made of beetroot and cabbage; from Tsbilisi (TBL), Georgia, a broth of lamb; from Kolpashevo (KLP), Rusia, a soup made with spinach and sorrel; and from Dzhusaly (DJS), Kazakhstan, the always sought-after caviar.

On the other hand, Slayton, Brand and Sttaford, brought: spaghettis, diced bacon, apple pie and apricot pudding.

After separation, they latched again to prove the utility and reliability of the Latch Module and then, after confirmation, *Soyuz 19* returned home landing without problems July 21<sup>st</sup> near Karaganda



(Kazakstán). *Apollo XVIII* de-orbit was on the 24th and it splashed down on the Pacific about 555 km from Hawaii, after having jettisoned the Docking Module.

Both flights were a success and the mission was an international shock due to the positive implications of such cooperation, between two old antagonists, looking towards the future Space exploration.

