

## *Columbia: Dawn of a new Space Era*

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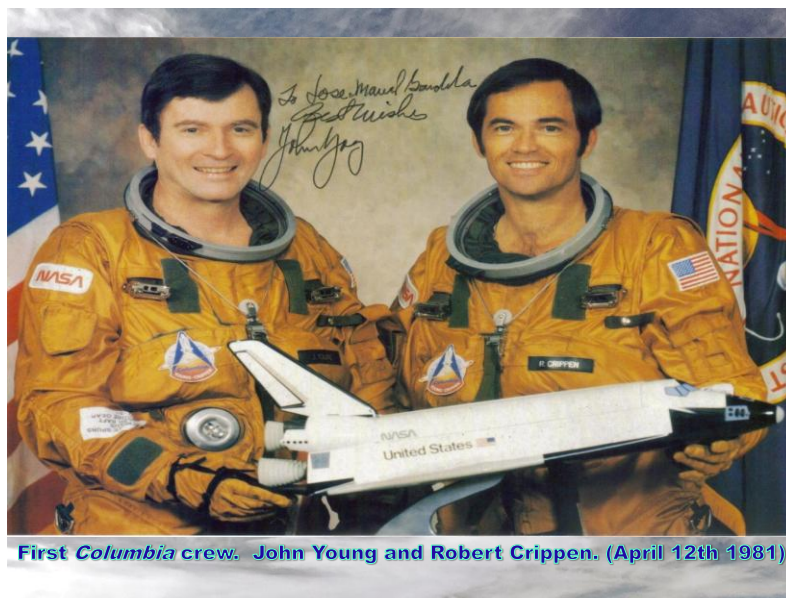
We, who started the Space Exploration Program in the late sixties of the last century, launching men to the Moon aboard the titanic Saturn V rockets, remember the official speech of President Richard Nixon announcing (1-5-1972), that NASA would start the construction of a system of reusable low cost Shuttles. NASA began sending us draft drawings of estrange vehicles - half rocket for takeoff, half aircraft for landing - which announced the dawn of a new era of Space conquest. It was the first time NASA was sending a new prototype of space ship with astronauts aboard, without a single previous test.

And the day came, April 12<sup>th</sup> 1981. It had been more than two years training thoroughly for the new challenge called *Space Shuttle*. Equipment never seen before required our attention and training so many training sessions were taken both, at USA and the Station.

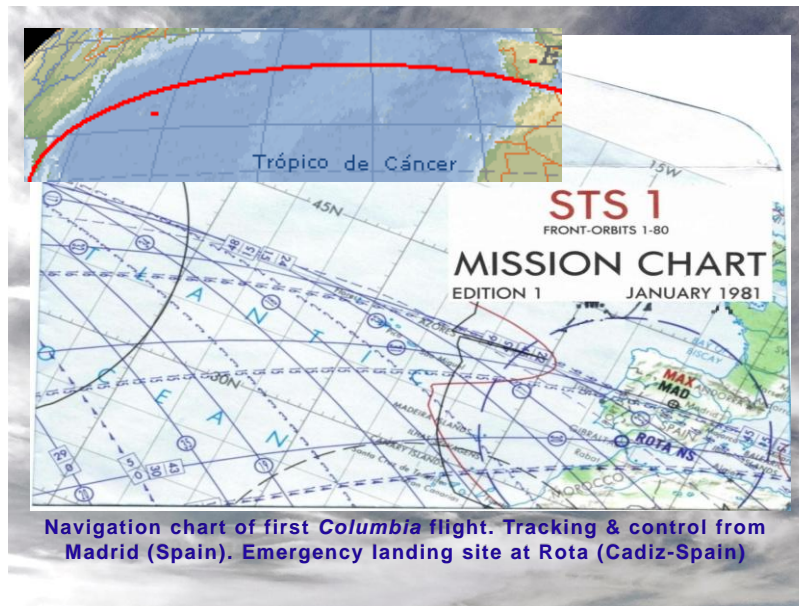
Unsurpassed technology, newer processes, ambitious and complex programs which had taken us hundreds, probably thousands, of hours simulating them over and over again. We were truly ready, knew all the procedures by heart but, nevertheless, still excited due to the enormous responsibility NASA had set upon us.



It was April 12th 1981 and Space Shuttle Columbia was ready for launch; its name had been assigned by repeating that of the Command and Service Module that first took the men to the Moon in the historical flight of the Apollo XI and the honor of being its first crew rested upon veteran astronaut John W. Young (2 Gemini flights and another 2 during project Apollo), and the rookie astronaut Robert L. Crippen.



*Columbia*, like the rest of the later ships like it, had an abort protocol in the case something went wrong after leaving the launch platform at Cape Canaveral which would hamper its ability to attain proper orbit.



To constantly monitor the status of the craft and its boosters, a ground link received data from the vehicle and sent it to the appropriate ground systems. The first station to establish contact with the Shuttle was Merrit Island (MIL) due to its proximity to the Cape, next was the British island of Bermuda (BDA) in the North Atlantic and the following, at the other side of the Atlantic, the Madrid Fresnedillas (MAD).



So, the Merrit Island antenna failed seconds before getting the expected contact with *Columbia* as it passed overhead. Immediately, the whole STDN NASA Network paid attention to nothing but the Bermuda Station which would get contact next.



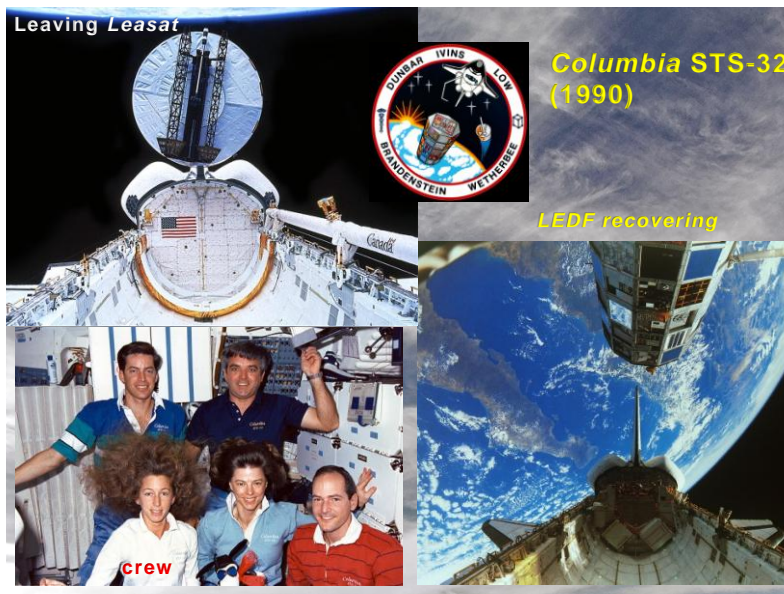
Awards and medals

Everyone was listening to the voice monitors but instead of the expected "Acquisition of Signal" they reported that the equipment in charge of calculating spacecraft velocity and acceleration had just failed. !! WOW!! Now we didn't know where Columbia was, which was its trajectory or if it had attained the proper speed. Should the flight be aborted?



Stuff selling. Failed satellites Palapa-B2 and Westar-VI. (1984)

At the consoles in Houston's Mission Control Centre the controllers were anything but calmed and we noted the tense atmosphere when they called *Madrid Ops* (Fresnedillas), asking our maximum responsible at the Mission Ops Console, Carlos González Pintado, with authentic fear, whether we were ready <<to catch the bird>> and if we could confirm all our equipment was <<Green and Go>>.



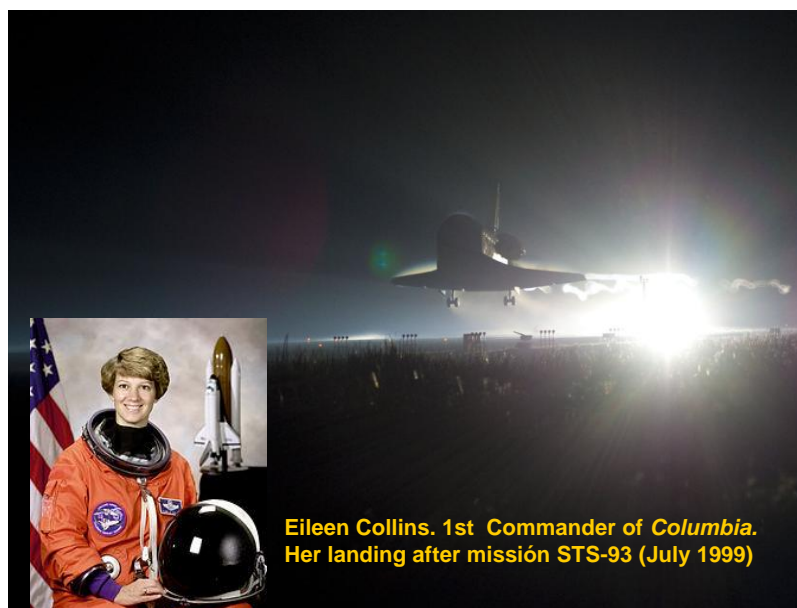
The answer from Madrid *Ops* was immediate and sound: <<Affirmative!!>>, or, in other words, we'll go for it. We couldn't hear the tension relaxing but we could feel it. And so, Fresnedillas jumped to the bullring and cited *Columbia*.



It was then, that the writer of these lines came into play as I had been assigned with nothing less than the responsibility of capturing any signal coming from *Columbia* with the big 26m parabolic antenna, as soon as it would appear over our west horizon.

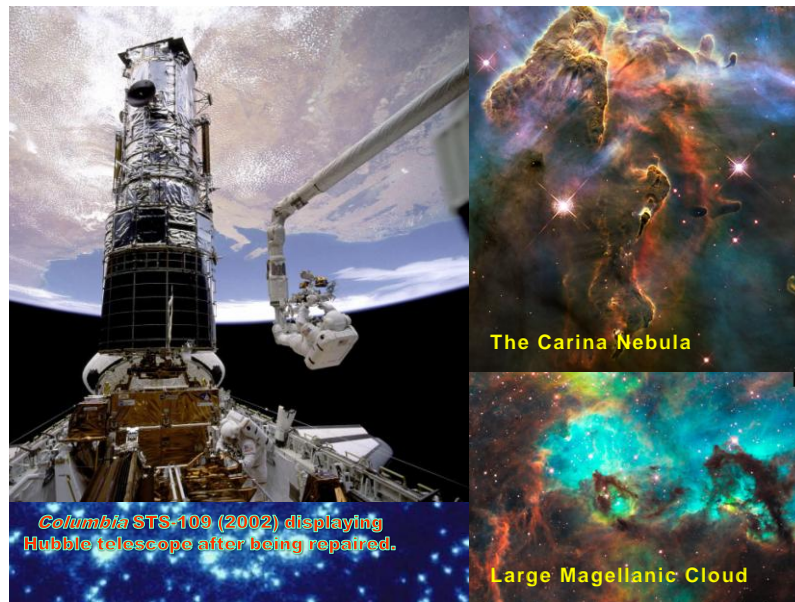


It was imperative to catch that signal as soon as possible, so ground Guidance and Navigation systems could calculate position, velocity and trajectory of the new Shuttle and inform the crew whether they should push-on for orbit or abort and do an emergency landing at the Rota base in Cadiz where they were ready and in stand-by should such event happen.



At the Mission Ops console in Fresnedillas, Carlos González was trying to monitor, all at the same time, the tenths of indicators that gave the status of almost every piece of equipment in the Station. During the last seconds previous to the expected rise of the Shuttle over the surrounding hills, he dedicated all his attention to the monitor indications

from the antenna console (from *my* antenna) waiting for the normal flickering that indicated a radio-frequency signal was being received at our front-end amplifiers, installed at the top of that 200 metric tons movable construction.



These were moments of a great anxiety and several of my fellow techs were around me and my Servo console, as expectant as I was waiting to see the appearance of the signal Houston was demanding. No doubt that my *fairytale* came to help me out, because after a couple of antenna search motions at the lowest possible elevation, I finally locked to the long waited signal and kept to it for the next six minutes when it disappear below the horizon at our southeast. I still remember when I cried: *Initial AOS!* and noticed people around me starting to breathe again.

Through the voice lines, we could hear the applauses and cheers of the Houston Controllers who, as expectant as us, had lived those decisive moments in the distance. As soon as the signal was acquired, our computers started to process the million of bits that would determine whether the spaceship could push to orbit. The computers said "YES" and Houston Control acknowledged: << *Columbia, this is Houston. You are Go for Orbit Insertion.* >>.

It was certainly gratifying to receive later the "congratulations" from the Flight Director, as well as a few awards and honorific prices for the success of our human crew.

We acted, once more, as if we were sailing a Viking *drakkar* where all the rollers are indispensable but their force and hard work are useless without the captain's voice keeping the tempo and mastering the course as waves and wind demand. If that day (and many others) we were able to take our ship to the good port of success it was thanks to the "know how" of a magnificent captain named Carlos Gonzalez Pintado.

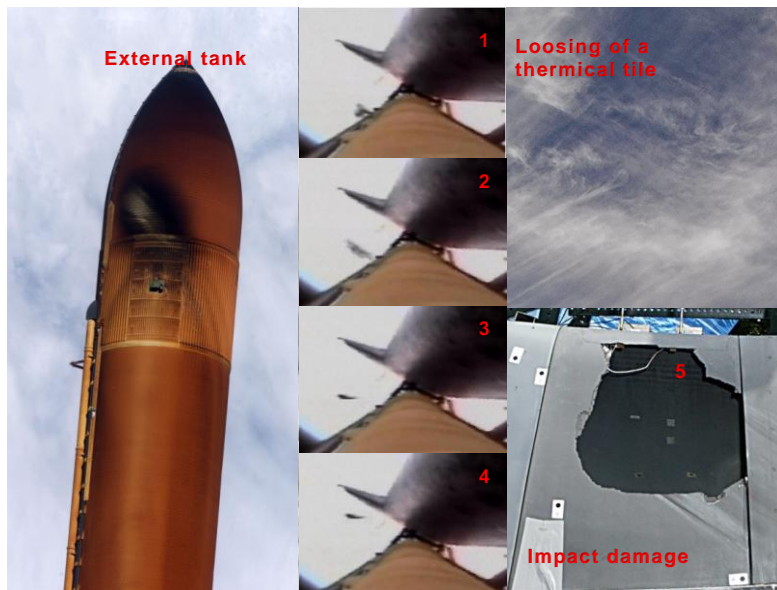
The first mission of a *Space Shuttle* accomplished the challenges that were meant for it and it is now part of History, as part of History is the Fresnedillas Space Tracking Station that made it possible. Anyone can understand that, even after three decades, I still keep in 2012 the memory of those unforgettable minutes with as much excitement as my heart pounded that April 12th 1981.



But the rookie *Columbia* had just barely opened the door through which, during the following 30 years, another four ships would travel to the sky. Their names, as other famous oceanic ships in the past, were: *Challenger*, *Discovery*, *Atlantis* and *Endeavour*.

It was on *Columbia* where first Spanish borne astronaut (Madrid) Michael E. López-Alegría flew into Space for the first time. His maiden flight was STS-73 from October 20<sup>th</sup> to November 5<sup>th</sup>, 1995. López-Alegría flew another three times into space and he has established the second world record of space walk (10), working in open space for a total of 67 hours and 40 minutes.





*Columbia* pierced our atmosphere 28 times leaving behind a cloud of satellites. And so, the names of them became familiar through the news releases: *Anik*, *Satcom-Ku-1*, *Syncom IV-F5* (Communications), *SBS-C* (Stock Information), *Astro* and *Chandra X-Ray* (Astronomy), *Lageos II* (Geodesic), and a good number of space labs from different nationalities that created and increased a great number of life sciences, terrestrial resources, communications, etc. and then, returning them back after the allotted time with the results of their studies. Best known were: Europe *Spacelab I* (ESA), Germany *Spacelab D* and USA *USMP I y II*, among others.

One of the greatest accomplishments to which all the scientific community applauded was the capture and repair, during eleven days aboard *Columbia* (STS-109) in 2002, of the great space telescope *Hubble*. Since then, the known Universe has become inconmeasurable bigger.

Few persons know that the launches of all five Shuttles were conditioned by the weather in the Iberia peninsula. Spain, due to its geographical location and the available infrastructure, offers a unique alternative for the emergency landing after launch from Cape Canaveral. In the not too probable abort situation due to problems or an anomaly, NASA would have instructed the commander of the ship to keep the flight over the Atlantic towards the East and land in one of the available three strips in Spain: Morón de la Frontera base (Sevilla), Rota Aero naval base (Cádiz) and aero base in Zaragoza. The election of which strip to use was

dependent upon the inclination of the orbit of *Columbia* or any of the other Shuttles in their way to space.



On February 1st, 2003, *Columbia* disintegrated into little pieces taking with it the lives of seven astronauts, when only a mere quarter of an hour was all that was left to land and receive the congratulations for a job "well done". The historic unforgettable crew was composed of: Rick D. Husband, William C. McCool, Michael P. Anderson, Kalpana Chawla, David M. Brown, Laurel B. Clark, and Ilan Ramon.

While the seven astronauts orbited Earth above our heads, a few analysts had already warned of the severe risk they would face when reentry into the atmosphere came about as it was known that one of the ceramic tiles went lose during liftoff and hit the attack plane of the left wing.

That unforgettable February 1st, the images that we were looking at went still and the voice of the PAO release, which was so used to inform constantly of every single event of a flight, went silent for long periods of time. Our many years of experience told us something unexpected and tragic had happened.



After a few minutes that seemed like hours, Houston Control confirmed what we didn't want to hear, and with a brief and drastic phrase said: "*Columbia is gone!*" ¡What a great tragedy within such a few words!

And thus, *Columbia* ended its endeavor but not that of the space investigation because this is non-stoppable. Human necessities demand more effort to discover new ways of fighting high risk diseases or to create complete organs for transplants that can only be achieved in a no gravity environment. In a future, that we all hope is not too far, thousands of ill persons that had no expectancy for a cure, will be able to thank the effort of those who gave their lives in the pursue of eliminating their fates.