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# THE LAUNCHING OF THE ESRO II/IRIS SATELLITE, VANDENBERG AIR FORCE BASE (CALIFORNIA) ON 16 MAY, 1968

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Thursday, 16 May 1968.

It was a day like any other at Lompoc, a small California town with 25,000 inhabitants spread out in the middle of flowering fields between two small mountain chains in the vicinity of the Vandenberg firing base.

In reality, from the very first hours of the morning an acute observer could have seen telltale signs that this day was not to be an ordinary day for the inhabitants of the Vandenberg Motel located in Lompoc at 947 North H Street. The absence of the morning breeze gave a more solemn general aspect than usual to the folds of the ten European flags which had been waving for the last few days from the Main Street side of the motel. Starting at 0630 hours, or a half hour ahead of their usual schedule, the few who were fond of early morning exercises had dived noisily into the motel pool which betrayed the morning briskness by a thin layer of mist over the surface. At 0700 hours engineers and technicians with clearly un-American appearance came out of the motel rooms arranged in a long row. They walked in small groups over to the "Coffee Shop" for breakfast. Perhaps they seemed to be a little more serious this morning than usual. Between 0715 and 0730 hours the various cars of the ESRO team left the motel court and it seemed almost as if the starting of the cars was just a little more nervous than usual.

In reality, this Thursday, 16 May was not to be just another day for the ESRO team based at the Vandenberg Motel. During the preceding day, the teams

from the American Air Force who took care of preparation for the firing of the Scout 161C rocket had completed their checkout and the rocket was officially recognized as ready for launch at 1200 hours. At 1330 hours the last checkout of the ESRO II/F.2 satellite, installed on the rocket since 2 May 1968 took place in record time and had been found to be completely satisfactory. Towards the end of the afternoon, on the basis of encouraging weather predictions, the project director confirmed the instructions - so much looked for - and requested the ESRO personnel to man their positions for the beginning of the countdown, planned for the next day at 0800 hours, for a firing at 1906 hours local time.

On 16 May at 0800 hours, John Bayley, the engineer responsible for setting the tempo for the development of the countdown began with a firm and decided tone to call up the different stations connected to the intercommunications network No. 6 of the firing range. The state of the equipment sheltered in the firing blackhouse and connected to the umbilical cord of the satellite was carefully checked out before linking to the satellite and placing it under stress. At 0834 hours the successive checkouts involving the power supply system, the attitude control system and the scientific experiments were carried out. These operations had been minutely broken down months ago into basic actions amounting to a total of 399. The training of personnel in the control procedures corresponding to the state of the satellite were such that questions and replies followed one another unhesitatingly without confusion during this whole part of the countdown. The state of confidence of the scientific experimenters in their equipment was such that no one felt the need, in the section reserved for scientists, to put away the game of chess intended for whiling

away the long periods corresponding to tests in which the scientists had no part! Some personnel, not involved in the countdown operation, were already packing material into crates for shipment back to ESTEC. Finally, 1218 hours arrived, or seventy-two minutes before the time predicted. The test director, Michel Pellet, and the physician attached to the project, Edgar Page, both gave an unqualified "Go!" to the project director as far as concerned the last checkout of the satellite which had been carried out before placing the rocket in vertical position for the firing. The break for lunch planned with the countdown could therefore be confirmed. There was so little strain evident, owing to the advance gained in the schedule that some persons took advantage of the situation to return to Lompoc to make some last purchases of gifts and souvenirs.

At 1400 hours, Colonel Hale, of the 6595th Wing of the American Air Force, responsible for the launching of the rocket, commenced the countdown of the rocket in the true sense.

At 1500 hours, ESOC passed to the project director the confirmation that all stations of the ESTRACK network as well as all the equipments of the control center were operational. The good humor was such at this stage of the launch preparation that the mission director sent a progress report via telex to the Goddard Center in verse form (rather free, I might add) and that several minutes later a receipt for the message was transmitted to him likewise in the form of verse (also rather free).

Then, suddenly there was a crisis - or almost one - at 1510 hours, the firing range services reported that one of the two transmitters for remote

destruction control planned for the ESRO II/F.2 mission was not operational and probably could not be repairedin time for the launch. Now, the availability of this transmitter had been pointed out as a "sine qua non" condition for the launch by booster rocket specialists. A meeting was immediately called for those responsible for the mission and those representing the rocket and the firing range. Some recordings of signals telemetered during previous launches were examined in detail and at 1545 hours it was finally decided to continue launch preparation in spite of the lack of this remote destruction control transmitter. After this incident, the atmosphere at the Mission Director Center became heavy. Even worry became evident beginning from 1600 hours when it became clear that placing of the rocket in vertical position had been responsible for building up a delay which alone ate up twenty-five minutes from the launch window allowed by the special characteristics of the orbit sought for ESRO II.

At 1655 hours, the rocket was vertical and motionless. The testing director immediately triggered the procedure for post-erection checks. All the operators knew it would be good if it were possible to recover some of the lost time so as to allow readjustment of the countdown of the vehicle to the predicted time. At the same time it was possible to note in the tone of the voices on network No. 6 that all the operators were conscious of the fact that it concerned possibly the last check of the satellite before launch. At 1810 hours or only with ten minutes of delay over the planned schedule, the director of testing passed the word to the project director that the results of the tests were satisfactory and that there was nothing to stop the launch as far as the satellite itself was concerned.

Since the reports received from ESOC confirmed the operational state of the stations and the control center, the project director could then confirm at 1825 hours to the NASA mission director that there was no objection from the ESRO side to the launch inside the firing window planned for and authorized Richard Steels, liaison engineer with the rocket, at 1850 hours to proceed with the extraction of the satellite's umbilical cord at the time originally planned in the sequence of operations for the rocket.

As soon as the satellite checks were complete, the American Air Force teams resumed the countdown of the rocket. By listening to the communications network No. 8, allocated to this operation, it was possible to realize that everything was being done to try to recover the delay. Questions and answers followed one another in a rhythm which could only be carried out by a perfectly trained team operating with an especially good rocket.

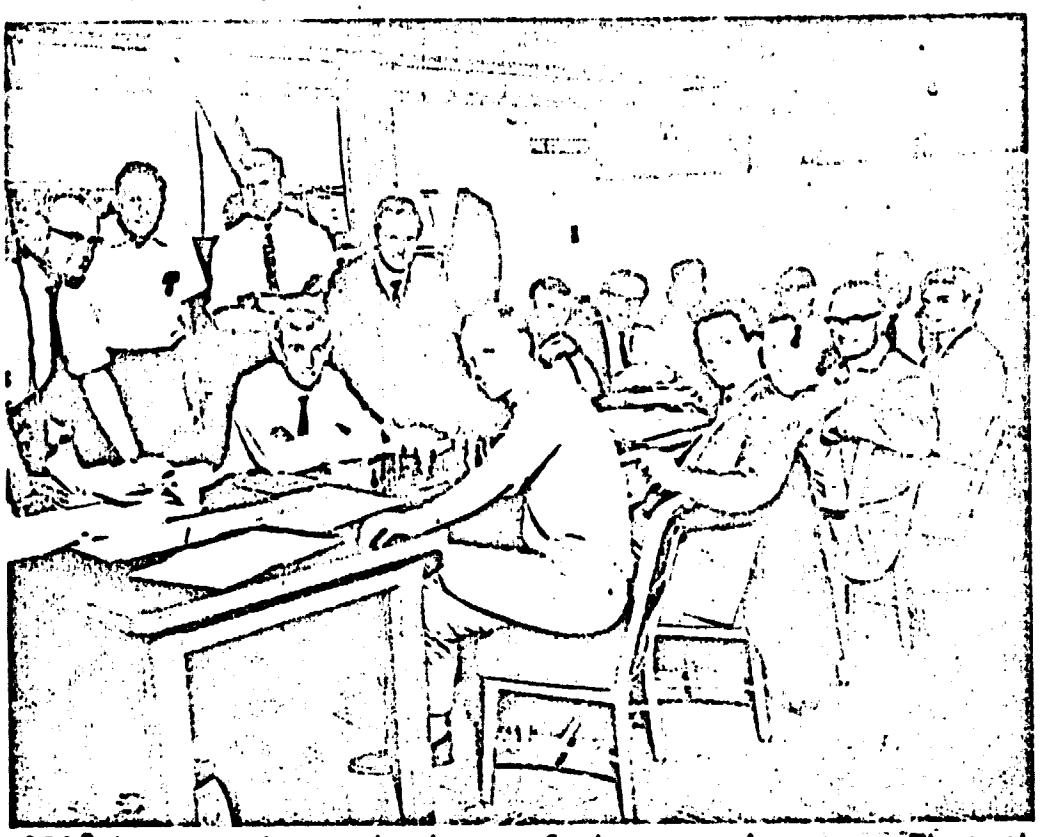
At 1858 hours, the umbilical cords were withdrawn from the satellite and the different rocket stages. Beginning from this moment, the satellite would operate on its internal batteries as it would do when it was placed in orbit. It no longer was connected to the ground and to those who had prepared it except by two invisible electromagnetic links, i.e., the telemetry and control guidance links. The transition of the satellite from its external power supply to its on board batteries at the time of extraction of the umbilical cord passed without comment by the two monitoring stations until the director of testing telephoned to the mission control center in order to request confirmation of the fact that the umbilical cord had actually been extracted.

Then came eight minutes which appeared curiously long with relation to the ten hours fifty-eight minutes which had already elapsed since the beginning

of the countdown. The different pyrotechnic circuits of the rocket were successively armed. The attitude control motors of the rocket were exercised in the form of brief pulses in order to bring them to a temperature to allow them to reach the expected high-speed response in flight. The rocket then, at the height of its second and third stages, angrily spit out puffs of smoke which the sea breeze magically dissipated. These signs of life were the only ones showing that this elegant rocket which rose stiff and white under the California sun was ready and only awaited the signal for blast off. The red emblem NASA/ESRO, at three meters down from the top of the rocket, showed up clearly on the white background of the thermal protection cap and brought proudly to mind that ESRO II/F.2 was at the top of the rocket and was also ready for blast off.

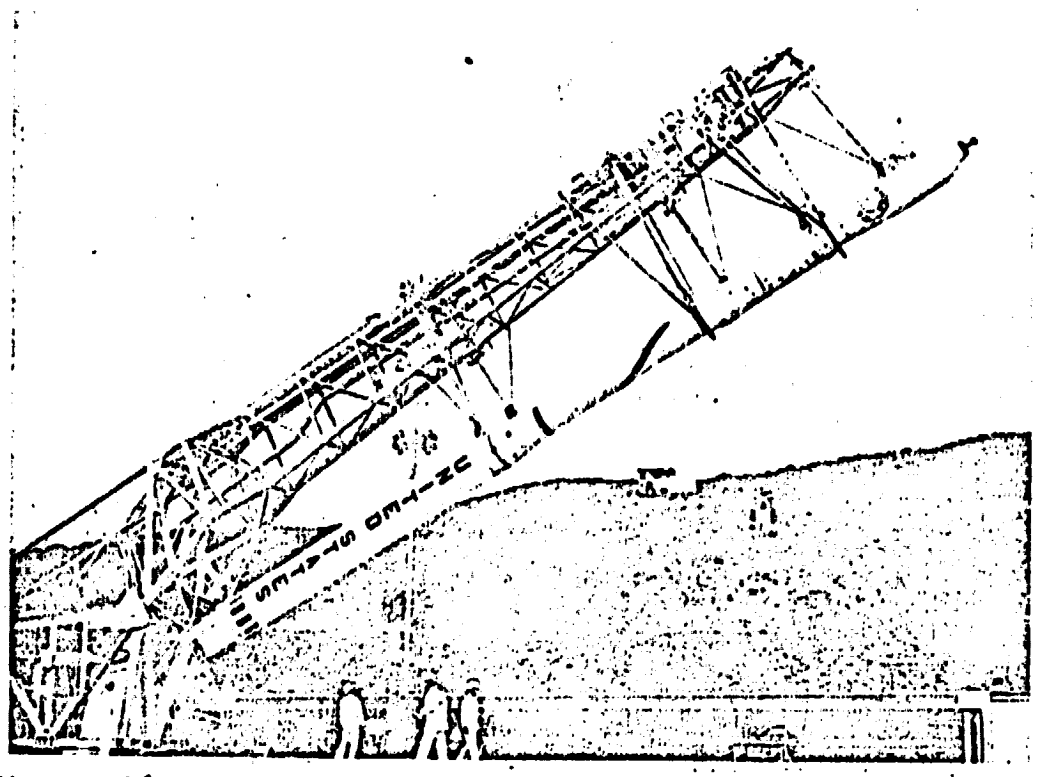
At 1905 hours 50 seconds, on the networks 6 and 8, clear and emphatic voices counted off the fateful 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0 and at the precise moment when the firing range's electronic clock passed over 1906 hours zero seconds, a clear light showed at the base of the launch tower. The rocket, after appearing to hesitate for a fraction of a second, rose rapidly and escaped from the thick white cloud covering the firing platform. After a few seconds, it disappeared into a cloud.

This, on 16 May 1968, at Vandenberg Air Force Base on the Pacific Coast, was the birth of the IRIS satellite, first satellite of the European Space Research Organization.



1218 hours. Last checkout of the experiments. That the diagnosis was satisfactory may be seen from the confident air of all the members of the scientific team.

1500 hours. The launch operations control center; report from ESOC to the project director.



Above: 1630 hours. The rocket is proceeding from the horizontal position to its vertical firing position.
Below: 1857 hours, at the blockhouse. The umbilical cord of the satellite is about to be extracted.

1859 hours. The umbilical cords of the satellite and rocket have been extracted.