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ONERA AT THE BEGINNING OF SPACE EXPLORATION (1950-1963)

Abstract

Created on May 3rd 1946 as Office National d'Etudes et Recherches Aéronautiques (French National Aeronautics Research Centre), Onera is in charge of conducting scientific and technical research for aeronautics, for both civil and military purpose. Not limiting itself to pure aeronautical applications, Onera's research spans a wide range of technical fields from aerodynamics to material/structure and rocket propulsion (solid, liquid and hybrid). Since many of these technologies cannot be fully tested on ground, series of "self-propelled flight models" ("maquettes autopropulsées"), named according to the Onera divisions in charge (OA, OE, OR, OPd), are developed. Following the launches of the first Sputniks by USSR in 1957 and especially the creation of Nasa in the USA in 1958, Onera's head understand that the institute's skills could be used to design sounding rockets in order to contribute to space exploration. At the same time, Onera designs technology demonstration rockets based on the OPd series, as a contribution to ballistic missiles development. These rockets could be used as suborbital sounding rockets for other applications as well. Effectively, on January 27th 1959, the Daniel-01 rocket carries out France's second space experiment (after Véronique in 1954), consisting in radioactivity measurements at an altitude of 130 km. Following this success, Onera ambitions to become a "french Nasa". Nevertheless, the French government chooses to create a dedicated space agency, Cnes (Centre national d'études spatiales) in December 1961, while Onera continues to contribute to scientific and technical research for space applications. Notable contributions are the development of a wide range of sounding rockets (totalling 400 launches till 1976) and scientific payloads for space experiments (satellite or suborbital rocket payloads). Some little known projects (eventually unrealized) illustrate the diversity of Onera's activity and its ambitions, like the Satmos project, for the launching of a small satellite using an enhanced 4-stage Bérénice rocket (which could have occurred before Diamant), and the Héliotrope satellite for the on-orbit demonstration of solar thermal propulsion. As an acknowledgement of its important commitment to space activities, Onera's designation is changed to Office National d'Etudes et Recherches Aérospatiales (French National Aerospace Research Centre) in 1963.