

Report from Paris by Laurent Rosenfeld

Green light for the Ariane 5

Despite austerity, the government has decided to go ahead with projects complementing the U.S. space program.

The French government recently confirmed its commitment to develop and build the heavy space launcher Ariane 5, a much enhanced version of the Ariane series, capable of launching the Hermes "mini-shuttle," a recoverable and reusable spaceship able to carry up to five astronauts.

The decision is quite surprising, insofar as it comes in the midst of dramatic state budget cuts and general austerity. In fact, only one year ago, nobody would have bet much on the odds of seeing the great projects then described by the leaders of the French space industry, Hubert Curien, chairman of the Centre National d'Etudes Spatiales (CNES), and Frederic d'Allest, chairman of the Arianespace industrial consortium.

It was then calculated that the development of Ariane 5 and the Hermes, to be operational in 1995, would require an annual space budget increase of about 1 billion francs (\$120 million) during the first five years, followed by an equivalent increase in the six years to follow. Such financial commitments were not expected at the present economic conjuncture, *unless*, as was noted by the Paris daily *Le Figaro*, "the military got its say in the matter."

The first surprise came at the end of 1983: The budget of the CNES for the year 1984 was increased by \$95 million, to which another \$25 million was to be jointly contributed by the Communication and Defense ministries. In other words, the CNES was getting the funds it required for this ambitious program. In February of this

year, President François Mitterrand proposed a European grand design aimed at constructing a European space station and at preparing military applications.

Then, in mid-June, Industry and Research Minister Laurent Fabius confirmed France's commitment to develop and build the new HM-60 rocket engine, designed to power the second stage of the Ariane 5 rocket, replacing the Viking-4 engine used in the present versions of Ariane. With a thrust of 200,000 lbs., this cryogenic engine using liquid oxygen and hydrogen will enable the rocket to put a 15 metric ton payload—the weight of the Hermes—into low Earth orbit, and satellites reaching up to 7 or 8 tons into geosynchronous orbit.

Such performance capability, while still far below that of the U.S. space shuttle, would make the French program complementary to the U.S. Space Shuttle and Space Station project. The Hermes hypersonic glider and spaceship is even considered a possible "rescue-vessel" for the large orbital space station recently announced by President Ronald Reagan.

Dr. James Beggs, the head of NASA who was recently in Europe to study space cooperation with the Europeans and Japanese, seems to agree with the project. Since France is only prepared to fund about half of the cost of the Ariane 5 and Hermes, Fabius could not have announced the project without the agreement of European partners, especially the Federal Republic of Germany, which would probably assume one-quarter of the

cost. Bonn in turn could not have agreed to the project without an agreement from the U.S. administration.

Also at issue are two other important decisions which will determine the fate of the European Space Agency's programs for 10-20 years to come:

- the construction of the Columbus, an enhanced version of the Spacelab considered a first approximation of a small European space station, presently under study in Italy and in Germany;

- the exact extent and nature of Europe's participation in the American large space station project, for which the Reagan administration has requested of Europe \$2 billion in financing.

While no official decision has been made public, it is probable that an agreement on the Columbus has been reached between the European partners: The decision on Ariane 5 and the HP-60 engine could be taken only under conditions of a reciprocal agreement on Columbus, the idea being that France's participation in Columbus should basically equal Italy's and Germany's participation in Ariane and Hermes.

As for the European participation in the American space station project, the situation is similar, although more complex. The European countries are willing to cooperate on this project, but only provided Europe is given more than a minor subcontractor role. In fact, the European countries want to use the opportunity of this project to acquire the expertise needed to build their own space station later. The agreement in principle should be reached rather quickly—before the end of the year—but the detailed agreement might take longer, perhaps as much as 18 months. It depends on the extent to which NASA is ready to share newly developed technologies with its junior partners in Europe.