Asteroid flyby is approved for Galileo

The National Aeronautics and Space Administration has decided to reroute its next interplanetary mission — the Galileo orbiter-and-probe of Jupiter, scheduled for launching in May of 1986 — to include the first close flyby of an asteroid. Less than seven months after launch, the craft will pass within 10,000 to 20,000 kilometers of a rocky, 200-km object named 29 Amphitrite. Unresolved in NASA's action this week, however, is whether Galileo will do anything as it goes by.

The decision, which resulted from two years of study and months of uncertainty over the ultimate question of whether to try it, was not an easy one. Changing Galileo's Jupiter route to allow even the possibility of scanning the asteroid means that the spacecraft will take three and a half months longer than formerly planned to reach Jupiter (arriving on Dec. 10, 1988, instead of Aug. 29). Its primary mission at the planet will take 22 months instead of 20, during which time it will orbit Jupiter only 10 times instead of 11 and accomplish one fewer flyby of one of the big Galilean satellites. The extension will cost NASA an estimated additional $20 million to $25 million.

And all to preserve an option in which the hoped-for asteroid bonus (SN: 9/8/84, p. 151) may never materialize.

The gamble comes from the fact that the commitment to change Galileo's Jupiter plans — including the three-month arrival delay — had to be made now, leaving time to revise computer software and satellite encounter geometries. Yet the decision actually to study the asteroid on the way, involving the development of complex operating instructions for the craft's scientific instruments, will not be made until Galileo has been checked out in flight, along with its "mission operations system" on the ground at Jet Propulsion Laboratory in Pasadena, Calif.

With the two Voyager craft that were sent to Jupiter and Saturn a few years ago, says Galileo project manager John Casani (who held the same job with the Voyagers), that checkout period took about two months, and Galileo is considerably more sophisticated. In other words, Casani emphasizes, NASA has made no commitment to study the asteroid — only a major change in the Jupiter portion of the mission to permit a chance to try. And Jupiter is Galileo's primary goal; if any problems remain unresolved after the initial checkout, the asteroid study will be dropped. The spacecraft will simply speed on by, tantalizingly close yet effectively blind.

If everything works, however, Amphitrite's 5.39-hour rotation period (determined from its brightness variations as it turns) should allow almost all of its surface to be scanned by Galileo's cameras and mapping spectrometer. These and other data should reveal its exact size, shape, mass, density, the contours and possibly the composition of its surface.

NASA has made a major change in one of the largest interplanetary missions it is likely to have for years, and with no guarantee of anything to show for it. The National Academy of Sciences and other advisory groups have given high priorities to an asteroid visit, however, and if the gamble pays off, it could also trim years from the achievement of that goal.

— J. Eberhart

AIDS research, virus both advance

The last few weeks of 1984 saw good news and bad news on the AIDS front. On the up side: An antiviral drug proved potent against the AIDS virus in culture, researchers reported that health workers are at no increased risk of getting AIDS, and a greater understanding was reached of how the disease attacks at the molecular level. But on the down side, AIDS was associated with possible heterosexual transmission, and in one case with shared needle use in a steroid injection by an athlete.

On the positive side, the Dec. 15 LANCET contains a report from the Centers for Disease Control in Atlanta stating that the antiviral drug ribavirin squelched the reproduction of lymphadenopathy virus, a purported AIDS agent, in white blood cells growing in culture. The drug has a proven safety record, but the CDC researchers tempered their enthusiasm by noting that it is a long way from a cell culture to a human body.

Following reports of a Boston-area health worker coming down with AIDS after he stuck himself while drawing blood from an AIDS victim, and a similar occurrence in a British nurse, Boston and Valhalla, N.Y., researchers announced that their study of 85 health workers showed the group to be at no increased risk. The study is published in the Jan. 3 NEW ENGLAND JOURNAL OF MEDICINE (NEJM).

A slew of AIDS work appeared in the Dec. 20 NATURE. In separate studies, Luc Montagnier's laboratory in Paris and Chiron Corporation in Emeryville, Calif., successfully cloned DNA from AIDS viruses. The Chiron report was initially publicized in September (SN: 9/15/84, p. 164). A British group and Montagnier's lab both characterized components on the surfaces of immune system cells that AIDS viruses grab onto when they infect the cells. "These results," Montagnier's lab predicts, "should help to delineate future therapeutic strategies."

Frighteningly, AIDS may be expanding its target groups. The University of California at San Francisco reported the occurrence of AIDS in four patients with no known risk factors. The three men had all been involved with prostitutes, some of whom, as drug abusers, are in an established risk group. The one woman had had sexual contact with a bisexual man. In addition, the Dec. 27 NEJM includes a report of AIDS in a bodybuilder who had shared needles for steroid injections.

— J. Silberner

White House unveils gene-splice policy

Existing laws appear sufficient to regulate the testing, use, production and safety of commercial products of biotechnology, according to the report of an interagency federal working group created under the White House Cabinet Council on Natural Resources and the Environment. The report, published in the Dec. 31 Federal Register, outlines the Reagan administration's proposed policy for commercializing biotechnology so that neither safety nor the emerging gene-splice industry's innovation and international competitiveness is sacrified.

The extensive report specifies which federal agencies have regulatory authority over products of genetic engineering, indexes all U.S. laws that might be used to govern biotechnology processes or products, recommends an advisory mechanism to assess evolving regulatory and safety issues, and proposes modifications to existing laws that might offer greater premarket safety review of biotechnology products. The document formalizes — and fleshes out in the greatest detail to date — what had been the administration's evolving ad hoc policy (SN: 8/20/83, p. 119).

Regulatory authority for biotechnology endeavors is determined largely by the product to be marketed. For instance, commercial goods containing genetically engineered microorganisms to be used as foods, food additives, drugs or medical devices must meet applicable Food and Drug Administration statutes, whereas those used for pollution control or enhanced-oil recovery would be governed by the Environmental Protection Agency's Toxic Substances Control Act.

The interagency panel reports that many gene-splice products, such as genetically engineered microbial pesticides, "may, on a case by case basis, be subject to greater [safety] data requirements" than conventionally derived microbial pesticides. It also notes that in the case of these microbial pesticides, an interim EPA policy requires that manufacturers of all genetically engineered versions must notify the agency before releasing the microbes into the environment as part of their efficacy tests.

During the next 90 days, the interagency panel is soliciting "candid assessments" of the process and policy it has proposed.

— J. Raloff