

The board reports

In the wake of the Apollo 13 abort, some officials of the National Aeronautics and Space Administration remain confident that the corrections can be made to the Apollo spacecraft in time to meet the earliest launch possibility for Apollo 14 in December.

But the findings and recommendations presented to NASA Administrator Thomas Paine this week by the Apollo 13 Review Board chairman, Edgar M. Cortright, are so extensive and would require such a thorough review of all systems, subsystems and procedures, that no one is publicly prophesying the final effect on the Apollo schedule.

Decisions affecting Apollo's future, based on the board's recommendations, will not be made until next month. By then, says Dr. Paine, the space agency will have had time to study in addition reports from the Office of Manned Space Flight and the agency's Safety Board, as well as all other possible manned space flight schedule options Dr. Paine has requested from the NASA research and flight centers.

Verbatim adoption of the Cortright recommendations would almost invariably mean a lengthy stretch-out.

Central to the report's recommendations was the need not only for correction of the cause of the Apollo 13 failure, but for a review of the entire spacecraft. The NASA officials are adamant in their determination not to fly another crew to the moon with the present design of the equipment.

To correct for the specific cause of the Apollo 13 failure, the service module's oxygen tank, the board recommended the removal from contact with oxygen of wiring, unsealed motors and other materials that could short-circuit and ignite adjacent materials. And the use of Teflon, aluminum and other materials that are relatively combustible in the presence of oxygen should be minimized. Although NASA officials have not decided on the resulting design of the tank, or even whether what must go can actually be eliminated, the oxygen tank changes have top priority.

The board's findings revealed that failure of the thermostatic switches to open could have been detected at the Cape if switch operation had been checked by observing heater current readings on the oxygen tank heater control panel. Since tank temperature readings indicated that the heaters had reached their temperature limit (switch opening should have been expected had these readings been observed) the board recommended improvements in the caution and warning systems, both on board the Apollo craft and in the Mission Control centers at Cape Ken-

nedy and Houston. Changes to eliminate unnecessary alarms, adjustments in the caution and warning logic systems to prevent an alarm from blocking another in the same system, and visual or audible alarms that could not be overlooked were advised.

Reassessment of lifeboat possibilities, consumables and emergency equipment in the lunar and command modules, under way since the abort itself, was also recommended. The study panel also wants changes in the launch procedures at Cape Kennedy when malfunctions of a major system or subsystem are involved.

Perhaps the most time-consuming task recommended, and the one that could most affect future schedules, involves management re-evaluation and reassessment of all Apollo spacecraft systems and the engineering organizations responsible for them at the Manned Spacecraft Center. This is to include both the prime and subcontractors.

One malfunction not related to the actual abort explosion, but which would be related to the general review and tests, was an abnormal current flow which was detected in the lunar module's power system while the LM was supplying the power to return the Apollo 13 crew to earth. The board recommended continuation of testing of the LM power system already under way at MSC in Houston.

The Apollo 13 report, a million-dollar study involving some 300 scientists and engineers and including over 100 simulated tests, describes the Apollo accident as "not the result of a

NEW COMMISSION

Compromise on drugs

An Administration-sponsored drug bill passed the Senate in January by an 82-0 vote (SN: 4/4, p. 339). The bill, introduced by Sen. Thomas Dodd (D-Conn.), would give the Attorney General the power to classify drugs, according to their potential for abuse, in schedules that in turn control research and medical use of the substances. The Secretary of Health, Education and Welfare would be relegated to an advisory position in regard to drug classification.

What raised the ire of scientists and the medical profession were the powers effectively given to the Attorney General to regulate drug research and to impose extensive record-keeping tasks on physicians who dispense any scheduled substances, including barbiturates and amphetamines.



NASA

Teflon burning: Redesign necessary.

chance malfunction in a statistical sense, but rather resulting from an unusual combination of mistakes, coupled with a somewhat unforgiving design." The review panel indicted all parties—the subcontractor for the oxygen tanks, Beech Aircraft Corp., Denver, Colo.; the prime spacecraft contractor, North American Rockwell Corp., Downey, Calif.; and the NASA personnel from top management on down.

The trigger of the near disaster appears to have been the failure of Beech Aircraft to follow design specifications for the thermostat switches whose failure led to all the subsequent events (SN: 6/13, p. 571). Switches with a 65-volt capability had been ordered, to make them compatible with ground-support equipment; Beech installed 28-volt switches, according to an outdated specification, instead. The application of ground-support voltage to the 28-volt switches welded the switches shut.

Critics have argued that the bill takes away authority that appropriately belongs in HEW. "The Attorney General is given broad powers in areas which have traditionally been the domain of the medical and scientific community and the representative of these communities, the Department of Health, Education and Welfare," says Neil A. Chayet, lecturer in Legal Medicine at the Boston University School of Medicine. Chayet is executive secretary of the Committee for Effective Drug Abuse Legislation, many of whose scientist-members testified against the bill.

Since the Senate action, attempts to reach a compromise on the control of drug classification have centered in the House Subcommittee on Public Health and Welfare. After being submerged in subcommittee rewrite sessions for six

weeks, a revised bill is surfacing. The compromise gives the drug-classifying power neither to Justice nor HEW, and gives both a handle on research.

The revised bill would establish a Commission on Drug Classification to mediate between the contending agencies. One member each would be appointed by HEW and the Attorney General. The President would name three additional members. In making its decisions on drug classification the commission would request the advice of both the Secretary of HEW and the Attorney General, remaining independent of both.

Under the proposed legislation the Secretary of HEW would license qualified researchers, distributors and manufacturers of the controlled substances. For purposes of regulation the Attorney General would register an applicant to distribute, manufacture or dispense controlled substances.

The future of the legislation is in doubt. The Justice Department has submitted a rival bill more like the Senate version, on which the House Ways and Means Committee will begin hearings in July. □

CONTRACEPTIVE PILL

FDA writes another warning

In March, Food and Drug Commissioner Charles C. Edwards announced the agency's intention to require all oral contraceptive manufacturers to enclose a 600-word warning of hazards and possible hazards in packages going directly to the patient (SN: 3/14, p. 266). Physicians and drug houses went along with the Commissioner's idea but not with the substance of his insert.

Last week, the FDA proposed a compromise. A brief statement to women will say, "Do not take this drug without your doctor's continued supervision." It will go on to declare oral contraceptives powerful drugs that can cause side effects in some persons and should not be used at all by others. "The most serious known side effect is abnormal blood clotting, which can be fatal," it will state. In addition, it will inform women that their physicians have a more detailed statement (regarding pill hazards, including metabolic effects on blood sugar and cholesterol and the fact that estrogen is known to cause cancer in animals though it has never been shown to do so in human beings). "Your doctor will give you this booklet," the proposed statement to women says.

By sending the more detailed outline of hazards to physicians instead of directly to patients, the FDA hopes to avoid charges that it is violating the doctor-patient relationship.

Affected persons have 30 days to submit comments on the new wording. □

SCIENCE NEWSBRIEFS

Space Record

The Soviet Union's Soyuz-9, launched into earth orbit June 1 with two cosmonauts aboard (SN: 6/6, p. 552), passed the 15-day mark this week, thus breaking the United States' record for the longest time in space, set by Gemini Astronauts Frank Borman and James Lovell in 1965. The purpose of the flight is to obtain biological and medical data on man's ability to work in space for long periods of time. □

Seeding near Tahoe

The surface of Pyramid Lake, a 170-square-mile body of water within the Paiute Indian reservation in western Nevada, has been dropping for many years at an average rate of about one foot a year.

To try to preserve the lake and provide adequate water for other users in the Truckee-Carson River Basin, the Department of the Interior will conduct a pilot five-year cloud-seeding program over the headwaters of the Pyramid Lake-Lake Tahoe region of California and Nevada.

Interior Secretary Walter J. Hickel and the governors of both states have approved the plans. The University of Nevada's Desert Research Institute will carry out the \$900,000 program for Interior's Bureau of Reclamation. □

Solid waste future

Long neglected, the solid waste problem (SN: 9/27, p. 278) is gaining recognition. Two bills presently working their way through the House and Senate could make the Government's solid waste program worth between \$250 million and \$800 million over the next three years. In comparison, the Departments of Health, Education and Welfare and the Interior have spent a total of about \$14 million on the problem since 1965. □

Health Insurance

The President last week presented general details for a Family Health-Insurance Program for the poor. Families with incomes below \$1,600 would have their insurance paid by the Federal Government. Families earning between \$1,600 and \$5,620 would be expected to pay a percentage of their income as their contribution to the insurance. The Federal Government would pay the rest of the premium. Legislation embodying the proposal will be forthcoming in January, the President said. □

Freedom of research

Scientific study of the oceans is increasingly being restricted by extensive claims of national jurisdictions over coastal waters. The Council of the

National Academy of Sciences therefore has urged the United States Government to allow scientific research, without a permit but with safeguards, in ocean areas subject to its jurisdiction. The hope is that such unilateral action would produce similar actions by other countries. □

Methadone regulations

The Bureau of Narcotics and Dangerous Drugs and the Food and Drug Administration last week jointly issued regulations for methadone programs for heroin addicts (SN: 4/11, p. 366). The regulations limit the maximum daily dosage of the drug to 160 milligrams per person. The drug must be dispensed in a form that cannot be injected by needle. This is a protection against theft. The guidelines call for concurrent rehabilitative measures such as vocational guidance and psychotherapy. Maintenance of records on the addict's history and follow-up are required. Sponsors of the program must report any hazards or side effects that become associated with the drug. □

Drug suit filed

The American Public Health Association and the National Council of Senior Citizens are taking the Government to court, charging the Food and Drug Administration with failure to enforce the 1962 Kefauver-Harris drug amendments. The 1962 legislation demands safety and efficacy of prescription medicines. At issue is the FDA's failure to release the results of a two-year drug evaluation study by the National Academy of Sciences-National Research Council (SN: 2/14, p. 181). The suit charges that about 150 products that do not meet legal standards continue to be sold. □

Marine sanctuary

Last week, President Nixon asked Congress to cancel all but three of the oil leases offshore from Santa Barbara and to create a marine sanctuary seaward from the existing sanctuary which stretches 16 miles along the coast near Santa Barbara. Oil leaks in the area in 1969 caused widespread damage. □

Building failures

Inadequate building construction contributed to the destruction caused by the tornado that hit Lubbock, Tex., on May 11, killing 25 and injuring 500. The storm either destroyed or seriously damaged 10,000 houses. That is the preliminary finding of a National Bureau of Standards building research team released this week. The team found many failures at points where lightweight buildings had been anchored to the ground. □