PUBLIC SAFETY

Use and Safety of Atom

➤ THE CONFLICT between the Atomic Energy Commission's regulatory responsibilities involving health and safety and its development of use of atomic energy has come to a head. The problem is one of concern to the new Administration.

The AEC has been criticized, on the one hand, for allowing safety considerations to unnecessarily impede industrial atomic development. It also has been attacked for placing safety factors second to development goals and thereby endangering the public health.

This paradox is a natural consequence of allowing one agency to control both regulation and development; and a reorganization of the AEC now appears imminent.

It has been the subject of four separate major studies by the AEC, the Joint Congressional Committee on Atomic Energy, the University of Michigan Law School and the Brookings Institution.

The AEC plan, now completed, appears to have the backing of President Kennedy.

When asked by SCIENCE SERVICE to give his views on the Michigan recommendations President Kennedy said that members of the Atomic Energy Commission agree that there should be some external check on their research and development program. He added, "I think that there is a fair balance today." He pointed out that the subject was discussed when he visited the Atomic Energy Commission in Germantown, Md.

The AEC study recommends that all regulatory functions now under the general manager be placed under a director of regulation, reporting directly to the five-man AEC. The present division of licensing and regulation and division of compliance, now under the authority of the general manager, would be placed under the new director of regulation. The compliance division would become an office of inspection and have a section of health and safety for regulatory duties.

The Brookings study is not yet completed. The extensive four-part review of the problem by Michigan Law School has recommended that the AEC be split into two agencies. An Atomic Energy Board would assume present safety regulatory functions of the AEC, including rulemaking and deciding licensing cases. An Atomic Energy Administration, headed by a single executive rather than the present five-member Commission, would be responsible for conducting the AEC's operational, development and promotional functions.

The split could increase public confidence in the operations of the atomic energy industry while, at the same time, the industry would benefit from a regulatory system that is not unduly burdensome, the Michigan study claims. Its authors are Lee Hydeman and William Berman, both former AEC attorneys.

The Joint Committee recommendations would create a three-man licensing board to operate within the AEC, its functions limited solely to regulations of health and safety involved in licensing. It would have no police powers to enforce compliance with its regulations, however, once the license was granted.

The members of the licensing board, men of high technical ability to be appointed by the President, would conduct reactor-licensing hearings and decide cases.

The five-man Commission would retain rule-making and policy functions but would look to the licensing board for recommendations on rules.

All proposals undoubtedly will receive Congressional attention in the coming weeks, and predictions are that unless the Administration changes its position, the AEC recommended modifications will stand.

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ROCKETS AND MISSILES

Stable Rocket Can Go Far With the Right Attitude

➤ ROCKETS, like people, need the right "attitude" and "stability" to push ahead and achieve success. With the right amount of both, however, "the sky is the limit," literally for rockets.

The attitude and stabilizing system of an Aerobee 150A sounding rocket will be put to the test soon from Wallops Station, Va.

If the rocket's attitude is right and sufficient stability is demonstrated, the two-stage Aerobee will become an important test vehicle for designing and developing experiments and instruments for an Orbiting Astronomical Observatory (OAO) to study the universe.

The Aerobee is one of the mainstays in the extensive sounding rocket program of the National Aeronautics and Space Administration's Goddard Space Flight Center.

The spinning motion of sounding rockets without attitude or pointing control systems prevents astronomical instruments from being pointed at celestial objects long enough to obtain needed information.

To be launched in a near vertical trajectory, the Aerobee 150A is planned to reach a maximum velocity of 6,100 feet per second, and take its 195-pound payload to an altitude of 134 statute miles.

Besides testing the new system, the Aerobee will carry two scientific experiments to measure energies in space. The first is a detector to obtain data on the energy and distribution of gamma rays in the 0.1 and 1.5 MEV (million electron volts) range. The second will measure solar flux or energy from the sun in two spectral regions. The latter experiment depends on the rocket control system to aim two experimental sensors at the sun.

The rocket attitude system basically is a gyroscope that will permit programming of as many as five different targets in space per flight.

Developed by Aerojet-General Corporation, the 44.4-pound attitude control system will be test-checked by a tracking solar sensing system of Ball Brothers Research Corporation of Boulder, Colo.

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TECHNOLOGY

Computers Imitate People

➤ COMPUTERS can now be programmed to solve problems in basically the same way that children apparently learn to speak and business men commonly make decisions, Prof. Herbert A. Simon of the Carnegie Institute of Technology declared in a lecture at the Massachusetts Institute of Technology, Cambridge, Mass.

A first approximation of "the hierarchy of final causes traditionally called the mind" has been reached, he said in describing a computer program called the General Problem Solver.

Living organisms, he argued, survive by associating appropriate perceptual symbols with motor symbols. The former describe the world as it is and the latter describe actions. Men solve their problems by finding correspondences between the symbols that constitute these internal languages, he said, and the system of methods they use is now being simulated in computers.

"Most of our skill in dealing with the environment," he said, "is embodied in elaborate heuristics, or rules of thumb, that allow us to factor (approximately) the complex perceived world into highly simple components and to find (approximately and reasonably reliably) the correspondences that allow us to act on the world predictably. . . .

"Computer programs can be written that use non-numerical symbol-manipulating processes to perform tasks which, in humans, require thinking and learning. These programs can be regarded as theories, in a completely literal sense, of the corresponding human processes. . . .

"A dozen or more computer programs have been written and tested that perform some of the interesting symbol-manipulating, problem-solving talks that humans can perform, and that do so in a manner which simulates, at least in some general respects, the way in which humans do these tasks."

Prof. Simon is associate dean of the graduate school of industrial management at the Carnegie Institute of Technology. His lecture was one of a series on "Management and the Computer of the Future," being given to celebrate MIT's centennial. The MIT's school of industrial management arranged the series of discussions of computer potentialities with the help of a grant from the International Business Machines Corporation.

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