

instructions by Police Chief Curry to "Go to the hospital," clearly an order that followed the assassination.

The Academy Committee made another, compatible estimate of this time delay by selecting as a matching point a phrase that is clearly intelligible on both channels: "You want me... Stemmons." By counting—backwards in time from this query to the "Go to the hospital" order on Channel II, and to the acoustical impulses on Channel I, Ramsey and his colleagues established a time difference of at least 30.9 seconds between them. The task of timing was complicated by the many skips on Channel II, which was activated by voice. Because of periods of silence when this channel was not transmitting, the real time separation could have been one minute, as estimated from the other approach. Thus the four sets of acoustical impulses could not represent assassination shots.

The Academy report advances several arguments that the crosstalk occurred in real time and was not added later by accident or design. The most interesting technical argument involves the behavior of the crosstalk in

the presence of a Channel I heterodyne tone. The recording indicated that the radio receiver for Channel I had an automatic gain control (AGC). The Committee observed that, when simultaneous transmission from two radios on Channel I gave rise to a heterodyne tone, the AGC reduced the amplitude not only of the Channel I signal but also that of the crosstalk from Channel II. The AGC could have that effect only if the crosstalk occurred in real time.

On a less technical level, the report discusses indications that the motorcycle with the stuck microphone was most probably not in Dealy Plaza at all. Similar reasoning had been advanced previously by James Bowles, the Communications Supervisor of the Dallas Police Department at the time of the assassination.

Part of the Academy panel's charter was to recommend further investigations of the police tapes. Although the panel complied with that request, they felt strongly and unanimously that the case against gunfire sounds on the tapes was so conclusive that the results to be expected from such studies would not justify their cost. —BGL

will participate as observers only.

Commenting on the composition of this policy review group, John Gibbons (Director of the Office of Technology Assessment) said, "It appears to limit sharply participation in space policy formulation and implementation by both civilian government agencies and the US private sector, while giving unambiguous control over policy decisions to the military-intelligence community. From the point of view of civilian space activities, this will make it even more difficult to integrate the requirements of civilian scientists, users, and potential commercial operators into space-policy decisions."

Hans Mark (Deputy Administrator of NASA), asked to comment about whether the domination of this group by representatives of the military would pose problems for the future direction of the NASA space program, told us, "No. It simply reflects the fact that more than half of space business is military."

The policy calls for the development and operation of the Space Shuttle by NASA in cooperation with the Department of Defense, but while referring to the Shuttle as the primary launch system for both military and civilian missions, it gives priority to national-security missions.

Reagan's statement on national-security goals is similar to Carter's in most respects, calling for insuring the survivability of space systems and for developing and maintaining a capability to react to threats to US space systems. Developing an operational antisatellite capability is mentioned for the first time, but this is not a drastic break from the past, as the Carter policy called for developing such a system if the US could not reach an arms-control agreement with the Soviet Union.

As in the past, the policy calls for data from national-security missions to be disseminated in accordance with Executive Orders and applicable directives, but it excludes a statement from the Carter policy that clarified this objective. The earlier policy had said, "Space related products and technology shall be afforded lower or no classification where possible to permit wider use of our total national space capability."

The OTA, however, in its recently released report "Civilian Space Policy and Applications," called for both a reexamination of the restrictions on which military space technologies could be used by the private sector, and a faster transfer of military technologies to commercial users. In this study of the influence of national policy on the commercial development of space technologies, OTA concluded that such increased cooperation between the military and civilian interests in space was

New space policy strong on defense

One outcome of what Representative George Brown Jr (D-CA) has called "a strictly militarily inspired space policy" puts the assistant director of National Security Affairs at the helm of a group advising the President on space policy issues. Reagan's statement of the new national policy was released via a White House fact sheet in July; the directive containing the policy itself remains classified.

"Since the document itself has been kept classified, there is no way to evaluate exactly what the policy is or how it will influence the conduct of space science," Peter Boyce (AAS executive officer) told us. Expressing the concern of many scientists, Eugene Levy (professor of Planetary Sciences at the University of Arizona and a member for the past four years of the Space Science Board) said, "It is most significant that scientists who have for decades been involved in these decisions seem to have been shut out. This is deeply disturbing."

President Reagan announced his new National Space Policy as part of the ceremonies surrounding the recent landing of the Space Shuttle Columbia. The Directive containing the policy follows a ten-month comprehensive review of the national space program conducted at the President's request under the direction of Victor Reis (assistant director in the White House Office of Science and Technology Policy). The

policy statement was released into a climate rife with speculation and discussion about the future of the US space program in the wake of a tough fight over the proposed NASA budget, concern about the militarization of space, and interest in keeping the US commercial applications of space technology competitive with other countries.

Reagan's policy reiterates much that was part of Carter's space policy. There are some changes, however. While once again avowing that "the United States is committed to the exploration and use of space by all nations for peaceful purposes and for the benefit of mankind," the statement now goes on to say that "peaceful purposes" include "activities in pursuit of national security goals."

The policy statement establishes a Senior Interagency Group on Space to provide a forum for Federal agencies, to review national space policy, and to refer policy issues to the President. This group, led by the Assistant to the President for National Security Affairs, includes the Deputy Secretary of Defense, the Deputy Secretary of State, the Deputy Secretary of Commerce, the Director of Central Intelligence, the Chairman of the Joint Chiefs of Staff, the Director of the Arms Control and Disarmament Agency, and the Administrator of NASA. The Office of Management and Budget and the Office of Science and Technology Policy

needed to enable the US to stay competitive with other countries.

Militarization of space. The President's announcement of policy led to an increase in Congressional concern about the growing role of the military in space. For example, Brown called for hearings of the House Science and Technology Committee to evaluate the Reagan space policy. Brown also authored and introduced in Congress a space-policy bill emphasizing the civilian uses of space.

The proposed FY 1983 NASA authorization bill includes a requirement proposed by Senator Harrison H. Schmitt (R-NM), chairman of the subcommittee on Science, Technology and Space, that DOD pay to NASA the full cost of

placing its payloads into orbit on the Space Shuttle on a yearly basis, at the same rate that NASA charges for its civilian flights. This would amount to adding \$409 million to the NASA budget for FY 1983. Schmitt told us he feels strongly that DOD should not have to be subsidized at the expense of our country's civilian aeronautics and space program. On 11 April the full Committee on Commerce, Science and Transportation unanimously approved incorporating this requirement into the authorization bill. Whether it will be included in the final budget has yet to be determined.

In FY 1983 the Department of Defense budget for space will for the first time exceed NASA's budget, while more than half of the total NASA budget supports the Space Shuttle and its auxiliary systems. The fourth Shuttle flight, launched in July, was the first to carry a military payload consisting of a classified group of instruments. On future Shuttle flights the payloads for DOD are expected to account for a larger proportion of the total, as Federal support for civilian programs is increasingly constrained; some estimates indicate that DOD payloads may exceed 50% of the total. In anticipation of this, and to load future Shuttles in secrecy and to maintain tight controls on its flights, the Air Force is building its own launch site at Vandenberg Air Force Base in California, scheduled to be completed in late 1985. In September the Air Force will begin operating its Space Command Center, newly established to coordinate military activities in space. The Jet Propulsion Laboratory, run by Caltech for NASA, has increased its defense work from 6% to 30%. Meanwhile JPL's director, Bruce Murray, has resigned and is being replaced by General Lew Allen Jr, former Chief of Staff of the Air Force.

OTA is now completing a small study evaluating programs for space science, one of whose points of focus is the current status of these programs. A technical memorandum resulting from this study is scheduled to be released in September or October. According to Philip Chandler (OTA Project Director of the Space Science Study) the new report will state that "Selective budget cuts and the reallocation of funds within NASA space science programs have left planetary science, solar and heliospheric physics, gamma-ray astronomy and x-ray astronomy with uncertain futures. Indeed, many in the space-science community think that the program has lost its sense of direction and that it is time for national goals for space science to be articulated." Chandler told us, "the White House fact sheet on national space policy and President Reagan's 'state of space'

speech published on 4 July, did not really address the major concerns of space science, and may, if anything, have heightened those concerns." —JC

physics community

AAS to provide journals to Polish institutions

The American Astronomical Society has been collecting money for subscriptions to AAS journals for Polish astronomical institutions. AAS is also urging institutions that receive complimentary or exchange subscriptions to the Polish journal *Acta Astronomica* to provide subscriptions to AAS journals for Polish counterparts.

The Polish government has prohibited Poles from sending hard currency out of the country, to improve deteriorated economic conditions there. As a result, Polish astronomers, unable to pay for foreign journal subscriptions, have had trouble keeping abreast of astronomical developments outside Poland. Extended visits by Polish astronomers to the US during more stable and prosperous times have facilitated the AAS effort.

Contributions for subscriptions can be sent to Arlo U. Landolt, Secretary of AAS, Louisiana State University, Box BK, Baton Rouge, LA 70803.

AIP changes copying policy for archival journals

Effective June 1982, the American Institute of Physics has changed its policies governing the copying of articles from the six archival journals it owns.

The AIP Executive Committee approved a revision of the statements on copyright and copying fees that appear in the journals to make explicit the conditions under which free copying may be done and to permit all libraries to copy articles without payment of copying fees as long as such copies are not sold. The revised statement on copyright reads, in part: "Individual teachers, students, researchers, and libraries acting for them are permitted to make copies of articles in this journal for their own use in research or teaching, including multiple copies for classroom or library reserve use, provided such copies are not sold."

This revision will soon appear in the six journals: *Journal of Applied Physics*, *Applied Physics Letters*, *Review of Scientific Instruments*, *The Journal of Chemical Physics*, *Journal of Mathematical Physics* and *The Physics of Fluids*. □

General Lew Allen will direct JPL

Bruce Murray, director of the Jet Propulsion Laboratory since 1976, tendered his resignation in April. Recently officials from Caltech, which operates JPL under contract from NASA, announced that Murray will be replaced effective 1 October by General Lew Allen Jr, who resigned his position as Air Force Chief of Staff in June. Murray, vice president of the Planetary Society, taught planetary science at Caltech while serving as director of JPL; he is now a professor of planetary science at Caltech on sabbatical leave for one year.

Allen, who will become a vice president at Caltech simultaneously with assuming the directorship of JPL, graduated from West Point in 1946, and obtained his PhD in physics from the University of Illinois in 1954. He then worked at Los Alamos from 1954 to 1957, researching the physics of high-altitude nuclear explosions. Allen served as science adviser at the Air Force Special Weapons Center until 1965, when he became head of the Air Force's Directorate of Special Projects in Los Angeles. In 1968 he joined the Pentagon, where he has served as director of space systems, director of special projects and director of the Space and Missile Systems Organization. In 1973 Allen was appointed director of the National Security Agency, in 1977 he became commander of the Air Force Systems Command, and since 1978 he has been the Chief of Staff of the Air Force.

Allen's appointment comes at a time when JPL is undergoing many changes. For years JPL has served as the principal center for planetary exploration for NASA, but the funds for planetary exploration in the Reagan FY 1983 NASA budget request were cut by 25% (PHYSICS TODAY, May 1982, page 78). The budget package eliminated the US mission to Halley's Comet, a US spacecraft to participate in the International Solar Polar Mission, and the Venus-Orbiting Imaging Radar spacecraft, all of which would have been operated by JPL. Last year, in an attempt to find other sources of funds, Caltech administrators approved an increase in the proportion of JPL's work that could come from the Defense Department, up from 6% to 30%.