

Democratic strategy by arranging a series of hearings to be held under the auspices of the House Banking Committee both in Washington and around the country, aimed at cooling out the issue. Charles Manatt followed on Sept. 17, as I reported last week, by changing an anti-Volcker resolution passed by the party's Western state chairmen to conform to Manatt's declaration that "Volcker is not the problem, Reagan is."

However, according to Hill sources, some Democratic senators and congressmen admit privately that this heavy-handed tactic "smells too much like fronting for Volcker"; two nationally syndicated columnists have jokingly referred to the sympathy between "Wall Street" and the "friends of labor," the Democratic Party.

### The turning point

Outside the controlled Democratic environment, the International Brotherhood of Teamsters leadership was endorsing the Melcher Resolution; the national construction laborers' union was passing a resolution demanding immediate action by the President, Congress, and the Federal Reserve to bring down interest rates; and the President's own political machine, the executive board of the powerful Republican Assembly of California, as the Reagan caucus in the state's GOP is known, on the weekend of Sept. 19 voted up the Melcher Resolution word for word, merely substituting "Republican Assembly" for "the Senate and the House of Representatives" in demanding that the President act to lower interest rates.

Nevertheless, on Sept. 24 Mr. Reagan reached the turning point of his presidency, and chose a tragic path for an administration entrusted less than 12 months ago by Americans with their greatest hopes in the past two decades.

Nor has Reagan even succeeded in his attempt to propitiate Wall Street. His proposed \$16 billion in further fiscal 1982 budget cuts and his capitulation to the demand for tax increases will not satisfy Paul Volcker; they will simply cut him off from remaining popular support and further narrow his bargaining leverage with Congress. He will probably lose the vote on the administration's proposed sale of AWACS equipment to Saudi Arabia, and his foreign policy will unravel along with everything else. Finally, he will have lost all standing with those Western leaders who recognize the folly of the Volcker policy. In a *Bild-Zeitung* interview preceding the President's national address, Chancellor Helmut Schmidt of West Germany declared that international monetary policy "will not be determined by moods and feelings from the United States," and that Mr. Reagan would "learn that it is very dangerous to try to do that."

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## Military Policy

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# The cruise missile and strategic doctrine

by Robert Gallagher

The U.S. Department of Defense's reported postponing of the first deployments of the land-attack cruise missile by at least a year from its original October 1982 date is an opportunity for Americans who support a strong national defense system to reopen the debate on the incompetent cruise.

The cruise missile is a slow-moving drone aircraft intended to penetrate up to 1,500 miles into Soviet territory and strike its target undetected by Soviet defenses. Its advocates assert that the cruise is a strategic weapon. That is not the case.

Furthermore, there is no variation of technological improvements that could turn the cruise into a strategic weapon. As this short report will show, the weapon already rests on a primitive foundation of technology, with many problems remaining unsolved. It is, at best, an inefficient piece of medium-range artillery (ship-to-ship cruise missiles, for example, were successfully used in the Arab-Israeli war by the Egyptians).

There is only one mission that the cruise missile could conceivably carry out: a first strike, sneak attack on Soviet military installations. And that is the intention of its designers. Yet, even for that mission, the cruise is inefficient and full of difficulties.

### The 'Stealth' cruise missile

The cruise missile is analogous in conception with the Nazi V-1 buzz bomb, the child of that faction of the armed services—begun with Billy Mitchell and carried forward by the Strategic Bombing Survey and Rand Corporation—that has raised airpower to the status of the basic defense of the U.S.

The basic idea behind the cruise is that application of advanced electronics and computer systems will enable the missile to travel at essentially zero altitude so that ground-based, "look-up" radar will not detect it, and that it can reach its target undetected, killing it with an exact hit. In an effort to solve the problem of "look-down" radar from aircraft or otherwise, the DOD has designed the missile's airframe to provide the maximum possible scattering of downward incident radar waves by the cylindrical shape of the top of the vehicle. The craft's flat bottom provides aerodynamic stability and heat dissipation capabilities to avoid infrared detection.

But, as *Aviation Week* has reported, these "stealth" features will in no way protect the missile from detection by Soviet aircraft equipment with advanced "look-down" radar. Once the missile is so detected, its maximum 500 mile per hour speed makes it a sitting duck.

The primary problem in an unmanned, low-altitude aircraft is the avoidance of obstacles over a varying terrain and the consequent necessary course correction. This remains unsolved in the cruise. In its current model, an inertial guidance system controls flight throughout over 95 percent of the course. Another system that combines the 1958 terrain-contour matching technique known as Tercom with in-flight data from radar and barometric altimeters provides direction for course correction. Along its course, the missile is to encounter checkpoints. At such locations, the Tercom computer is to compare in-flight altimeter data with terrain elevation maps supplied by the Defense Mapping Agency from satellite terrain readings. The computer is to provide course corrections to the inertial guidance system on the basis of these comparisons.

In recent tests of the Tercom system, the majority of runs resulted in missiles crashing into the side of a mountain. Tercom requires that the missile's course be over terrain that is sufficiently rough and unique. According to GAO reports, the system is easily confused by "monotonous expanses." Yet "many of the targets," says the GAO, "are in relatively smooth areas" of the Soviet Union. The system is also easily confused by snow on the ground, since this produces a variance between altimeter readings and the stored given map data, disguises landmarks, and changes infrared signatures.

A February 1980 GAO report stated that the Defense Mapping Agency "considers the following factors critical to the success of Tercom: map size, terrain roughness, terrain uniqueness, and what the radar altimeter sees compared to what DMA maps. . . . Important questions remain unanswered concerning the last three of the four critical areas." Because of these problems, says the report, the Strategic Air Command has concluded that it will be unable to determine the validity of the cruise until 1986, when the present SAC requirements for terrain mapping are to be completed.

A February 1981 GAO report, "Some Land-Attack Cruise Missile Acquisition Programs Need to Be Slowed Down," states that "if ground clearance altitudes are increased, missiles can more frequently crash into tall obstacles en route to their targets." But if the cruise flies at a higher altitude, it is more open to detection.

The utopian advocates of the cruise are banking on solving these problems through the heavily funded "Advanced Cruise Missile" program of the Defense Advanced Research Projects Agency (Darpa).

The current cruise model includes largely off-the-

shelf technology. Darpa is looking to apply the results of research it has funded in artificial intelligence and computer systems to produce a cruise that will work:

- **Advance cruise missile engine.** This is to enable DOD to make the missiles smaller, so as to make a smaller radar signature, or to increase space for the payload.

- **Advanced cruise missile delivery.** This program includes development of a system to control the low-altitude flight of the cruise toward the target area—specifically, on-board sensors that look forward of the chosen path or that warn control systems of possible attack or detection. Flight optimization systems are to use sensor information for course correction. Also included is an improved terrain following system.

- **Cruise missile radar masking.** The aim is to develop a method to mask the missile's radar signature, and thus allow the craft to blend in with the background clutter of the terrain, to make it "chirp like a bird."

- **Autonomous terminal homing.** This terminal guidance system is to permit the missile to hit its target precisely. In the endgame kill, the system is to compare stored infrared images of the target area with images obtained via an on-board infrared sensor and control target homing.

### An assessment

In short, the cruise missile requires extensive work and development before it can "fly," and the technological potential to turn it into a strategic weapon is nil. Yet, its proponents argue that it is cheap, that it can be deployed without extensive infrastructural development (fuel, launch facilities, and so forth are all relatively simple for the cruise compared to the ICBMs), and it carries the aura of a miracle weapon.

Its essential attraction, however, for such policy-makers is otherwise: the cruise missile is a credible first strike weapon for use in a limited nuclear war—a war, however, that the Soviets have stated repeatedly is an impossibility.

The proposed deployment of the cruise is thus a reflection of the fascination held by people such as former Secretary of Defense Harold Brown and Secretary of State Alexander Haig with the possibility of a first strike against the Soviet Union. That war-fighting and war-winning are primarily a question of national economic strength has eluded these strategists; that the military arm of a nation-state depends most heavily on the civilian applications of new scientific development is forgotten; and that the Soviet Union, at least through its development of beam-weapon technologies, is pursuing a war-winning strategy based on a growing economy and intense scientific research seems irrelevant to them. At the level of fundamentals, this is what defines the insanity of the cruise missile deployment.