

for ocean targets, depending on the targeting agreement. MX silos could also be inspected to ensure that no targeting data are present in the computer rack in the equipment room.

Violations of these detargeting provisions could be reported within minutes to the proper authorities on either side via dedicated communications links. Although the configuration of these on-line channels lies beyond the scope of this analysis, they could be installed at modest expense, and reliably effective and timely procedures for clarifying the cause of any outage on them could be established.

As an incidental but important benefit, the links could be used by the team to augment the Russian missile attack early warning system. In the event of a false warning from Russian tactical warning sensors, the teams could quickly provide reassurance to the proper authorities (in this case, the Russian early warning center and the general staff in particular) that U.S. strategic missiles had not been launched.

Continuous monitoring of all U.S. ICBM forces allowed under START II (500 Minuteman III missiles each with a single warhead) would require that a joint team serve around the clock in each of ten centers, one for each of the ten missile squadrons spread across several bases in the western United States. Ten joint teams thus serve simultaneously, requiring at least another ten to provide for relief and time off.

A similar arrangement would be established in Russia. Joint teams would be trained and assigned to launch centers throughout the country and provided with the appropriate report channels to NORAD and the Pentagon. Russia also has redundant launch centers, not only at the regimental level but also at higher levels (especially the division level), that could probably support this function adequately. Indeed, the Russian ICBM control system for silo-based forces is far more elaborate and centralized than its U.S. counterpart. Unlike U.S. land-based missiles, Russian missiles in silos continuously and automatically report their status to the highest levels of the nuclear command chain in Moscow. (U.S. missile squadrons are islands electronically isolated from higher levels.) Joint monitoring teams could thus occupy positions at several levels in the nuclear command hierarchy.

Detargeting Submarine-Launched Missiles

Missiles on board alert U.S. strategic submarines are normally dormant except for brief periods during weapons system checks; the target information

resides in a disk drive apart from the missiles. There it remains until the crew receives launch orders. Then the crew accelerates the gyroscopes and inserts the target data into the missile guidance, a process requiring about ten minutes. If the orders call for strikes against new targets that had not been prestored in the disk drive, the crew requires substantially more time to convert the new target coordinates into target instructions that can be fed into the missile guidance. This computational process can be shortened somewhat if the new targets have been listed already in target books (but not preprogrammed in the disk drive). One or two hours is required to reprogram the missiles to strike altogether new target coordinates.

Detargeting, strictly defined, is therefore not a meaningful option for U.S. submarines. Even if all target data were erased from the disk drive, the SSBN possesses the inherent capacity to generate targeting data and load it into the missile guidance set. By contrast, Russian submarines appear to be sharply limited in this respect. They rely on preprogrammed targeting tapes provided before leaving port, without which targeting and launch could not be performed.

Detargeting, more broadly defined, could mean that submarines would stay out of range of targets during their patrols. For U.S. Trident submarines with missile warheads reduced from eight to five as planned, which increases the D-5 missile range by more than one-third, major portions of Russia could be struck from the moment a submarine leaves port. This makes it infeasible to operate Tridents based at either the Atlantic or Pacific home ports out of range of major targets. Russian SSBNs would have even less latitude to operate out of range, given the location of their northern and eastern ports and their reliance on protection by friendly forces in home waters against intrusions of Western antisubmarine warfare forces.

Modest Dealerting Measures for ICBMs and SSBNs

Additional steps could be taken to dealert ICBMs. One measure is to "safe" the missiles in their unmanned silos, as was done to the 450 Minuteman II missiles in October 1991 as part of President Bush's unilateral move to reduce nuclear alert rates. Maintenance crews enter each silo and insert a special pin into the motor ignition mechanism. This physically blocks ignition. To reverse the procedure, the crews have to return to each silo and pull the pin, a more time-consuming procedure than might be expected. The Russians surely have a comparable option for their silo-based ICBMs that is equally time-consuming to reverse.

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