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**Reversibly De-Alert the Remaining Missiles.** The missiles which would not have been de-activated by the above initiatives should be configured so that they can not be launched on short notice. Below, we will discuss in turn how this could be done for: submarine-launched ballistic missiles (SLBMs), silo-based ICBMs, and truck-mounted ICBMs.

**SLBMs.** U.S. Trident submarines are not kept on alert in port and have never practiced a launch while surfaced. They go to sea in a condition called "modified alert."<sup>13</sup> A submarine crew needs about 18 hours to perform procedures such as removing the flood plates from the launch tubes and calibrating the missile gyroscopes to bring a submarine from this state to launch-readiness. A first level of de-alerting for U.S. submarines could therefore simply be to keep them on modified alert. An additional measure which would increase the time required to prepare for launch would be to remove the guidance sets from the missiles and store them onboard. During a national emergency, they could be reinstalled from inside the submarines using doors that have been installed in the launch tubes to allow the replacement of defective guidance sets while submerged.

We do not know the detailed technical measures by which a similarly lengthy delay could similarly be imposed on the launch of missiles from Russian submarines while they are at sea. However, we have been assured that such measures could be contrived. The specific measures that each country would take could be explained -- and even demonstrated -- prior to a dealerting agreement.

Britain has already adopted a de-alerted posture for its submarines at sea. In the public report of its recent "Strategic Defense Review," the British Government announced that

"We will have only one submarine on patrol at a time, carrying a reduced load of 48 warheads...Trident is now our only nuclear weapons...The submarine's missiles will not be targeted and it will normally be at several days' 'notice to fire.' This reduced state of alert will enable a greater use of ballistic missile submarines for secondary tasks such as exercises with other vessels, equipment trials and hydrographic work."<sup>14</sup>

De-alerting would in no way decrease the survivability of the approximately two thirds of U.S. submarines which are kept at sea at all times. However, due to low tensions and low budgets, all but two or three Russian submarines are typically kept in port today where, in theory, they would be vulnerable to a "bolt-out-of-the-blue" surprise attack. Russia attempts to partially compensate for this vulnerability with a launch-on-

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<sup>13</sup> "A modified alert SSBN is one which is underway with its strategic weapons system in the lowest state of readiness (key components not installed), a relaxed communications posture consistent with the delivery of routine operational and administrative message traffic, and no requirement with respect to being in range of its assigned modified alert target package." (Letter from P.J. Ryan, Head Strategic Submarine and Maintenance Branch, U.S. Navy, to Joshua Handler, April 30, 1998.

<sup>14</sup> Chapter 4, "Deterrence and Disarmament," in *Strategic Defense Review* (U.K. Ministry of Defense, July 9, 1998, <http://www.mod.uk/policy/sdr/chapter04.htm>).