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EDITOR'S NOTE

The first article in this double issue of the journal, by Dean Wilkening, provides a thorough and nuanced examination of the potential of airborne boost-phase ballistic missile defense. Boost-phase defense, if it can be done, has several attractions—most importantly the ability to destroy a missile before it could launch decoys. But, as the author points out in considerable detail, such defense is highly challenging, requiring very rapid intercepts after the launch and very high-performance homing kinetic-kill vehicles. The author, while not making light of these challenges, does conclude that airborne boost-phase intercept could become technically achievable in the next decade.

The next two articles follow on to the article published last year by Robert Nelson on the use of bunker-buster nuclear weapons to attack deep-buried targets, including targets containing biological and chemical weapons. The earlier paper focused on the likelihood that any practical bunker buster would cause massive nuclear fall-out above ground.

The articles in this issue, by Robert Nelson and by Michael May and Zachary Haldeman, focus attention on another issue—whether an underground nuclear explosion (with yields in the range of 1–10 kilotons) would be likely to destroy buried biological and chemical agents. There are of course uncertainties; but overall both articles express skepticism that the agents would be destroyed unless their locations underground were known with considerable precision. The articles raise the additional concern that a nuclear explosion could actually disperse the agents into the environment.

The short article following, by M.V. Ramana, seeks to estimate how much enriched uranium India will need for the core of the nuclear reactor it is developing for its planned nuclear submarine, and from this to estimate India's overall uranium enrichment capacity and capacity to produce weapon-grade uranium.

Finally, the note by Jan Beyea, Ed Lyman, and Frank von Hippel supplements the article published in the last issue of the journal by these three authors and others on the risks and effects of loss of water in commercial-reactor spent fuel pools. In the note here, the authors calculate the costs of evacuation, decontamination, and property loss, and the number of cancer deaths due to

releases of various magnitudes from a spent fuel fire of cesium-137 at five U.S. nuclear sites of varying population density. For the range of releases examined, the authors estimate the five-site average consequences as $100 to $350 billion, and the number of cancer deaths as 2,000 to 3,000.

As noted, this is a double-issue of the journal, Volume 12, numbers 1 and 2.