Preface

by Dr. Bruce G. Blair, President, Center for Defense Information

Most Western observers of Russia's system of nuclear control and early warning warn that its deterioration poses a danger to the world. Of particular concern is its questionable effectiveness in preventing the theft of nuclear weapons in storage. That concern animates the West's efforts to assist Russia in securing its vast storehouse of nuclear weapons and raw fissile materials. Other concerns range from the susceptibility of the early warning network to false alarms – increasing the risk of a mistaken launch – to a breakdown of safeguards against unauthorized actions that could lead to an unsanctioned launch of nuclear missiles.

Although Col. (ret.) Valery Yarynich, the author of this volume, shares my view that these are legitimate and reasonable concerns, his assessment diverges considerably on many of the particular points of concern. And his judgment counts a great deal more than mine, and, for that matter, the typical Western observer. Col. Yarynich brings to the discourse some unusual credentials, not the least of which is a 30-year career in the Soviet Strategic Rocket Forces and the Soviet General Staff, where his primary responsibilities lay in streamlining the Russian strategic nuclear command and control system. He is one of a small group of true specialists in this esoteric realm, a person who worked with all the key designers, testers, and implementers of the system.

Having worked closely with Valery and a considerable number of his colleagues in this field for more than a decade, I can attest to his tremendous store of knowledge of the system. From him, and a handful of his colleagues in the military and specialized military industrial design bureaus assigned to build coherent nuclear command-control systems that could carry out orders to execute a large-scale nuclear war and at the same time prevent any accidental or unauthorized use of the Soviet arsenal, I learned a great deal about the Soviet and Russian system that deserves only admiration and confidence.

I learned that the nuclear control system of the Soviet Union and its successor, Russia, is better designed than the nuclear control system of the United States, about which I also have some first-hand, as well as academic, knowledge, having devoted decades of my career to the operation and study of U.S. nuclear weapons. In the adrenalin rush among Western analysts brought on by the fear of a meltdown of Russian nuclear control, a cool analytical understanding of the workings of the Russian system is often missing. There is an impressive side to these workings that has been lost on Western observers, mainly because they have not really grasped the Russian system's architecture.

Whenever I meet with South Asian and other nuclear specialists interested in refining the design of their nascent nuclear command system, I strongly recommend that they examine the Russian system and emulate it if they wish to achieve the highest level of top-down control. The Russian architecture compares favorably with the American because of the extraordinary attention paid to ensuring strict centralized control over Russian (Soviet) nuclear operations. This concentration reflects the core value of Russian political and military culture going back for centuries. From the days of the czars through the dawn of the nuclear age under Stalin and beyond, "control" was the watchword. "Control" is the hallmark of the system, and its pervasive priority is embodied in the most elaborate centralized network the world has ever seen. By comparison, the U.S. system started out as a highly decentralized system that operated on the basis of a great deal of trust between the U.S. civilian leadership and the military. Although the U.S. system evolved toward greater centralization with more stringent technical and organizational safeguards against unauthorized use of nuclear weapons, it remains today far less centralized and "tight" than its Russian counterpart. Alas, the maintenance of the Russian system – human, organizational, and technical – has fallen down, preventing it from realizing its design potential.

Col. Yarynich documents the development of the Soviet and Russian system in fine-grained detail. He provides an authoritative account of the system designers, and the technical and organizational arrangements that evolved from the system's inception after World War II until the present day. His descriptions are based on material that exists in the public domain in Russia, the United States, and elsewhere, but material that called for a true expert to integrate into a coherent picture.

The picture that emerges is often fascinating. The stodgy Soviet bureaucracy created, against all odds it would seem, some of the most innovative systems of nuclear control imaginable. To cite one example, the Soviet "Dead Hand," or *Perimetr* system designed by the Impuls bureau in St. Petersburg, under the guidance of Lt. Gen. Varfolomey V. Korobushin, embodies bold concepts of control for dealing with circumstances involving a sudden U.S. missile attack that decapitated the top political and military leadership in the Moscow metropolis. Reminiscent of the "doomsday machine" in the famous Stanley Kubrick movie *Dr. Strangelove*, this Soviet innovation was placed into operation in the early- to mid-1980s during the nuclear confrontation of the Reagan era.

Col. Yarynich describes the project's history and rationale, and, in fact, he describes all of the significant systems of nuclear control and early warning that evolved during the past one-half century. This encyclopedic account is by far the definitive work on the subject, not only in terms of the various technical projects but also in terms of their function and performance in the overall system. He provides rigorous assessments of the survivability and capabilities of the separate parts and overall system. He provides the factual and analytical basis for informed judgments on the Russian (Soviet) capability to maintain effective control in various stressful environments ranging from large-

scale enemy nuclear assault, to illicit acts on the inside to misuse Russian nuclear forces, to spoofing or cyber-attack by terrorists.

This work is thus required reading of anyone who wishes to grasp the actual inner workings of the Russian nuclear control system before commenting on its strengths and weaknesses. It is also essential reading for those of us who aspire to move beyond the conventional wisdom that the system is riddled with deficiencies. The gloom and doom may be partially justified but often its misinformed and misguided. And a mastery of the subject generates a fair amount of optimism about the inherent strength of the system as well as an understanding of its potential weaknesses.

Col. Yarynich rightly calls for a searching look at both the U.S. and Russian systems by a group of governmental and non-governmental experts. Such a body of experts sharing information about each system could help allay unjustified fears as well as identify genuine deficiencies requiring fixes. American and Russian experts could learn a great deal from each other, and cooperate in addressing vulnerabilities to deliberate exploitation by terrorists, misguided insiders, or other parties. They could cooperate in finding new ways to reduce the risk of mistaken launch on false warning. They could cooperate in figuring out ways to reduce the danger of mistaken or unauthorized launch by Pakistan, India, or other countries. They could cooperate in numerous ways for noble purposes. This book is a terrific first step in this direction of sharing knowledge and advice.