

ing cascade of moves and counter-moves similar to the 'precautionary' mobilizations of 1914.

The prevention of accidental or inadvertent war is a part of the common ground between the superpowers, and they have signed a number of agreements designed to reduce the risks. One of these was the Hotline agreement of 1963 which established direct teletype communications between Moscow and Washington. In 1984, the US and the USSR agreed to upgrade the Hotline by adding a facsimile transmitter. This equipment can scan a document and translate the print into signals which can be transmitted by telephone and reproduced as type at the other end.

The Accidental Measures Agreement of 1971 includes pledges by the US and USSR to notify one another of unauthorized use of nuclear weapons, of ambiguous warnings that threaten to lead to nuclear war, and of any test missile launches that go beyond the home territory of the country performing the tests. Under the Incidents at Sea Agreement of 1972, both sides pledge to avoid dangerous actions on the high seas, to adhere strictly to the 'Rules of the Road,' and not to simulate attacks on passing ships.

Two senators in the United States, Democrat Sam Nunn and Republican Jack Warner, have promoted the idea of jointly manned risk-reduction centres in the US and the Soviet Union. The purpose of these centres would be to deal with ambiguous warnings, acts of nuclear terrorism and other events that might trigger an accidental nuclear war. On 15 September 1987, Soviet Foreign Minister Eduard Shevardnadze and US Secretary of State George Schulz signed an agreement outlining some modest moves in this direction. Centres will be set up in both capitals to exchange information about upcoming missile launches, but they will not be jointly manned.

More generally, analysts are trying to suggest guidelines for crisis prevention and strategies for better management of the crises that do arise. In the excellent survey entitled *Hawks, Doves and Owls: An Agenda for Avoiding Nuclear War*, the editors suggest ways to better prepare civilian leaders for their crisis management role:

Nuclear decision-makers often are not experts on the subject. Many new political appointees with responsibilities related to nuclear weapons arrive at their jobs with little knowledge or background in US-Soviet relations, nuclear weapons affairs, or crisis decision-making . . . it would be useful to offer some compilation of lessons learned from the experience of former officials in similar positions of responsibility. Active participation in crisis simulations can also be a valuable experience.¹⁵

CONCLUSION

The danger of accidental or inadvertent nuclear war is low during normal peacetime conditions but increases during times of crisis when positive control, the need to respond rapidly to an attack, is at odds with negative control — that is, the safeguards that prevent the unauthorized or accidental use of nuclear weapons. The trade-offs between positive and negative control will continue to pose problems in the future.

The risks should not be exaggerated but neither should they be ignored. Accidental nuclear war is a 'management' problem which requires careful analysis and ongoing efforts at prevention. Some weapons systems and some operational procedures increase the dangers but there are ways of reducing the risks and those are being explored.

This is an area where the interests of the two superpowers coincide and there are encouraging signs that the two will strive to find measures, both unilaterally and in concert, to reduce the risk.

NOTES

1. Paul Bracken, *The Command and Control of Nuclear Forces*, Yale University Press, New Haven, 1983, p. 49.
2. For a detailed analysis of the Soviet side of this issue, see: Stephen M. Meyer, "Soviet Nuclear Operations," in Ashton B. Carter, John D. Steinbruner and Charles A. Zraket (eds.), *Managing Nuclear Operations*, The Brookings Institution, Washington, D.C., 1987.
3. Desmond Ball, "Nuclear War at Sea," *International Security*, Vol. 10, No. 3, Winter 85/86, pp. 3-31.
4. Barbara Marsh, *The Probability of Accidental Nuclear War: A Graphical Model of the Ballistic Missile Early Warning System*, Unpublished Master's Thesis, Naval Postgraduate School, Monterey, 1985, p. 65.
5. *Ibid.*, p. 63.
6. John Steinbruner, "Launch under attack," *Scientific American*, Vol. 250, No. 1, January 1984, pp. 37-47.
7. Michael Wallace, Brian Crissey and Linn Sennott, "Accidental Nuclear War: A Risk Assessment," *Peace Research Reviews*, Vol. 10, No. 3, *The Nuclear Time Bomb I*, 1986, pp. 85-170.
8. See: Fen Osler Hampson, "Escalation in Europe," in Graham T. Allison, Albert Carnesale and Joseph S. Nye, Jr. (eds.), *Hawks, Doves & Owls: An Agenda for Avoiding Nuclear War*, W.W. Norton & Company, 1985, pp. 80-114.
9. Bruce Blair, *Strategic Command and Control: Redefining the Nuclear Threat*, The Brookings Institution, Washington, D.C., 1985.
10. *Ibid.*, p. 288.
11. Dan Caldwell, "Permissive Action Links (PAL): A Description and Proposal," *CISA Working Paper No. 56*, Centre for International and Strategic Affairs, UCLA, December 1986.
12. See, for example: Herbert L. Abrams, "Human instability and nuclear weapons," *Bulletin of the Atomic Scientists*, Vol. 43, No. 1, January/February 1987, pp. 34-39.
13. Independent Commission on Disarmament and Security Issues (US), *Common Security: A Blueprint for Survival*, Simon and Schuster, 1982, pp. 147-149.