Improving the Means for Intergovernmental Communications in Crisis

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PREFACE

This report summarizes assessments of potential bilateral and multilateral measures for enhancing superpower stability in times of nuclear crisis. The focus is on controlling crises through improved intergovernmental communications rather than on preventing crises through negotiated restrictions on weapons development and testing or on the operations of strategic or theater forces during peacetime.

The contents of the report are drawn from unpublished working papers drafted in December 1982. Funds for publishing the work in this form were made available by a grant from The Ford Foundation. In late 1978, The Ford Foundation provided grants to The Rand Corporation and several university centers for research and training in international security and arms control. At Rand, the grant is supporting a diverse program, including the publication of research that would otherwise not be disseminated to the general public.
SUMMARY

Two existing agreements between the United States and the Soviet Union commit both nations to measures and safeguards intended to prevent nuclear war. Together, the agreements provide for prompt notification, exchanges of information, and "urgent consultations" in situations where there appears to be a risk of nuclear conflict between the two countries, between one of them and other countries, or between other countries. The direct communications link (DCL), or Hot Line, between Washington and Moscow is designated as the means for consultation and for exchanging information in critical circumstances.

Assessments summarized in this report, however, indicate that the Hot Line and other existing means of intergovernmental communication are not adequate to meet the requirements implied by a range of plausible nuclear-crisis scenarios. These scenarios span potential nuclear crises that could arise from conflict among third countries, from conflict between one of the superpowers and a third country, from actions initiated by terrorist groups, and from misinterpretation by one superpower of potentially provocative behavior by the other. From a U.S. perspective, these scenarios pose different problems and call for different forms of international cooperation to improve intergovernmental communications for crisis control.

CONCLUSIONS

Several conclusions are drawn from the results of these assessments:

- Existing means for communications between the American and Soviet heads of state are less than adequate and could be substantially improved.
- Improved means for direct communications between the American and Soviet heads of state are not sufficient; the Hot Line should be supplemented by a link connecting the military command centers of the United States and the USSR, and by improved links connecting each nation's capital with its embassy in the other's capital.
- Improved bilateral communication links between the United States and the USSR are, by themselves, not sufficient; other countries should be interconnected with comparable systems.
- The United States should seek an agreement among nations to exchange information in the event of a nuclear crisis involving terrorist groups.
Six possible bilateral and multilateral measures that could improve intergovernmental communications in crises are addressed below:

1. Improving the Washington-Moscow Hot Line.
3. A communications link connecting military command centers in Washington and Moscow.
4. An agreement to exchange information in nuclear crises involving terrorist groups.
5. A multilateral crisis-control network.
6. A multinational military crisis-control center.

The first five of these measures appear to have significant net potential advantages for enhancing nuclear-crisis-control capabilities.

*Improving the Washington-Moscow Hot Line.* The existing Hot Line has essentially the same capabilities today that it had in the mid-1960s when it was initially implemented: terminals in Washington and Moscow with 66-word-per-minute teletype equipment. Although this relatively modest system appears to have been adequate in the past, it may not be sufficient to meet the requirements for direct communications between heads of state in future crises. In a nuclear crisis or war between third nations, information exchanged on the Hot Line might include intelligence data (maps, diagrams, orders of battle) concerning the belligerents, information on reactive force deployments of the major powers' own forces to prevent ambiguity of intention, statements of position, and agreements and communiqués to defuse a situation as promptly as possible. These types of communications suggest benchmark requirements for facilitating message exchanges between the heads of state, including time compression for end-to-end message preparation and delivery, reliability, graphics transmission, privacy and security of transmission, authentication, and near-real-time connectivity or accessibility of heads of state to the system. Based on these requirements, which are suggested by most, if not all, representative scenarios, facsimile transmission appears to be the preferred approach to upgrading the Hot Line.

*High-data-rate embassy communications.* Existing high-data-rate communications systems can perform at a level above that possible with facsimile technology. Although these systems are not commercially available, they offer many potential benefits for crisis control, war avoidance, and war termination. Such systems could be used for national communications links connecting heads of state with their embassies in the other state. The Soviet embassy in Washington could be authorized to install such a system using Soviet equipment; the U.S.
embassy in Moscow could be authorized to install such a system using U.S. equipment. With high-data-rate capital-to-embassy links supplementing the direct communications links between heads of state, the U.S. embassy in Moscow would be able to augment existing direct communications with state-of-the-art imagery and other communications that could be hand-carried to host government officials. An additional link of this kind could facilitate face-to-face meetings of the foreign head of state with the other side’s ambassador, providing an opportunity for clarification of ambiguities that is not available with impersonal message exchanges.

Crisis control in incidents of nuclear terrorism. The small probability that someone outside of government programs might be able to obtain a nuclear weapon or build a crude nuclear bomb may be gradually increasing. During the past ten years, criminal activity in the nuclear domain has been growing. Several thefts of uranium ore have occurred and offers have been made by intermediaries to sell purportedly stolen nuclear material. None of these incidents, however, has involved an attempt to acquire nuclear material for use in a weapon, nor have any nuclear weapons been stolen. It is certainly a quantum leap from the recent activities of currently identified terrorist groups to the acquisition of a nuclear capability. There are, however, plausible future scenarios in which terrorists could provoke a nuclear crisis involving the United States, the USSR, and other countries, and in which prearranged measures for international cooperation could be highly advantageous. Two measures in particular appear to have potential for crisis control in incidents of nuclear terrorism:

- An agreement among nations to exchange information in the event of a nuclear crisis initiated by subnational groups.
- The establishment of a rapid, secure communications link connecting military command centers in Washington and Moscow. This link would allow expeditious exchange of detailed technical data and expert knowledge to supplement head-of-state communications.

A multilateral crisis-control network. Direct communications among heads of state may be neither appropriate nor sufficient in themselves to perform all of the functions of nuclear-crisis management—crisis stabilization, deescalation, disengagement, war termination, the coordination of measures for regional peacekeeping, and control of nuclear terrorism. These functions require intergovernmental exchanges of technical data and expert knowledge that are best communicated through national civil and military command centers. Bilateral
communication links connecting the national military command centers of pairs of nations would constitute a multilateral communications network, providing a rapid and secure means for nations to cooperate in the event of a nuclear crisis. Each command center would be staffed entirely by national personnel, and information would be transmitted with unrestricted exclusionary privileges at the discretion of the sender. Such a network has several advantages: flexibility to tailor crisis communications to the nature of events; close proximity of internetted civil and military command centers to national decision-makers; and minimal risk of inadvertent or unauthorized disclosure of sensitive information. The establishment of bilateral links would be at the discretion of individual countries and need not be part of a broader agreement among nations to consult in the event of a crisis.

A multinational military crisis-control center. The establishment of a multinational crisis control center consisting of facilities in a neutral third country, staffed jointly by military personnel from the United States, the USSR, and other nations, has been proposed. One of the stated purposes of such a center would be to help monitor and contain nuclear weapons that might be used by third parties or terrorist groups. From the U.S. perspective, any consideration of a multinational crisis-control center must deal with the fundamental asymmetry that flows from the fact that the “third parties” whose nuclear activities and weapons would be monitored are U.S. allies or countries with which the United States wishes to maintain a common stance on basic foreign-policy issues. It is difficult to conceive of any way to minimize the risk of alienating allied or friendly third parties except by including all of them in the center, an approach that is almost certainly neither politically feasible nor technically workable. The unavoidable political and technical problems inherent in the operational concept of a jointly manned military center in a neutral country (e.g., remoteness, rigidity, complexity, susceptibility to communications overload, susceptibility to deceptive practices) would cause the center to be bypassed in time-urgent crises. These disadvantages raise serious questions regarding the effectiveness of a jointly manned center as a means of achieving nuclear-crisis prevention and control objectives.

OTHER IMPLICATIONS FOR CRISIS CONTROL

Improved bilateral communications between the United States and the USSR have direct implications for systems of communications among the United States and its allies. During a crisis, when the United States is communicating with the USSR, it will also need to
consult and exchange information with its allies. To realize the full advantages of improved communications links with the USSR, the capabilities of the inter-allies communication system must be at least comparable to those of the Washington-Moscow system.

The potential benefits of improved means for bilateral U.S.-USSR communications extend beyond purely technical arrangements for enhancing crisis stability. A high-data-rate embassy communications capability could help counter the tendency to bypass foreign ambassadors during crisis situations, where face-to-face meetings could be a valuable supplement to formal message exchanges. Establishment and maintenance of a military communications link would require U.S. and Soviet military representatives to cooperate in establishing communications protocols, identifying the types of information that might be exchanged, and reviewing ways in which the two nations could otherwise coordinate their efforts to control nuclear crises.

Improved intergovernmental communication systems would be important enabling mechanisms for crisis control. Such systems, however, cannot be considered a substitute for adequate military capabilities as a deterrent or for the willingness of nations to cooperate in a crisis. Improving intergovernmental communications constitutes only part of a much larger agenda for enhancing nuclear-crisis stability. Progress in reducing the risks of nuclear war and in improving the prospects for crisis avoidance, containment, and deescalation will depend heavily on unilateral measures that provide for the sustainability of forces in nonnuclear conflict, the endurance of strategic forces at high levels of alert, and the survivability and performance of national systems for command, control, communications, and reconnaissance. Despite possible higher peacetime costs, unilateral measures for achieving these latter goals should remain high on the agendas of both superpowers.
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I. INTRODUCTION

This report summarizes assessments of potential bilateral and multilateral measures for enhancing nuclear-crisis stability through improved means for intergovernmental communications. The results are based on requirements implied by a range of plausible nuclear-crisis scenarios, including crises that arise from the acquisition of nuclear weapons or nuclear materials by a terrorist group, from conflict among third countries, from conflict between one of the superpowers and a third country, and from misinterpretation by one superpower of the potentially provocative behavior of the other.

These assessments suggest five measures that appear to offer significant net potential advantages for crisis control:¹

1. Modernization of the Washington-Moscow Hot Line by installing commercially available facsimile equipment to provide a faster and more versatile mode of communication between heads of state.


3. Establishment of a communications link connecting military command centers in Washington and Moscow.

4. Agreement among nations to exchange information during nuclear crises involving terrorist groups.

5. Establishment of bilateral communications links connecting the national military command centers of other pairs of nations.

These measures can be considered independently, but together they

¹The first four are described in an April 1983 report to the Congress by Secretary of Defense Caspar W. Weinberger[1]. Subsequently, in May 1983, President Reagan announced his intention to propose to the USSR the measures recommended in Secretary Weinberger’s report[2]. Since that time, negotiations between the United States and the USSR have taken place, with “significant progress” on Hot Line modernization reported by Secretary Weinberger in January 1984[3]. In April 1984, the two sides were reported to be “near agreement on technical aspects of upgrading existing Hot Line communications.” The Soviets were also reported to have rejected two other measures—the establishment of high-data-rate links between each nation’s capital and its embassy in the other’s capital, and the establishment of a communications link connecting military command centers in Washington and Moscow[4].
constitute a complementary system of intergovernment communications that could serve multiple purposes in crises.

Because military communications links are intended mainly to supplement direct communications between heads of state during crises, establishment of a military link presupposes the existence of a direct communications link (DCL). At least three such DCLs already exist among the major powers: the Washington-Moscow Hot Line, established in 1963; a Paris-Moscow DCL, established in 1966; and a London-Moscow DCL, established in 1967[5]. The United States[8,9] and, recently, the Soviet Union[10] have both apparently proposed the establishment of DCLs with Beijing. The People's Republic of China (PRC), however, appears to be the only acknowledged nuclear power that does not have a DCL arrangement with any of the others.

Direct communications links offer advantages for crisis control without the penalties associated with more restrictive approaches that require prior notice, restrict military maneuver, limit weapon tests, prohibit deployments, or require exchanges of specific information. The inherently permissive nature of communications links provides a flexible capability that could be useful in a wide range of circumstances. The use of modern, widely available communications technology would enable parties to exchange information and communicate intentions by rapidly exchanging verifiable evidence—a process that could lessen mistrust and apprehension in a time-urgent crisis that neither side intentionally provoked.

There will always be a risk that DCLs will be used to deceive or misinform. Simple voice and telegraphic communications in general are especially susceptible to deceptive practices. Modern direct communication links, however, would tend to complicate rather than facilitate deception planning. Plans to mask a staged sequence of events would somehow have to accommodate the uncertainties brought on by the existence of a fast and versatile system of intergovernmental communications, and the need to respond credibly to carefully constructed and unpredictable interrogatories in near real time, interrogatories designed so that responses are verifiable. In these situations, vagueness, stalling, or refusal to communicate would risk signaling the deception rather than contributing to it. Simpler deception schemes are generally the kind that have the best chance of success. Establishing mechanisms that force more rapid and elaborate deception planning will tend to deter, especially when the price of failure is high.[3]

[3] DCLs are also known to exist between Washington and Tokyo[6], and between Seoul and Pyongyang[7].

The use of DCLs to exchange information in crises is not without other kinds of risk. Situations may arise where containment or defusing of a crisis may entail risking the transfer of highly sensitive information to a potential adversary. The costs and risks of further escalation in such situations will have to be weighed against the risks of revealing intelligence sources and methods or of conveying sensitive information that could later be used to the advantage of an adversary.

In most circumstances, from crisis avoidance to war termination, the potential utility of DCLs would be limited by the ability of both sides to control their own forces and by their national means of verification. An improved Hot Line could not fully and effectively serve its purposes unless it was closely coupled to the national command and control system and readily accessible by the National Command Authority throughout the full range of potential crisis conditions. This suggests that DCLs should be designed to be used as an integral part of national command and control systems.

Despite positive evaluations of the Hot Line, and the apparent advantages of improved intergovernmental communications, there are still differences of view on the nature and likelihood of crises in which direct communications might usefully affect outcomes, on the utility of DCLs in securing cooperative international behavior under crisis conditions, and on the impact of DCLs on the participatory process in national decisionmaking. This assessment nevertheless leads to the conclusion that improvements in intergovernmental communications should be implemented.

International scenarios will almost certainly become more complex and more fraught with risks that are contrary to the will or desire of the major powers, providing incentives and opportunities for more frequent and detailed exchanges of essential information. The basic trends that drive crisis scenarios provide a compelling rationale for highly capable crisis communication systems, particularly the pace of nuclear proliferation. Thirty or more nations—some of which have

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"The Hot Line has been used during at least five crises in the past 20 years: the 1967 Arab-Israeli War; the India-Pakistan crisis in 1971; the 1973 Arab-Israeli War; Turkey's invasion of Cyprus in 1974; and the 1979 Soviet invasion of Afghanistan[12,13]; two of these (1967 and 1973) have been officially acknowledged[14]. Lyndon Johnson, the first President to use the Hot Line, summed up his experience in the 1967 Arab-Israeli War as follows: "The Hot Line proved a powerful tool not merely, or even mainly, because communications were so rapid. The overriding importance of the Hot Line was that it engaged immediately the heads of government and their top advisors, forcing prompt attention and decisions[15]." Caldwell[16], in distilling lessons learned from a comparative analysis of crisis management in the Cuban missile crisis and the 1973 Arab-Israeli war, concluded, "The first and most obvious lesson is that the ability of the Soviet and American leaders to communicate quickly, directly, and secretly with each other is a valuable asset during crises."
been engaged in long-standing regional disputes—are estimated to be capable of producing nuclear weapons by the end of this century[17], and there is a relatively near-term prospect of nuclear weapons in the possession of one or both of two adversary nations in regions where the United States, the USSR, the PRC, or all three have vital interests.

Third-party actions are not easily controlled by the superpowers. Since World War II, there have been many crises resulting in superpower confrontation where actions by third parties have largely driven the pace and outcomes of events. The tendency of some third countries to play off one superpower against the other and the use of surrogates to mask national responsibility are likely to compound future problems of crisis avoidance and crisis control. It is in these contexts especially that potential improvements to intergovernmental communications and other crisis-control measures need to be assessed.

5For an analysis of Soviet behavior in six such crises, see Fukuyama[18].
II. IMPROVEMENTS TO THE WASHINGTON-MOSCOW HOT LINE

The existing Washington-Moscow Hot Line has evolved from the Memorandum of Understanding Between the United States of America and the Soviet Union of Soviet Socialist Republics Regarding Establishing of a Direct Communication Link, signed at Geneva in June 1963. The Hot Line comprises terminals in Washington and Moscow with 66-word-per-minute (wpm) teletype equipment, a full-time duplex wire telegraph circuit, and a redundant full-time duplex short-wave radio-telegraph circuit.

In 1971, the United States and the USSR signed the Agreement Between the United States of America and the Union of Soviet Socialist Republics on Measures to Improve the USA-USSR Direct Communications Link. Two satellite circuits were provided between the United States and the USSR, one each by the Intelsat system (using earth stations provided in the United States and the USSR) and the Soviet Molniya II system (using Soviet-provided earth stations in Moscow and Maryland). These satellite circuits have been used since 1978 and are currently supplemented by the original wire telegraph circuit. The system has retained the 66-wpm teletype capability.

It could be argued that the current modest teletype system has been adequate. Transmission time for short text messages is generally thought to be satisfactory relative to other factors such as the time required for message preparation by the sender and translation by the recipient. Reliability is provided by redundant transmission paths. In peacetime crisis environments, three independent transmission paths should be adequate, even with the threat of attempts by terrorists to disrupt transmission. Secure transmission is available using mutually agreeable hardware. These characteristics, however, would not be sufficient to meet the requirements for direct head-of-state communications implied by a broad range of plausible future crisis scenarios.

Crisis in which the Hot Line may be particularly useful are those in which heads of state and their senior military commanders are fully involved, but little or no military action has yet taken place. The will to explore crisis-relieving measures exists, but the exploration requires significant communications on the Hot Line. Such crises could be of several kinds:
• Major powers may be in crisis because one power has misinterpreted potentially provocative behavior on the part of the other power, and a series of (perhaps unwilling) escalatory steps is in progress.

• Some subset of individuals or allies of either or both of the major powers may have undertaken a unilateral action that the associated major power is trying to control or limit; that power must convince the other that steps toward control are underway and that potential damage has been confined to some verifiable limit.

• Third-power or subnational groups may have caused a crisis whose origins, aims, and plans are ambiguous, and major powers must share information to bolster confidence that none of them is responsible and that the crisis-generating groups can be identified and, if necessary, controlled without the major powers coming into conflict.

This general framework permits definition of specific crisis situations that are representative of some of the kinds of crises that could occur in an increasingly complex world in which more participants have sophisticated technological and operational capabilities.

One specific situation which will become eminently plausible in the next decade or two (or possibly, even now) involves the outbreak of a local, i.e., non-major-power, crisis or war, in the course of which serious threats are made to use nuclear devices. How might such a situation possibly evolve? The superpowers (which we assume to be committed to a war-avoidance reaction and which therefore have a desire to contain the situation) hold crisis-resolution discussions with the parties involved (which may be de facto client states of the United States and/or the USSR). At the same time, each power feels it must move to a carefully controlled alert status, a move that could be misinterpreted by the other. Several actions might then be taken by the superpowers:

• Intelligence information concerning the belligerents (maps, orders of battle) might be exchanged.

• Information on reactive force deployments of the major powers’ own forces (alert status, positioning) might be exchanged to prevent ambiguity of intention.

• A coordinated standoff of major-power forces might be undertaken to reduce alert status at roughly a commensurate pace.
• Essential command, control, and communications (C^3) data on major-power forces may be protected to minimize asymmetries of information available to adversary planners.

• Assuming that the belligerents are willing to negotiate and that the major powers are agents in the negotiations, expeditious exchanges might be made of positions, drafts, agreements, and communiqués to defuse the situation as promptly as possible. Here, time constraints may be critical; it would not be acceptable in, say, a 12- to 24-hour crisis period to have half or more of the time consumed in end-to-end message exchange times.

• Protective measures might be taken to prevent deception measures and misinformation and to preserve communications security; and avoidance measures might be taken to prevent the status of discussions and coordinated actions undertaken by the major powers from leaking to belligerents.

Such actions suggest benchmark requirements for the message exchanges between the major powers (and between each head of state and his major consultative groups) that should guide any decisions about upgrading the Hot Line. Those requirements include privacy, speed, and feedback; confident authentication; force-posture coordination and status documentation; facilitation of head-of-state negotiations; full documentation of exchanges and negotiation behavior; text display and editing in real or near-real time; clear and authenticatable exchange, where desirable and necessary, of intelligence-related or unilaterally possessed information; and preparation and exchange of authenticated statements and drafts, modified by real-time negotiation. Voice and teletype-based message-exchange capabilities are clearly inadequate to meet these requirements in situations that span the representative crises. The communications system should have much less constrained capabilities, as well as growth potential in general-information uses. The salient technical characteristics of such a system include the time compression for end-to-end message preparation and delivery, reliability, graphics transmission, privacy and security of transmission, authentication, and near-real-time connectivity or accessibility by heads of state.

Based on this analysis, facsimile transmission appears to be the preferred approach to upgrading the Hot Line. Facsimile transmission systems provide a reasonable initial response to the requirements suggested by most, if not all, of the representative scenarios. While the transmission rate of the current teletype system is probably adequate for short messages, it would not be adequate in time-critical situations where long text messages must be exchanged. The advantage of
greater transmission speed is the additional time it makes available for deliberation and consultation, particularly when several messages must be exchanged during a relatively short period.\footnote{Multiple Hot Line messages in a relatively short time interval would not be unprecedented. During the Six Day War, there were apparently seven exchanges of messages between Johnson and Kosygin over the Hot Line. On June 10, 1967, the last day of the war, six Hot Line transmissions are reported to have occurred in a period of less than four hours[19].}

Graphics transmission would enable authentication of messages by signature; in addition, charts, plan drawings, and photographs could be transmitted at modest but useful resolution (with a nominal grey scale). Facsimile eliminates the need for keyboarding and therefore eliminates operator errors. Like teletype systems, facsimile transmission systems mask personal traits—aural and visual—of the communicators. Problems can occur in voice or video contact for several reasons, including imprecision of translation, misunderstanding, psychological factors resulting in undesirable voice traits that could be exploited, and other similar factors.

The Consultative Committee on Telephone and Telegraph has developed classifications and standards for three groups of facsimile and is currently preparing a Group 4 standard for error-free digital facsimile transmission on public data networks. The Group 3 standards represent the currently accepted level of technology for widespread use, i.e., operation at a maximum of 9,600 bits per second and resolution of 200 lines per inch. Group 4 facsimile will operate at 56,000 bits per second and will provide resolutions of up to 400 lines per inch; it will also have provision for mixed-mode operation which will allow transmission of symbol-coded text and graphics. The resolutions achieved by Group 3 and proposed for Group 4 facsimile transmission are roughly midway between the resolution of the ordinary home TV (~30 to 50 lines per inch) and high-quality photographic resolution (~2500 lines per inch). The facsimile resolution will probably enable the transmission of very high-quality contour maps with little or no degradation. The speed of data transmission is again roughly intermediate between teletype and video. Advanced systems, exploiting the best practical facsimile technology that could be made widely available, would transmit a page of text in a few seconds (on the current Hot Line, it takes 6 to 7 minutes to transmit a page of text).

Facsimile systems therefore offer the potential for substantial assistance in heads-of-state exchanges and in critical consultative arrangements between a head of state and his own supporting staffs. A state-to-state link seems eminently practical; the mix of policy and technical issues involved is not a great departure from the issues that surrounded
the establishment of the current Hot Line and should cause no funda-
mental problems. Consultative arrangements, including ancillary links
to heads-of-state support staffs, also seem immediately practical for
backstopping state-to-state exchanges by appropriate intranational
arrangements. Commercial availability of appropriate facsimile sys-
tems is assured. The state of the art of facsimile systems is already
well advanced, additional growth is unquestionably possible, and the
technology is essentially responsive to the notion of mobile, portable,
or transportable systems, so that links need not be restricted to fixed-
terminal configurations[20].
III. BILATERAL HIGH-DATA-RATE EMBASSY CRISIS COMMUNICATIONS

High-data-rate transmission technology exists that can perform at a level beyond that possible with facsimile technology. Although these high-data-rate systems are not commercially available, they offer many possible benefits for crisis control, war avoidance, and war termination. However, at least two factors argue against a direct U.S.-USSR communication link that uses “state-of-the-art” technology: the costs of technology transfer, and the hazards of allowing an adversary to interface directly with state-of-the-art systems. Nevertheless, it may be possible to alleviate these problems.

One possibility would be the creation of specific national links connecting the head of state with his embassy in the territory of another state. The Soviet embassy in Washington would be authorized to install such a system using Soviet technology and encryption systems; the U.S. embassy in Moscow would be authorized to install such a system using U.S. technology and encryption systems. The embassy lead-ins would be fixed sites using equipment of national origin. Some commonly agreed-to equipment might also be used to achieve sufficient information commonality to permit communication of state-of-the-art imagery, maps, figures, handwritten (thus authenticatable) communications of heads of state, and graphic displays between governments.

The U.S. embassy communication center in Moscow could thus augment existing direct communications from the Department of State, the Pentagon, and the White House. Images, maps, drawings, displays, and other communications would be hand-carried from embassies to host government officials in times of crisis. Transmissions from heads of state to their embassies would also provide unique opportunities for quality control, interpretation, error correction, and some relevant technical processes.

These capital-to-embassy links would supplement direct links between heads of state. The reception terminals within each embassy would be under the direct control of the embassy, to prevent unauthorized exposure of specific equipments. Bilateral agreements would be implemented, allowing the respective nations to bring in the appropriate equipment freely and without interference.1

1Under the 1961 Vienna Convention on Diplomatic Privileges and Immunities, communications augmentation of this kind requires consent of the host government. The
Provision of high-capability capital-to-embassy links could have several advantages:

- An explicit Department of State role (in the case of the United States) in potentially dangerous situations would be emphasized. The additional link, culminating in face-to-face meetings between the head of state and the other side's ambassador, could help to smooth over infelicities of expression and to clarify ambiguities more efficiently than is possible with impersonal message exchanges.

- Explicit recognition of embassy terminal links as essential information exchanges would make the respective embassies vital C³ nodes. Thus they might dampen the escalation of a confrontation, because their elimination could shut off critical C³ information.

- A bilateral international agreement to provide high-data-rate embassy communications might also specify the intention to protect such communication facilities in times of stress—contrary to the current practice of withdrawing diplomatic recognition and communications.

The embassies already possess a respectable inventory of equipment and have the services of specialists to whom advanced links would pose no special technological problem. Embassy communication links would serve as additional mechanisms for recognizing a set of activities which both nations now carry out for strictly national purposes. Such recognition and an implicit set of mutually beneficial operations could tend to bolster both transnational activities and the recognized set of national activities.

"receiving state shall permit and protect free communication" of a diplomatic mission "for all official purposes." The mission "may employ all appropriate means, including diplomatic couriers and messages in code or cipher. However, the mission may install and use a wireless transmitter only with the consent of the receiving state"[21].
IV. CRISIS CONTROL AND NUCLEAR TERRORISM

In addition to fears about the increasing risks associated with nuclear proliferation, there has been growing concern in recent years over the possibility of some terrorist group obtaining a nuclear weapon or somehow acquiring nuclear material and fabricating a nuclear device. Although experts still debate the issue, the small probability that someone outside of government programs might be able to design and build a crude nuclear bomb may be gradually increasing. This possibility has been enhanced by the inadvertent public release of nuclear weapons design information; decreasing certainty about inventories of fissile materials; the increase in the number of foreign facilities producing special nuclear materials; and the continuing spread of nuclear programs throughout the world, which multiplies the chances for diversion or theft of nuclear material.

At the same time, the volume of terrorist activity in the world has increased dramatically. Judging by increases in the number of terrorist incidents with fatalities, the number of incidents with multiple fatalities, and the number of incidents in which many died or were threatened with death, terrorists appear increasingly willing to deliberately kill wantonly, or at least to risk higher casualty levels.

The last ten years have witnessed growing criminal activity in the nuclear domain. Several thefts of uranium ore and low-enriched uranium have occurred, and offers by intermediaries to sell purportedly stolen nuclear material indicate a potential for a nuclear black market. Terrorists in Europe have attacked persons and facilities in an effort to halt or delay nuclear energy programs. However, none of these incidents has involved any attempt to acquire nuclear material for possible use in a weapon, nor have any nuclear weapons been stolen.

To the extent that they may have thought of it at all, terrorists probably recognize that possession of a nuclear device would provide them with tremendous publicity and enormous coercive power. Since 1970, approximately 60 threats against American cities and institutions have been made in which possession of nuclear material or a nuclear device has been claimed[22]. All but one of these threats apparently were hoaxes.¹

¹In the single case that was not a hoax, the extortionist had possession of low-enriched uranium oxide[23].
It is a quantum leap from the recent activities of currently identified terrorist groups to the acquisition of a nuclear capability. Even if terrorists somehow acquired a limited nuclear capability, it is unlikely that they would be able to use it to initiate an unintentional nuclear confrontation between the United States and the Soviet Union. There is, however, a range of plausible scenarios involving terrorists or third countries in which a serious crisis could be provoked between the United States and the Soviet Union, and in which some prearranged machinery for U.S.-Soviet cooperation would be highly advantageous. These scenarios involve potential incidents close to the borders of the Soviet Union or Soviet Bloc countries, incidents in a third country that might request assistance from both the United States and the Soviet Union, incidents in areas where U.S. and Soviet allies are in confrontation, and incidents in international waters close to the Eurasian landmass. Below are several examples drawn from a large number of possibilities:

- **Terrorists in Germany launch a well-planned attack on a nuclear weapons storage site in Germany and escape with a nuclear weapon.** There is immediate suspicion that the assault on the storage site may have been instigated by the Soviet Union. There is also concern that the terrorists may try to escape with the weapon to East Germany. Despite suspicions of possible Soviet complicity, the United States asks for Soviet cooperation in monitoring the East German border to prevent the weapon from coming into East Germany.

- **A message, including a diagram of a nuclear device, is received from a group claiming to be the Red Army Faction.** The message says that an improvised nuclear device has been placed somewhere along the border between East and West Germany and will be detonated unless Brigitte Mohnhaupt (an imprisoned RAF terrorist) is released and flown to Libya. A thorough sweep of the area identified by the terrorists cannot be made without helicopters from the United States violating East German airspace or Soviet helicopters violating West German airspace.

- **The Popular Front for the Liberation of Palestine claims to possess a nuclear weapon which it threatens to detonate in Israel unless the Israeli government withdraws from East Jerusalem and the West Bank.** The threat message is accompanied by a diagram of the device and a small quantity of highly enriched uranium. Israel has called for assistance and, without specifically mentioning nuclear weapons, has warned
that a nuclear attack on Israel will lead to retaliation. The United States offers Israel its assistance and asks the Soviet Union, because of its influence in Syria, to cooperate in assessing the threat.

- An explosion occurs at a nuclear facility in Iraq. There are several possible explanations. One is that an Iraqi attempt to fabricate a nuclear weapon has resulted in accidental detonation. This the Iraqis deny. A second possibility is that the Iraqi nuclear program was sabotaged, presumably by Israeli or Iranian agents. A third possibility is that a foreign power hostile to Iraq detonated a nuclear device to destroy Iraq’s nuclear program but disguised the blast to make it appear to have come from Iraq’s own nuclear program. Iraq has asked both the Soviet Union and the United States for assistance in determining the extent of dispersal of nuclear material.

- A ship carrying spent nuclear fuel from Japan to France for reprocessing disappears on the high seas. A last garbled message from the vessel indicated a possible mutiny or hijacking. There is a strong desire among the world’s capitals, where many recall the Scheersberg incident,² to determine whether this is an act of piracy, and if so, by whom, and to help evaluate the purposes to which the cargo can possibly be put. Both the United States and the USSR are asked to provide their ocean surveillance capabilities to help locate and recover the missing cargo.

These types of scenarios suggest the potential need for various forms of international cooperation in crises involving nuclear terrorism and for mechanisms that would facilitate such cooperation—in particular, an agreement among nations to exchange information in the event of nuclear crises initiated by subnational groups or unknown parties, and the establishment of a special, secure communications link for this purpose. The nature of information exchanged between nations in a crisis may be highly technical, e.g., data pertaining to nuclear threat assessment, nuclear weapons design, or terrorist groups and their modus

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²On November 17, 1968, a freighter of Liberian registry, the Scheersberg A, sailed from Antwerp carrying 200 tons of uranium oxide. Its destination was listed as Genoa. On December 2, a message was received in Milan to the effect that the uranium would not be delivered to Genoa. The following week, the Scheersberg A arrived in Palermo, Sicily, where it was left at dockside without a crew. The pages in the ship’s log for the days following the departure from Antwerp had been torn out, and there was no trace of the cargo. A formal investigation ordered by Euratom, the atomic-energy agency of the European Economic Community, failed to determine what had happened to the missing uranium oxide. However, it has been rumored that 200 tons of uranium oxide turned up at Haifa in early December 1968 and that it has since been used to fuel Israel’s nuclear reactor at Dimona.
Cooperation in the field between U.S. and Soviet operational elements engaged in a nuclear emergency search or the recovery of nuclear materials would place additional demands on an intergovernmental communications link. The current Hot Line would not be the best means for exchanging technical data and expert knowledge in such circumstances. A rapid secure link connecting military command centers in Washington and Moscow would be more appropriate in this situation and would be useful in other types of crises as well.

Absent a crisis, there appears to be little hope of obtaining Soviet cooperation in assessing possible terrorist group motives and capabilities for nuclear extortion, acquiring nuclear materials, threatening nuclear facilities, or fabricating a nuclear device. U.S. and Soviet perceptions of international terrorism are so divergent that such an agreement would be highly unlikely. Nevertheless, both countries would probably share a common interest in cooperating in certain types of nuclear emergencies; and although mutual suspicions may prevent cooperation in advance of a crisis, they may not necessarily preclude the establishment of arrangements that would permit cooperation among nations during an emergency.³

³The USSR has entered two agreements for dealing with certain aspects of terrorism that present problems perceived as mutual (airline hijacking and airline sabotage), but without raising the broader topic of terrorism in general[24,25].
V. A MULTINATIONAL CRISIS-CONTROL CENTER

It is apparent from the scenarios defined above that direct communications among heads of state are not by themselves sufficient to perform all the primary functions of crisis management, including the negotiation and coordination of measures for regional peacekeeping, crisis stabilization, deescalation, disengagement, and war termination, as well as control of nuclear terrorism. These are primarily functions that require intergovernmental exchanges of data and expert knowledge among senior military, diplomatic, and, in the case of some nations, other civilian personnel responsible for nonmilitary nuclear crisis control. Two levels of crisis communication are clearly needed. This need was recognized by the Congress in Section 1123 of the Department of Defense Authorization Act of 1983, which mandates

conduct of a full and complete study and evaluation of initiatives for improving the containment and control of the use of nuclear weapons, particularly in crises. Such a study and evaluation shall include... establishment of a multinational military crisis control center for monitoring and containing nuclear weapons used by third parties or terrorist groups.

The mandate does not specify either an organizational form for the crisis-control center, an institutional home, a location, or a set of members, other than representatives of the United States and the USSR. One potential form of military crisis center\(^1\) was proposed elsewhere by authors of the mandate. This center would consist of facilities in a neutral third country, staffed jointly by personnel from the United States, the USSR, and other nations.\(^2\)

The purposes of the proposed center vary widely, and there is no clearly “appropriate” set of nations that have special claim on the

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\(^1\)The term “military” as used in the phrase “military crisis control” is largely shorthand for a set of functions performed by different agencies within governments (military, diplomatic, foreign intelligence, police, and nonmilitary nuclear energy management) that are responsible for crisis control.

\(^2\)This configuration was proposed in 1982 by Sen. Henry M. Jackson[26], Sen. Sam Nunn, and others[27]. Bilateral variations of the center concept were proposed later by Perry[28], by Blechman[29], and by Ury and Smoke[30]. In early 1984, Sen. Nunn and others introduced a resolution "expressing the support of the Senate for the expansion of confidence building measures between the United States and the Union of Soviet Socialist Republics, including the establishment of nuclear risk reduction centers, in Washington and Moscow, with modern communications linking the centers"[31].
missions of avoiding accidental nuclear war and coping with nuclear terrorism. Any center in which the superpowers participate and in which intelligence information is exchanged will generate recurring pressures for expanding membership. If it is to have any hope of accomplishing some of its intended purposes, the center must start with a small number of participating states, and it must have a rationale for limiting admissions according to some appropriate criteria. Unrestricted growth in membership would soon paralyze a center's operations.

From the U.S. perspective, any consideration of a center must deal with the continuing fundamental asymmetry that flows from the fact that the “third parties” to which the 1983 Authorization Act refers happen to be American allies or countries with which the United States wishes to maintain a common stance on basic foreign-policy issues (with the exception of India, which is not, however, either a Soviet ally or a security partner against the United States). It is difficult to conceive of a way to eliminate the risk of alienating allied or friendly third parties except by including them all. But an all-inclusive multinational center is almost certainly neither politically feasible nor technically workable.

Bilateral arrangements have been proposed before, but they have been rejected. In 1970, the Soviets proposed informally that the United States and the USSR agree to take joint action to prevent the outbreak of war by accidental, unauthorized, or provocative action against either country by a third party. This proposal was rejected because the Soviets were seen as inviting the United States, in effect, to cooperate with them against Great Britain, France, and the PRC precisely at a time when Sino-American relations were at a most delicate point on the road to rapprochement.

A multinational center should include at least the five acknowledged thermonuclear-weapons states (the United States, the Soviet Union, the United Kingdom, France, and the PRC). There appear, however, to be few potential advantages to such a center. The principal advantage appears to be the perception of a tangible attempt to avert nuclear war and to build confidence among nations. As a highly visible symbol, a center could have an initial positive impact. But if it did not function, if it were bypassed, if it were overwhelmed in crisis or misinformed in fact, its credibility would vanish. A secondary advantage would be the opportunity to establish personal contacts with threat-assessment experts of other nuclear states, and possibly to exchange information on the interpretations of third-party threats. A third possible advantage would be the opportunity to engage in intelligence exchanges and liaison arrangements on a multilateral basis.
Traditionally, such activities are bilateral (although in atomic intelligence and certain other sectors, multipartite exchanges have been instituted).

By contrast, the combined effects of many potential disadvantages are such that a center would be unlikely to succeed in achieving meaningful nuclear-containment objectives:

- If each of five center members maintained a direct channel to the government of each of the other four center members, there would be ten direct links. With a capability for simultaneous two-way communication, as many as 20 messages might be in transmission simultaneously. While many might be copies of other messages, the communications overload would present a substantial problem and would entail communications protocols that might further slow down the process of effective communication. Additional problems of translation into four languages, coupled with the delays associated with approval for release of information from national capitals, are bound to add a large degree of sclerosis to arrangements that function best when they are deliberate, but fast, secure, and flexible.

- Because no particular set of nations can legitimately claim exclusive rights to engage in war-prevention and crisis-control measures, any configuration of center membership will create stresses among allies as well as interinstitutional stresses.

- Any center that includes a sufficient number of nation states to be relevant risks information overloads and coordination fiascos in times of crisis. In particular, the inability to exclude members guarantees participation by uninvolved and uninformed members in every crisis. Involving every member in every crisis would lessen the utility of the center and would undermine international confidence.

- In addition to delays in authorization to exchange intelligence, military and diplomatic representatives would probably have to negotiate within the bounds of written instructions from their capitals, thus further delaying coordination of actions in response to agreed threats.

- Because of the center members’ access to shared intelligence, and the reactions of other members to that intelligence, the center and the national liaison missions to it would be convenient intelligence targets, with resulting risks to intelligence sources and methods and resulting advantages to deception planners and counterintelligence managers seeking to mask surprise attacks. The center would be both vulnerable to
deceptions aimed at it and a potential source of feedback for deceiving national governments.

- Because of disincentives to utilize the center in time-urgent crises, and because of inactivity in noncrisis periods, a tour at the center would not be viewed as advantageous in either the military or the diplomatic career ladder. As a consequence, the center would probably not be staffed by the best officers from any nation. (It might be attractive for intelligence, counterintelligence, and deception personnel, however.)

- Even if some able personnel were assigned, the neutral location of a center would guarantee its remoteness from the centers of national decisionmaking and would deprive its participants of direct contact with decisionmakers.

- To assure cohesiveness of allied policies, a backchannel network would be required to coordinate allied positions at the center. The backchannel network, however, would probably perform much better than the center and would thus render many of the center’s ostensible functions superfluous, particularly in times of crisis.

In summary, the unavoidable political and technical problems inherent in the operational concept of a multinational military crisis-control center (remoteness, rigidity, complexity, susceptibility to communications overload, susceptibility to deceptive practices, etc.) are such that the center would be bypassed in time-urgent crises; and, taken together, the nature and magnitude of a center’s disadvantages also raise serious questions regarding its ability to contribute to other crisis-prevention and control objectives.
VI. A MULTILATERAL CRISIS-CONTROL NETWORK

Many of the arguments presented earlier for a bilateral military communications link between the United States and the USSR apply equally to the need for bilateral links between national crisis-management centers in other pairs of countries, and it is in this sense that the term “multilateral network” is used here. Multilateral is not meant to imply a communications system where connections between nations are made through switching centers staffed by multinational teams. Rather, a multilateral network among, say, five nations would simply be the aggregate of ten bilateral links connecting pairs of national centers. Each center would be staffed entirely by national personnel. Information would be transmitted with unrestricted exclusionary privileges at the discretion of the sender (i.e., each nation would send what it wants, when it wants, to whom it wants).

It is this exclusionary feature (absent in a multinational center) that would provide a network with one of its most important advantages, the flexibility to tailor crisis communications to the nature of events as they occur. National crisis-control centers that would form the nodes of an intergovernmental network are themselves networks linking the nerve centers of national agencies that must be closely coordinated during a major crisis. A second advantage of a network would be the direct, real-time communication between experts in appropriate ministries, military and nonmilitary, without intermediaries.

A principal objective of the 1982 Congressional mandate[27] was to provide a mechanism that could deal effectively with the international diffusion of nuclear capabilities by creating a mechanism to contain nuclear crises initiated by third parties. The Washington-Moscow Hot Line does not connect with the third parties that increasingly can affect prospects for peace or conflict. The need for greater outreach has been apparent for some time. 1 Recent rapid advances in

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1 A proposal for the establishment of direct communication links among heads of government was submitted by the United States delegation to the Eighteen Nation Disarmament Committee in 1962 as part of an outline of a Treaty on General and Complete Disarmament. “Specified Parties to the Treaty would agree to the establishment of rapid and reliable communications among their heads of government and with the Secretary General of the United Nations”[32]. The Soviet Union later agreed to include a version of the U.S. proposal in a subsequent Soviet draft Treaty[33]. Other U.S. proposals for “reducing the risk of war” were also incorporated (with modifications) in the Soviet draft Treaty, including one that called for the exchange of military missions: “Specified Parties to the Treaty would undertake the exchange of military missions between states
sophisticated communications technology have made a multilateral crisis-control network more practical than before. The advantages of such a network include the following:

- A network could interconnect existing national crisis control centers that are already staffed by high-quality officers.
- Regular operational activity in existing national centers helps maintain the proficiency needed in nuclear crisis.
- National crisis-control centers are already internetted to pertinent national entities (military, intelligence, nuclear energy, diplomatic, police), thereby providing flexibility and interconnecting appropriate sources of expertise.
- The proximity of national operations centers to senior national decisionmakers provides opportunity for near-real-time review and supervision by national policymakers. The danger that messages might not reflect high-level viewpoints is thereby reduced.
- The ability to communicate selectively provides flexibility to tailor crisis communications to the nature of events.
- The availability of intragovernmental networks would facilitate the clearance of policy instructions and security assessments regarding sharing of sensitive information with allies and adversaries. Communicating such instructions to a remote center would take less time, and sharing may be more substantial than would be the case at a remote center.
- The availability of intragovernmental networks could minimize inadvertent or unauthorized disclosures that might jeopardize national security interests, including intelligence sources and methods that might be more readily disclosed in the environment of a jointly manned center.
- Containment of national reactions within nationally controlled centers could reduce feedback to deception planners and would also reduce risks of surprise attack associated with data and assessment exchanges.

There are also some potential disadvantages to a multilateral communications network:

- Such a network would not be highly visible and would probably be viewed as incremental rather than as a significant addition or groups of states in order to improve communications and understanding between them.
to existing capabilities. It would probably not have much impact as a means of building public confidence.

- Military links raise concerns about bypassing traditional diplomatic channels of communication in ways that could lead to confusion and disarray in crises. This problem could be minimized by establishing appropriate mechanisms for intragovernmental coordination.
- There is a political problem of participation. As in the case of a multinational center, there do not appear to be widely acceptable criteria for sanctioning the participation of some nations in a multilateral network and excluding others.\(^{2}\)

Although Secretary Weinberger’s report to the Congress[1] rejects the proposal for a multilateral network, the problems inherent in such a capability appear to be outweighed by the risks of not having one available. Perhaps the best approach would be to let a multilateral network evolve incrementally over time, with superpower encouragement, as pairs of nations see the need for it. This would avoid the political problem of taking a position on which nations to include and would allow individual nations to negotiate arrangements with others as they see fit. It may be advantageous, however, to have international agreement on the desirability of and basic guidelines for such bilateral links when and if they are established.

\(^{2}\)The number of participating nations in a network of the type suggested here would not pose an unmanageable problem of communications saturation, as would be the case with a multinational center. The essential difference is that in a multinational center, every member nation would be consulted in every crisis. In a multilateral network, only those nations relevant to the crisis need to communicate; communications from uninvolved or unwanted members would not require an immediate response; and all transmissions would be direct (without intermediaries) and bilateral.
VII. CONCLUSION

It is apparent that both bilateral and multilateral measures for international cooperation will be necessary to control a broad range of plausible nuclear crises. More robust and effective bilateral arrangements between the United States and the USSR are needed to improve the means for controlling direct, but inadvertent, superpower confrontations. But bilateral arrangements by themselves are not likely to suffice for controlling potential nuclear crises generated by subnational groups or third nations.

Three bilateral measures proposed recently by the United States would significantly improve existing mechanisms for U.S.-USSR communication during crises. These measures—Hot Line enhancement, a military communications link, and high-data-rate embassy communications—would serve different, but mutually reinforcing purposes in crises. Together they would provide rapid and flexible means for implementing existing agreements[34] that call on both nations...

...to notify each other immediately in the event of an accidental, unauthorized or any other unexplained incident involving a possible detonation of a nuclear weapon which could create a risk of outbreak of nuclear war.

...to notify each other immediately in the event of detection by missile warning systems of unidentified objects, or in the event of signs of interference with these systems or with related communications facilities, if such occurrences could create a risk of outbreak of nuclear war between the two countries.

...to act in such a manner as to reduce the possibility of [one Party's] actions being misinterpreted by the other Party. In any such situation, each Party may inform the other Party or request information when, in its view, this is warranted by the interests of averting the risk of outbreak of nuclear war.

...to immediately enter into urgent consultations with each other and make every effort to avert . . . the risk of nuclear war between the United States of America and the Union of Soviet Socialist Republics or between either Party and other countries.

The current Hot Line and other existing means of intergovernmental communications appear to be inadequate for these purposes, even in less than the most demanding scenarios.
Potential benefits of the proposed measures for improved bilateral communications between the United States and the USSR extend beyond purely technical arrangements for enhancing crisis stability. Establishment of high-data-rate embassy communications may help counter the tendency to bypass foreign ambassadors in the respective capitals during crisis situations where face-to-face meetings could be a highly valuable supplement to formal message exchanges. Establishment and maintenance of a military communications link would require U.S. and Soviet military representatives to meet and confer for the purpose of establishing communication protocols, for identifying the types of information that might be exchanged, and for reviewing ways in which the two nations might coordinate their efforts to avoid as well as control nuclear crises. These types of consultations, conducted periodically, would serve many of the purposes identified by advocates of jointly manned centers \[28,29,30\] without incurring the full risks associated with continuous joint manning in close proximity to each nation’s military headquarters.

Improved means for bilateral U.S.-USSR communications have implications for communications systems linking the United States and its allies. During a crisis, while the United States is communicating with the USSR, it will probably also need to consult and exchange information with its allies. Therefore, to realize the full potential benefits of improved communications links with the USSR across a wide range of possible nuclear crises, the means for communication among the U.S. and its allies must be at least comparable to those between Washington and Moscow.

The assessments of bilateral measures summarized in this report have been presented, for the most part, from a U.S. perspective. To some extent, this is unavoidable. Although the measures addressed have purposes that are consistent with long-standing Soviet declaratory policy, there are asymmetries in perspective, alliances, technology, doctrine, and national political infrastructure that bear on the acceptability of such measures. Some asymmetries are obvious; others are much less visible, and there is considerable uncertainty regarding their implications for agreement on specific measures. Certainly any proposed measure that appears to widen a perceived U.S. advantage or narrow a perceived Soviet advantage will have a low probability of gaining Soviet acceptance. The reverse, of course, is also true. Future work in this area would benefit from a better understanding of

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1A similar concept for establishing “agreed-upon crises procedures” has been proposed by Ury and Smoke[30].

2See, for example, Refs. 5, 35, and 36.
potential obstacles to acceptance and ways for minimizing and accommodating such obstacles.

Strengthening bilateral arrangements between the United States and the USSR is of central importance, but this should not be the exclusive focus of a long-term strategy for nuclear-crisis control. Ways must be found to establish effective multilateral mechanisms that include all the nuclear powers and other nations as well. A first step, proposed recently by the United States, would be to seek an agreement among nations to exchange information in the event of a nuclear crisis involving terrorist groups. A second step would be to encourage the establishment of crisis communication links between other pairs of nations. In the aggregate, such bilateral links would constitute a flexible and effective means for multilateral communications in crisis.

The conclusions of this report were derived from assessments of a range of plausible nuclear-crisis scenarios. These assessments confirm that improved intergovernmental communication systems would be important enabling mechanisms in controlling crises. Modern channels of communication, however, cannot substitute for the general adequacy of military capabilities as a deterrent, for the willingness of nations to cooperate in defusing a crisis, or for the competence of national leaderships. Improving intergovernmental communications constitutes only part of a much larger agenda for enhancing nuclear-crisis stability.

Progress in reducing the risks of nuclear war and in improving the prospects for crisis containment and deescalation will depend heavily on unilateral measures that provide for the sustainability of forces in nonnuclear conflict, the endurance of strategic forces at high levels of alert, and the survivability and performance of national systems for command, control, communications, and reconnaissance. Despite possible higher peacetime costs, unilateral measures to achieve these goals should remain high on the agendas of both superpowers. Otherwise, opportunities in crisis to buy time for deliberation, consultation, and negotiation during crises may be lost. And at critical transition points, when a crisis might either escalate or stabilize and be resolved, national command authorities could be pushed to decisions prematurely by a use-it-or-lose-it time constraint brought on by inadequate supporting resources.
REFERENCES


