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## SECTION 1.0

### EXECUTIVE SUMMARY

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The intent of the analysis presented here is to understand the impact of nuclear weapons on crisis and conflict situations that have occurred since their introduction into military arsenals. The nuclear weapon deployments and operations described in this report reflect situations which occurred in the planning or oversight of nuclear weapons during the first fifty years of the nuclear age. Case studies covering crisis and conflict situations in which the use of nuclear weapons were considered, the weapons deployed, or exposed to combat conditions are presented in chronological order in Sections 2 through 17.

The evaluation of the crisis and conflict situations was accomplished in four steps: 1) research and preparation of the individual case histories, 2) classifying the cases by motivating or casual factors, 3) assessment of decision-making considerations, and 4) identification of lessons learned. The results of the last three steps are summarized in Subsections 1.2 through 1.4, respectively. Although world political and military environments have changed significantly over the period spanned by these events, it is felt that these cases provide a basis for drawing conclusions of possible relevance to future nuclear threats and crises.

#### 1.1 SCOPE AND LIMITATIONS OF THE ANALYSIS.

This report is focused on theater and Third World crisis and conflict situations. It does not, except in the case of the Cuban missile crisis, address the "Cold War" strategic competition between the United States and Soviet Union. However, in several of the situations described here the superpowers were drawn into, or became adversaries in the events described. Further, it does not address several "saber-rattling" situations between the North Atlantic Treaty Organization (NATO) and the Warsaw Pact countries that occurred during the Cold War years.

This report also does not address accidental events involving nuclear weapons that occurred during peacetime research, development, or military operations. For example, the United States and other countries suffered ten or more nuclear weapon accidents prior to 1970. Three well documented U.S. events were:

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- A B-52 carrying two 12 megaton bombs crashed 15 miles north of Goldsboro, NC, on 20 January 1961. One weapon was jettisoned on a parachute but the second (with only one safety interlock switch still open) was recovered from the destroyed aircraft.<sup>1</sup>
- A B-52 collided with a KC-135 refueling tanker and dropped four 1.1 megaton bombs on the coast and into the water off Palomares, Spain, on 17 January 1966. Radiation was released but all four bombs were recovered after several months.<sup>2</sup>
- A B-52 carrying four hydrogen bombs crashed and sank through the ice during its landing approach to Thule, Greenland, on 21 January 1968. Radiation was released and only parts of the bombs were recovered.<sup>2</sup>

Although these accidental events were important, they distract from the analysis of crisis and conflict situations which is the focus of the study. However, they show that ownership and operations with nuclear weapons is a costly proposition because of the hazards incurred and that stringent safety procedures are prudent. The accidents influenced the U.S. decision to remove bombs from aircraft flying all but authorized alert and deployment missions in 1968.

One should note an important qualification. Conclusions depend upon the degree to which the case studies are themselves accurate and do not distort, through omission or commission, what actually occurred. The information and data used in the case studies were taken from numerous unclassified U.S. and foreign sources to cross-check their accuracy. While the case studies do not carry the authenticity of first-hand observations or classified sources, it is our hope that they provide a useful basis, by virtue of their lack of classified information, for broader discussion of issues attendant upon the ownership of nuclear weapons than would be the case otherwise.

### 1.2 CLASSIFICATION OF CASES BY MOTIVATING FACTORS.

An initial reading of the sixteen case studies shows that the decision to consider, plan, or deploy nuclear weapons in a given case can be classified by five dominant motivational or causal factors. These factors, with examples of each, are presented in Table 1-1.

The deployment of nuclear weapons for purposes of destroying large, high-value military and industrial targets has been an accepted strategic concept since World War II. It motivated the strategic forces planning during the Cold War between the U.S. and the Soviet Union. It was a primary consideration for nuclear force deployments by NATO and the Warsaw Pact countries after 1950. It was the motivating factor in General MacArthur's request for nuclear weapons to be used against Chinese airfields during the Korean War, and the Soviet deployments of missiles in Cuba and Afghanistan.

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Table 1-1. Classification of case studies by motivating factors for considering, planning, or deploying nuclear weapons.

## Dominant Motivating Factors and Illustrative Case Studies

1. Weapons planned or deployed to destroy strategic offensive targets
  - World War II Japan: Destroy military targets in Hiroshima and Nagasaki and demonstrate weapon effectiveness
  - Korean War: Destroy airfields in Manchuria
  - Cuban Missile Crisis: Soviet missiles aimed at U.S. cities and military targets
  - Afghanistan War: Soviet missiles aimed at Pakistani and Chinese military targets
2. Weapons planned or deployed to facilitate tactical operations
  - World War II Japan: Bombs planned to support Operations Olympic and Coronet during invasion of Japan.
  - Desert Storm/Iraq War: Nuclear artillery and missiles to support Coalition ground offensive
3. Weapons considered or deployed to salvage an otherwise desperate or overwhelming force situation
  - Korean War (1950): Cover retreat of UN forces from the Yalu River following Chinese intervention
  - Vietnam (1954): Relieve French troops surrounded at Dien Bien Phu
  - Vietnam (1968): Relieve U.S. Marines surrounded at Khe Sanh
4. Weapons considered or activated to reinforce deterrence posture and strengthen political position
  - Suez Canal (1956): U.S. moves to deter Soviet intervention
  - Lebanon (1958): U.S. moves to deter Soviet intervention
  - Taiwan (1958): U.S. cruise missiles to deter communist China
  - Cuban Missile Crisis (1962): U.S. responses to Soviet threat
  - October War (1973): Israeli weapons to deter Syria
  - South Africa (1984): Deter Cuban and Soviet forces in Angola and Namibia
  - Desert Storm/Iraq War (1991): Deter Iraqi use of Scud missile weapons of mass destruction against Israel and Saudi Arabia
  - Taiwan (1996): Chinese missile testing/exercises to influence elections
5. Weapons deployed inadvertently, by military doctrine, or poor planning
  - Mediterranean Sea (1967): Assault on the U.S.S. Liberty by Israel
  - Sea of Japan (1968): Capture of the U.S.S. Pueblo by North Korea
  - Manchuria (1969): Soviet response to Chinese border attacks
  - Afghanistan (1980): Soviet invasion force
  - Falkland Islands (1982): British naval weapons

The motivation to deploy nuclear weapons for purposes of blunting large conventional force attacks and for destroying hard-point defenses and command bunkers was conceived during the planning for the invasion of Japan (Operations Olympic and Coronet). In the 1950s, it became an important factor in developing and deploying nuclear artillery, battlefield missiles, and aircraft for use in central Europe to stop large-scale Warsaw Pact attacks. The deployment of nuclear weapons

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was studied for possible use in the Desert Storm operation against Iraq but was not considered necessary.

The use of nuclear weapons to salvage a desperate situation such as preventing collapse of the Pusan perimeter and destruction of UN troops retreating from the Yalu River in Korea or relief of surrounded forces at Dien Bien Phu and Khe Sanh were accepted with strong military, political, and public support in each case. The Israeli decision to deploy nuclear weapons during the October War of 1973 could also be included in this category. As the result of unanticipated success by conventional forces or political decisions the use of nuclear weapons was avoided, but in most cases, the weapons were available and target planning was sufficiently advanced to support operational use had they been required.

Eight cases involved nuclear weapons that were deployed or put on alert status to reinforce deterrence or to strengthen political positions. The best known of these cases was the Cuban missile crisis in which the activation of strategic missiles, bombers, intermediate-range missiles in Europe, and defensive weapons in the U.S. reinforced the quarantine of shipping to cause the Soviet Union to withdraw its missiles. The threat of U.S. nuclear attacks against Iraq is credited with deterring the Iraqi use of chemical or biological warheads on its Scud missiles fired at Israel and Saudi Arabia. Recently, the PRC launched nuclear-capable missiles in test/exercises in an attempt to influence elections in Taiwan .

Finally, there have been inadvertent deployments of nuclear weapons in time of crisis or conflict due to poor planning, military doctrine, or response time considerations. The presence of nuclear weapons on alert status prevented timely responses to the attack on the U.S.S. Liberty and capture of the U.S.S. Pueblo. The Soviet deployment of nuclear battlefield weapons during its invasion of Afghanistan and in response to Chinese border attacks can be attributed to military force doctrine. The British failure to remove nuclear weapons from ships deployed to the Falkland Islands was caused by lack of time to off-load them. These cases are generally deplored and regretted but, like accidents, the risks incurred are part of the price of ownership of nuclear weapons.

Several general conclusions were reached during the initial characterization of cases:

1. The historical cases covered a very wide range of circumstances. Therefore, the U.S. must maintain a flexible doctrine and nuclear forces must be able to respond to a variety of crisis and conflict situations.

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2. Other countries are aware of these events and can learn the same lessons. The U.S. should be careful, therefore, to avoid setting self-imposed constraints which an adversary can exploit.
3. Nuclear weapons in the inventory make both adversaries and allies more cautious. The mere existence of the weapons may deter an enemy from use of chemical or biological weapons and they may prevent or limit some conflicts for fear of escalation.
4. Nuclear weapon deployments or use are not driven only by a nuclear threat. An overwhelming conventional force or chemical and biological weapons may justify the threat of nuclear responses.
5. Military leaders and unit commanders often feel that nuclear weapons detract from conventional force capabilities. They require unique and highly restrictive use control, special handling, training, testing, planning, security, and logistics support.

Because the "nuclear genie" cannot be put back in the bottle, the U.S. must maintain all aspects of its nuclear capabilities. This includes the ability to monitor, understand, and evaluate foreign nuclear developments as well as to have the ability to refine U.S. nuclear weapons and operational doctrines and to ensure the quality and safety of the weapon inventory. Because a number of countries possess nuclear weapon technologies and special materials, the U.S. must be capable of assessing and responding to potential as well as existing nuclear arsenals.

### 1.3 CHARACTERIZATION OF THE DECISION-MAKING PROCESS.

The decision to deploy or use nuclear weapons has always been one of the highest classification of any state's secrets. No matter how well-intentioned their motives, the leaders and officials responsible for making such decisions do not want troubling post-conflict questions or "second guessing" concerning their logic and actions. Therefore, the U.S. public and probably that of all other nuclear powers have not been provided much insight into the decision-making process, its scope, or considerations. Documentation from past crisis and conflict situations is often incomplete, highly classified, dispersed at numerous locations, or destroyed. However, a few important insights can be gained concerning this important subject.

Gar Alperovitz recently published an exhaustive study of the World War II decision to drop atomic bombs on Hiroshima and Nagasaki.<sup>3</sup> He noted that President Harry S. Truman made his decision within three days following the Potsdam Conference, 2-5 August 1945, as described in Section 2.1. He used the advice of only a small set of trusted officials including:

- James F. Byrnes, Secretary of State
- Henry L. Stimson, Secretary of War

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- James V. Forrestal, Secretary of Navy
- General George C. Marshall, Army Chief of Staff
- John J. McCloy, Department of State (Far East)
- Admiral William D. Leahy, Navy Intelligence (MAGIC)

He met or communicated with these people individually to obtain their views but there was no combined meeting or consensus.

Truman's decision to use the bombs apparently did not follow from a thoughtful consideration of all alternatives. Weeks after the fateful events, James Byrnes stated the widely accepted rationale, "they were used to save hundreds of thousands of lives during the invasion of Japan." This appears to have been an ex-post-facto explanation since three other explanations for use of the weapons have also been identified.

- They would put the U.S. in a position to better control the terms of the surrender .
- Their shock effect might prevent Russia from intervening in the conflict.
- There may have been no decision, because of the "momentum of war" and the bureaucratic processes associated with production, movement, training, and attack planning. It may have been simply that no effort was made to stop the process.

Although these alternate explanations may be controversial, they suggest that the decision process was complex. That the decision was less than thoughtful is reinforced by the fact that on 10 August, Truman had to have his memory refreshed concerning the Potsdam Proclamation and its conditions for "unconditional surrender."

By contrast, in October 1962 President John F. Kennedy was supported by an extensive staff in deciding the responses to the Cuban Missile Crisis as described in Section 7.1. In addition to daily briefings from the Central Intelligence Agency and Defense Intelligence Agency, meetings were held with 34 members of the Executive Committee of the National Security Council, the Secretary of Defense and Joint Chiefs of Staff, and a team of White House staff and Administration officials who helped to evaluate options and formulate decisions. While Kennedy was the final authority, he held combined meetings with these groups to search for a consensus on actions. The critical decisions to implement a quarantine on Cuban shipping and demand that the Soviet missiles be removed, took place during an intense four-day period. Several nuclear weapon deployments and attack options were developed and evaluated over a thirteen-day period.

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The U.S. decision-making process is presumably more sophisticated today. The National Security Council, in conjunction with the Joint Chiefs of Staff and the intelligence agencies, preplan and evaluate response options for a variety of potential crisis situations on a worldwide basis. The difficult process of assessing national objectives in terms of political and military requirements and adversary and international responses deserves further discussion.

Set aside the possibility of an irrational leader who deploys or uses nuclear weapons based on emotion or to exact retribution. It is more likely that the leadership of a nuclear-capable country will follow an orderly process in deciding whether nuclear weapons should be deployed or used in a crisis or conflict situation. Under this premise, there are three major variables:

- Cost-benefits to the leader's country
- Opponent's costs following the move
- Opponent's potential benefits from the move

Each of these variables may be influenced by many supporting considerations as illustrated in Table 1-2. Clearly, the decision to deploy or use nuclear weapons depends upon specific political or military objectives. These objectives will impose costs on the opponent but in some cases they may open opportunities for him to benefit as suggested at the bottom of the table. Furthermore, each objective may be more or less important to the leadership. Therefore, it is useful to assume that each consideration be weighed by its importance. For example, it may be several times more important to hold an enemy's arsenal of weapons of mass destruction at risk than to prevent activation of defenses; hence, a leader may be willing to accept high collateral civilian casualties and worldwide disapproval to achieve that objective, even if it means loss of U.N. or allied support. Finally, the manner in which the variables are combined may not be a linear process since some considerations are interrelated.

This report does not attempt to develop a calculus of nuclear decision making since the process is much too complex and too many of the details of past cases are not readily available. However, it helps to understand that the decisions in each scenario may depend on a number of considerations, and their interaction, not simply the motivating factors listed in Table 1-1. To illustrate, the South African decision to develop nuclear weapons was driven more by its political isolation and lack of allied military support than by superior conventional Cuban and Soviet forces in Angola and Namibia. Similarly, the presence of British nuclear weapons in the Falkland Islands was driven by the need to block Argentina's supply routes as soon as possible rather than by any military need for the weapons. While we do not know the decision-making processes of other countries, it may be

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the case that new nuclear nations, are likely to follow the kind of process used by the U.S. in its first decisions.

Table 1-2. Illustration of decision-making variables and supporting considerations.

## Decision-Making Variables and Supporting Considerations

- Examples of cost benefits to the leader's country
  - Hold enemy leadership at risk
  - Hold enemy weapons of mass destruction at risk
  - Deny enemy access to space or communications assets
  - Deploy or activate defense systems
  - Alter readiness of forces for prompt response
  - ... Additional considerations
  
- Examples of opponent's costs
  - Nation state survival or leadership/regime survival
  - Excessive civilian casualties and destroyed infrastructure
  - Loss of allied support
  - Possible intervention by third party
  - Destruction of religious and cultural sites
  - ... Additional considerations
  
- Examples of opponent's potential benefits
  - Early detection may permit a preemptive strike
  - Deny allied basing and support by coercion or attacks
  - Buy time for UN actions or negotiations
  - Provoke response that damages influence/prestige
  - Disrupt allies/coalition political relationships
  - ... Additional considerations

On 28 March 1996, Secretary of Defense William J. Perry testified to the Senate Foreign Relations Committee, "The United States will consider nuclear retaliation (in a devastating response) if attacked with chemical weapons."<sup>4</sup> This position was advanced to deter third world countries from developing and using chemical weapons. It was intended primarily for Libya who is constructing a large underground chemical weapon plant at Tarhunah, 37 miles southeast of Tripoli.<sup>5</sup> Because the plant is relatively invulnerable to conventional weapon attacks, the nuclear option (specifically, the B-61 penetrating bomb) was raised and repeated again on 20 April.<sup>6</sup> This illustrates the concept of using nuclear threats to control proliferation of weapons of mass destruction and reinforce diplomatic or economic options.



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## 1.4 OBSERVATIONS AND CONCLUSIONS.

As an aid in comparing the cases examined here, a summary table is shown in Appendix A. In it are the salient political dimensions of each case: the political setting, the attitude of the participants toward nuclear war, deterrence factors, concerns about escalation, impact on nuclear proliferation, and the degree of credibility of nuclear participants with respect to weapon use. The operational military dimensions of each crisis are also shown: nuclear options considered, the characteristics and availability of theater nuclear weapons, command and control issues, and concerns about collateral damage.

Each crisis can also be characterized by an initiator nation, or nations, and by one or more responder or target nations. These nations were either nuclear-capable or nonnuclear at the time of the crisis. Table 1-3 identifies the initiator and responder nations in each case. The intent is to understand who learned what from whom. The following observations emerge from analysis of the material presented in Appendix A and Table 1-3.

### 1.4.1 Statistical Observations.

- Nine cases involved nonnuclear nations that initiated a crisis against a nuclear nation. Even if one eliminates four cases (Lebanon, Liberty, Israel, and the Falklands) where one can argue the presence of special circumstances, there is still evidence that nonnuclear nations pursued their objectives in the face of nuclear-armed responders (Korea, Taiwan 1958, Pueblo, Khe Sanh, and Kuwait).
- Five cases involved nuclear nations on both sides. This suggests that nuclear weapons, while important, do not eliminate potential conflict between nuclear nations (Suez, Cuba, Sino/Soviet, Afghanistan, Taiwan 1995-1996).
- Three nations initiated more than one crisis (North Korea, PRC, USSR), suggesting that they view nuclear weapons as "normal" rather than "special" elements of their forces.
- Three nations (U.S., USSR, PRC) had to respond to nuclear threats more than once, suggesting that they have had opportunities to refine their nuclear decision-making process.
- Five nations have been in both positions, as initiator and as responder (USSR, PRC, France, Israel, UK) also providing opportunity to refine their nuclear decision-making process.
- Four nations have been responders only (U.S., Japan, Pakistan, Angola). These nations probably see nuclear weapons in different terms than those that initiated nuclear crises.
- Three cases of nuclear "carelessness" (Liberty, Pueblo, the Falklands) suggest that over time recognition of the special nature of nuclear weapons may be reduced.

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Table 1-3. Summary of crisis participants.

<i>Study</i>	<i>Year</i>	<i>Initiator of Crisis</i>	<i>Nuclear</i>	<i>Responder(s)</i>	<i>Nuclear</i>	<i>Remarks</i>
Japan	1945	Japan	N	US	N(Y)	US nonnuclear in 1941
Korea	1950-1953	North Korea	N	US	Y	
Dien Bien Phu	1954	Internal Rebellion	N	France/US	N/Y	France nonnuclear at start of conflict
Suez	1956	UK/France	Y/N	USA/USSR	Y	France nonnuclear at start of conflict
Lebanon	1958	Internal Rebellion	N	US/USSR	Y	
Taiwan	1958	PRC	N	US	Y	
Cuba	1962	USSR	Y	US	Y	
Liberty	1967	Israel	N	US	Y	
Pueblo	1968	North Korea	N	US	Y	
Khe Sanh	1968	Internal Rebellion, North Vietnam	N	US	Y	
Sino/Sov	1969	USSR	Y	PRC	Y	
Israel	1973	Syria	N	Israel	Y	
Afghanistan	1979-1987	USSR	Y	PRC/Pakistan	Y/N	
Falklands	1982	Argentina	N	UK	Y	
Angola	1984	South Africa	Y	Angola	N	
Kuwait	1991	Iraq	N	US	Y	
Taiwan	1995-1996	PRC	Y	US	Y	

INITIATOR	RESPONDER	
	Nonnuclear	Nuclear
Nonnuclear	2	9
Nuclear	1	5

MULTIPLE CRISIS INITIATORS	
North Korea	2
PRC	2
USSR	3

RESPONDERS TO MULTIPLE CRISES	
US	12
PRC	2
USSR	2

BOTH INITIATOR AND RESPONDER	
USSR	3/2
PRC	2/2
France	1/1
Israel	1/1
UK	1/1

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- Two cases where the initiator (PRC) was both nonnuclear and nuclear-capable (Taiwan 1958, Taiwan 1995–1996). As noted above, this suggests that nuclear weapons may be seen by the PRC more as just another element of military capability rather than as something fundamentally different.
- Three cases involved initiator “nations” that were in internal rebellion (Dien Bien Phu, Lebanon, Khe Sanh). The potential for possible nuclear involvement was not likely to have been a factor in their insurgency.
- The rate of occurrence of nuclear crises shows a marked secular trend: 1 in the 1940s, 4 in the 1950s, 5 in the 1960s, 2 in the 1970s, 2 in the 1980s, and 2 to date in the 1990s. There appears to have been a global learning process, first to acquire and exercise nuclear weapons during the first 25 years of the nuclear age and a reining-in on nuclear confrontations in the second 25 years. In the “learning period,” the U.S. and USSR were involved, either as responder or initiator 14 times, while in the reining-in period they appear only three times.
- Equating the number of learning experiences with degree of learning, one can order the nations involved in these crises by the frequency with which they appear as either initiator or responder: U.S. -- 12, USSR -- 5, PRC -- 4, North Korea, France, Israel, and UK -- 2 each, and eight single-experience nations (Japan, North Vietnam, Syria, Argentina, South Africa, Iraq, Pakistan, Angola).

### 1.4.2 Development of Strategic and Tactical Nuclear Policy and Doctrine.

For the U.S., three crises during the first ten years of the nuclear age (Japan, Korea, Dien Bien Phu) served to define the broad outlines of nuclear theory to the present time: deterrence of potential adversaries, escalation control, maintaining credibility in the use of nuclear weapons, political control of weapons, minimizing collateral damage, identification of strategic and tactical targets, and the need for weapons designed specifically for tactical use. Three additional crises (Suez, Lebanon, Cuba) served to broaden the learning process when superpower interactions were critical features of the conflicts. In the first two of these cases, the USSR was deterred from action by U.S. nuclear superiority, implying U.S. ability to prevail in a counterforce exchange. In these crises, the focus shifted from the specifics of tactical targeting to the posturing of nuclear forces through their positioning and alert status. The nuclear *force* became more important than the nuclear *weapon*, although the ability to deliver weapons on targets was essential if force posturing and signaling were to be credible. More “bang for the buck” dominated weapon developers and military user considerations, but the politically acceptable approach was the threat of use rather than actual use of nuclear weapons. The Cuban crisis was a direct superpower-to-superpower confrontation where the calculus of nuclear parity, the strategic nuclear balance, and signaling determination through nuclear force postures were refined. Thus, the nuclear superpowers quickly learned to establish the circumstances under which deployment or use of nuclear weapons might be appropriate and justifiable.

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While planning for Operations Olympic and Coronet, Korea, and Dien Bien Phu involved consideration of tactical nuclear weapons, the broader doctrine of theater nuclear warfare evolved more slowly than did strategic doctrine. The need to match the size and importance of a tactical target to the size of the weapon and the political implications of nuclear use; the rapid development and dispersal of tactical targets; the difficulty of reconciling different viewpoints of national political leaders and military commanders in the field in a timely manner; the need for weapons tailored to battlefield use in terms of yield, accuracy, and delivery systems; and the necessity of assuring nuclear weapon security and their command imposed complex requirements that took more time to understand and to develop practical implementations. These issues were decisively important in Korea in 1950 where there were judged to be few suitable nuclear targets and those that were identified lost their significance in the time needed to make the political decision. The same occurred at Dien Bien Phu in 1954. It was not until the 1960s, when theater nuclear doctrine was extensively developed for the NATO Central Front and Korea, that the lessons learned from crisis experiences were incorporated into theater force structure and doctrine.

These same six crises served as important learning experiences for the USSR as well. Cuba was the first time the USSR initiated a nuclear crisis, appreciating in the process the practical limitations of nuclear weapons. But further experiences in the Sino/Soviet crisis and in Afghanistan twenty years later were necessary to dissuade the USSR from continuing the practice of nuclear adventurism. These conflicts served to accelerate the need for nuclear arms control negotiations between the superpowers. Thus followed the Strategic Arms Limitations Talks (SALT I and II), Strategic Arms Reduction Treaty (START I and II), Non-Proliferation Treaty, Anti-Ballistic Missile Treaty, Intermediate Range Nuclear Forces (INF) Treaty, and the Nuclear Test Ban Treaties. Since the Cuban crisis, "hot-line" communications have become an accepted feature of diplomatic communication between national leaders.

### 1.4.3 Attractiveness of Nuclear Weapons and Nuclear Proliferation.

Four of the first five crises had outcomes satisfactory to the U.S. due in part to ownership of and superiority in numbers of nuclear weapons. The termination of WW II was largely attributed to the U.S. use of nuclear weapons. Possible use of nuclear weapons by President Eisenhower broke the stalemate along the 38th parallel and hastened the armistice in Korea in 1953. In the Suez and Lebanon conflicts, U.S. nuclear capabilities, rather than conventional forces, deterred Soviet actions.

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These events confirmed, in the minds of the USSR and other nations, that such weapons were an essential ingredient of national influence and security. They accelerated the nuclear weapon development efforts of the Soviet Union, UK, and other countries to set in motion a wave of nuclear proliferation. First, the Soviet Union in 1950 and the United Kingdom in 1956 achieved nuclear status; from the USSR flowed nuclear assistance to the PRC, until terminated in 1960 when old animosities prevailed over common ideology. The independent nuclear weapon development by France was accelerated by its embarrassment over its lack of capability at Dien Bien Phu and Suez. Within fifteen years after their introduction, the first wave of nuclear proliferation was completed.

It is not surprising other nations learned the lesson of nuclear weapon desirability from the early crises and determined to acquire them. This has been the path taken by North Korea, South Africa, Israel, Iraq, and Pakistan, and while not figuring directly in the events described here, so have India and Libya. Only Japan, weighing experience over theory, has vehemently abjured them.

In addition to diplomatic efforts to limit nuclear weapon proliferation, crises since 1968 have involved threats against existing and developing nuclear capabilities of proliferators. There were aspects of threatening PRC nuclear weapon facilities and delivery systems in the Sino/Soviet border dispute. Other examples include the Israeli covert operation to destroy nuclear reactor components in a French port, the Israeli attack on the Iraqi Osirik reactor in 1981, and the determined U.S. effort to destroy Iraqi nuclear weapon facilities during Desert Storm in 1991. Thus to diplomatic efforts to control nuclear weapon proliferation has been added an "active" aspect.

#### 1.4.4 Post Cold-War Crises May Be More Complex.

The Desert Storm conflict presented the richest set of complications of any of the cases studied. The Iraqi invasion of Kuwait could easily have extended to Saudi Arabia and the United Arab Emirates. Iraq was close to having nuclear weapons and post-war analyses have shown that one or two weapons used against the Coalition ports and logistics might have destroyed its ability to prosecute the war. The incipient nuclear threat was joined by simpler and less expensive chemical and biological weapons. Their use could have brought Israel into the war against Iraq. Israel might have felt justified in responding with nuclear weapons and this could have split the Coalition and totally changed the political and military nature of the conflict.

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Future nuclear weapon proliferators can resort to deceptive and international cooperative ventures to achieve their goals. During Desert Storm, Iraq demonstrated how difficult it is to find and destroy a clandestine development program, even though the country was signatory to the Nuclear Non-Proliferation Treaty and subject to United Nations (I.A.E.A.) inspections. In the past few years, there have been examples of:

- Nuclear expertise and capabilities available from the PRC, Russia, North Korea, and South Africa.
- Nuclear materials from dismantled weapons and from the stockpiles of disintegrating nations seeking markets.
- Ballistic and cruise missile delivery systems being developed by several nations and sales of systems, technologies, and manufacturing assistance are expanding.

If proliferation control of nuclear, and other weapons of mass destruction, and their delivery systems fails, conflicts involving international coalition members against adversaries at widely different locations may become more common.

The Cold War was difficult to manage and control when only two dominant nuclear powers were involved. Because of proliferation of weapons of mass destruction, future crisis and conflict situations may involve three or more nuclear capable countries, each pursuing different national goals and linked by different international agreements. Even the nonnuclear nations involved in the conflict may not be able to join with, or accept conditions imposed by nuclear powers. Consequently, it may become difficult or impossible to avoid growing instability in international affairs.

### 1.4.5 Responsible Stewardship of Nuclear Weapons.

As nations struggle to understand the roles of nuclear weapons and to fit them into a coherent military doctrine, at least three difficult issues have emerged.

#### Collateral Damage.

Immediately following the Hiroshima and Nagasaki attacks, President Truman was troubled by the ethics of using weapons of such power and wide-ranging effects to destroy even military and industrial targets while causing large-scale collateral damage and civilian casualties. Military commanders seek the efficiency of nuclear weapons for destroying large-area and hard targets but political leaders see the need to minimize collateral damage and casualties as an important part of

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public expectations. While technology can help reduce this dichotomy to some extent by improving delivery accuracy, providing low and adjustable yield weapons, and suppressing radiation effects, enemy commanders can, by concealing their forces in civilian areas, by frequent movement, and by dispersing targets, reduce their force vulnerability. The balance between identifying military targets and assessing their vulnerability and identifying civilian non-targets puts heavy constraints on the employment of nuclear weapons when such considerations are accepted by the user.

### Civilian Control.

In the area of command and control, a single civilian authority for use of nuclear weapons is reassuring since it removes direct control from the military who might be less sensitive to political considerations. But this requires that the President, or his successor, and the command and control systems that link national political leaders to military commanders must survive and perform adequately in the face of decapitation attacks. In the U.S., the President is assisted in the sensitive decision-making process by the National Command Authority (NCA) and by intelligence agencies. During the 1980s, the line of decision-making authority was strengthened to include (in order of command precedence) the President, Vice President, Secretary of Defense, Deputy Secretary of Defense, and Chairman of the Joint Chiefs of Staff. This line of authority is not identical to the constitutional line of succession.<sup>7</sup>

To enhance the survivability of command and communications links, the U.S. has constructed duplicate facilities at the White House, the Pentagon, at Raven Rock (Pennsylvania), in the Blue Ridge Mountains (Virginia) and on aircraft (Looking Glass and Doomsday).<sup>7</sup> However, the communications links must also survive attacks such as high-altitude nuclear detonations to destroy satellites and interfere with electromagnetic transmissions if these facilities are to perform their required functions.

The U.S. and other nuclear powers face common, and difficult, problems with respect to the decision-making process and to the command and control of their weapons. Major powers have initiated expensive, long-term programs to provide assurance of control and survivability under decapitating attacks. But in less highly developed control environments, the question of "who is in charge" may remain an ambiguity, since national leadership may change during a conflict and the possibility of weapon theft must be considered.

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### Nuclear Weapons Dispersal and Alert.

For many years, nuclear weapons were deployed by the U.S. throughout the world where they could be readily available for immediate use. However, the U.S.S. Liberty and Pueblo crises showed that the nuclear presence complicated conventional responses. As in the Falkland Islands conflict, nuclear weapons on dual-purpose platforms may be put in harm's way, subject to accidental detonation, loss, or risk of chemical and radiological contamination through the exigencies of military operations. This problem is much less severe after the Intermediate Range Nuclear Forces Treaty of 1987 and the unilateral withdrawals of tactical nuclear forces by the U.S., NATO, and USSR. Nevertheless, there is a degree of incompatibility between the requirements for security and control of nuclear weapons and their availability in times of extreme need. The Israelis experienced this problem when military circumstances evolved with lightning speed during the October War of 1973.