NUCLEAR WEAPONS THAT WENT TO WAR

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In 1995, the world commemorated the 50th anniversary of the birth of atomic (or nuclear) warfare. Nuclear weapon history is replete with stories of unprecedented scientific research, secrecy, international spies, epic engineering accomplishments, complex production programs and political brinkmanship. The atomic bombs dropped on Hiroshima and Nagasaki have been documented and studied extensively over the years. Consequently, they have become the focus of continuing debates, praiseworthy support, distorted malignments and criticisms by various contemporary political, military, scientific and religious organizations. However, only a few people remember or realize that nuclear weapons were also deployed operationally and seriously considered for combat use by the United States and other countries during more than 16 crisis and conflict situations.

If one sets aside the well known “Cold War” competition for nuclear deterrence and supremacy between the United States (U.S.) and the Union of Soviet Socialist Republics (USSR), there has been a rich and interesting history of third world situations in which nuclear weapons played an important and sometimes decisive role. The purpose of this report is to document these case histories in which “nuclear weapons went to war.” They provide a basis for understanding the political, military, and other real-life conditions under which use of nuclear weapons became central to the conflict strategy and planning.

This history, jointly sponsored by the Defense Special Weapons Agency (DSWA) and Science Applications International Corporation (SAIC), should be useful to military analysts, operational weapon planners, war game specialists, and historians. It provides:

- Evidence of conditions under which nuclear weapons were seriously considered for use.
- Cases in which improvements can (or should) be made in weapon planning, operations, and security.
- Descriptions of political, military, and public reactions that resulted when use of nuclear weapons was imminent.
- A basis for war games situations in which new weapons, strategies, and tactics can be evaluated.

Several ground rules were observed in preparing this report. First, it does not address the Cold War competition between the U.S. and USSR. Second, it covers all U.S. and foreign crises and conflicts that could be found in which nuclear weapons were considered for use or mistakenly
brought into combat. Third, it is based entirely on data and information from unclassified sources. Although classified sources could provide greater insight into the details and add credibility to each event, the report will have wider distribution and utility as an unclassified document. Fourth, each historical event is presented as a stand-alone situation in which three elements are addressed:

- Description of the situation, its background and resolution.
- The role of nuclear weapons and delivery systems.
- Lessons learned from the crisis or conflict.

To insure that the material of this report is credible and clearly presented, it has been submitted to a team of senior military and political experts for review and refinement before publication. However, the research was not exhaustive and future readers may be able to contribute further insights into the studies.

To make the report more useful and readable for the analyst, an Executive Summary (written by Dr. Stephen J. Lukasik and Mr. William C. Yengst) is provided as Section 1. The individual conflict and crisis events are presented in chronological order as Sections 2 through 17. References are listed in Section 18 and are identified numerically by the corresponding section numbers.

Acknowledgements

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Many people contributed inputs for the various case studies; however, Michael Rothenberg (SAIC-Foreign Sciences Research Center) deserves credit for researching several of the hard to find foreign sources of information. Charles A. McDonald, Marvin C. Atkins, Mike O. Wheeler, James J. Martin, Jr., and William M. Layson reviewed and commented on draft copies of the studies.
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<td>353</td>
</tr>
<tr>
<td>A-1</td>
<td>Summary of cases</td>
<td>A-2</td>
</tr>
</tbody>
</table>
SECTION 1.0
EXECUTIVE SUMMARY
S. J. Lukasik and W. C. Yengst

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:
• 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. ¹

• 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. ²

• 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. ²

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.
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
   - 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
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.
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. 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
• 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.
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
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." 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. 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. This illustrates the concept of using nuclear threats to control proliferation of weapons of mass destruction and reinforce diplomatic or economic options.
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.
Table 1-3. Summary of crisis participants.

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

### Initiator vs. Responder

<table>
<thead>
<tr>
<th>Initiator</th>
<th>Responder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonnuclear</td>
<td>2</td>
</tr>
<tr>
<td>Nuclear</td>
<td>1</td>
</tr>
</tbody>
</table>

### 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

10
• 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.
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.
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.
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
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.7

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).7 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.
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.
SECTION 2.0
APPLICATION OF NUCLEAR WEAPONS AGAINST JAPAN
W. C. Yengst

By the summer of 1945, the strategic situation in the Pacific Theater of World War II had evolved to a three-party conflict which can be stated as follows:

- **Japan**: The dominant objective of the Japanese government, following the loss of nearly all its overseas acquisitions, was to protect the home islands and preserve its honor. Two different approaches were advocated; 1) Emperor Hirohito, Foreign Minister Togo, and many cabinet ministers favored accepting the allied country proposals for surrender and 2) the Minister of War (General Korechika Anami), the military Chiefs of Staff, and a number of junior officers wanted to fight until the Allies terminated the war due to heavy casualties.¹

- **United States and Its Allies**: On 26 July 1945, the United States, Great Britain, Republic of China, and Soviet Union issued the Potsdam Declaration which demanded the unconditional surrender of Japan, or face “complete destruction.” President Harry S. Truman and the U.S. Joint Chiefs of Staff were eager to end the war for two reasons: 1) to avoid high allied casualties anticipated during an invasion of the Japanese home islands plus the utter destruction of the country and 2) to prevent the Soviet Union from entering the conflict with the spread of Communist control in northern China and Korea.²

- **Soviet Union**: Stalin and the Soviet diplomats at the Potsdam Conference were difficult to deal with since they had already begun plans and movement of forces to intercede against Japan. They approved the Declaration but said, “it did not matter.” They intended to regain areas along the Trans-Siberian Railroad, Manchuria, Korea, and the long-contested Kurile Islands.² A force of nearly a million troops was moved to reinforce the Far East Command and allied Mongolian forces.³

Thus, a sense of time-urgency entered the war planning of all three parties. It is useful to consider these objectives in greater detail to understand the role played by nuclear weapons and their impact on war termination.

2.1 GENERAL DESCRIPTION OF THE EVENT.

2.1.1 Status of Japanese Defenses.

Despite heavy Japanese military losses during the Allied Pacific Islands Campaign, the land forces on the home islands increased from 3.1 million troops in early 1944 to 5.5 million by August 1945. The Army had 173 infantry and four armored divisions plus 88 independent brigades. This
force included 20,000 artillery pieces, 3,000 tanks, and 5,500 tactical aircraft. Japan planned to have 3,000 suicide boats and human torpedoes by the end of 1945.\textsuperscript{4} A Civilian Volunteer Corps of 1.5 million Navy workers and garrison personnel were being mobilized.\textsuperscript{5} These forces did not include the 1.2 million troops of the Kwantung Army located in China, inner Mongolia, and Korea.\textsuperscript{3}

On the island of Honshu, General Sugiyama was in command of XI Army with six divisions in the north, XIII Army with six more divisions in south-central, and XII Army with 18 divisions around the Tokyo area. The southern island of Kyushu was defended by nine veteran divisions commanded by General Yokoyama. He could also draw on six infantry brigades, three armored brigades, and a Naval detachment of ten battalions on the islands around Kyushu and Ketsu. The Japanese anticipated a bloody campaign which they code named “Ketsu-Go” or Decisive Battle. They built a deep underground “Imperial National Redoubt” at Matsushiro under Mount Minakami 110 miles northwest of Tokyo. The redoubt would hold the Imperial Family and 10,000 members of the high command and government.\textsuperscript{1} It would control the Coastal Defense Divisions and coordinate defensive operations.

2.1.2 Plans for Invasion of Japan.

On the Allied side, General Douglas MacArthur began planning for the invasion of the Japanese home islands on 28 May 1945. He envisioned a two-step process starting with Operation Olympic to invade Kyushu Island on 1 November followed by Operation Coronet to invade Honshu on 1 March 1946.\textsuperscript{2} Operation Olympic would involve 767,000 personnel (about 193,000 combat troops) and based on experience in Okinawa from 1 April to 21 June, it might result in 63,000 American and 150,000 Japanese dead.\textsuperscript{5} The larger Operation Coronet was estimated to result in 400,000 Allied and perhaps 800,000 Japanese dead.\textsuperscript{5} Winston Churchill estimated that the U.S. would suffer one million dead and Britain would lose 500,000 dead in the two invasions.\textsuperscript{2} Despite these serious predictions, President Truman ordered the invasion plans to proceed following the Potsdam Conference.

Admiral Chester Nimitz, General MacArthur’s Navy counterpart, advocated two attacks into China, one at the northern seaport of Ningpo and the other at Hangchow Bay near Shanghai, to cut off Japanese forces in China from returning to the home islands. This recommendation was set aside by the Joint Chiefs of Staff in favor of MacArthur’s plan to carry the war directly to the home
islands. Therefore, on 18 July, Nimitz ordered the U.S. Navy to concentrate on destroying the "remaining heavy enemy ships" in preparation for the upcoming invasion.

Because of the fear of high casualties during the invasion, several deceptive steps were taken under the name Operation Pastel. For example, the U.S. Chief of Naval Operations, Admiral Ernest King, leaked news stories focused on the probable invasion of Formosa (Taiwan) in late summer to cover an Okinawa buildup of forces. Diversionary air strikes and reconnaissance including scouting of beach areas were done along the Chinese coast. A fake airborne corps headquarters was set up on Okinawa, dummy gliders were built, and elements of the 11th Airborne Division performed mock training exercises. Their stated mission was to drop paratroops inland to lure Japanese troops back from the beaches. In fact, no airborne assault was planned as part of Operation Olympic.

In early August, a large force of U.S. troops from the Philippine Islands joined others located in Okinawa to become part of a convoy. According to Edward Lewanski (Chicago, Illinois), the convoy would lead the Operation Coronet invasion fleet. It was headed for Wakayama on the southwest coast of Honshu Island. In preparation, the troops were briefed on the mine-infested waters of Osaka Bay and the shores fortified with pillboxes.

2.1.3 The Diplomatic Maneuvers.

On 3 July, General George C. Marshall (Army Chief of Staff) received copies of secret Japanese documents indicating that Japan might try to strike a deal with Russia rather than accept surrender. Confronted with a possible Russia-Japan alliance that would drastically alter the balance of power in the Far East, the U.S. and Great Britain agreed on 4 July to accelerate efforts to use the atomic bomb.

President Truman was informed about the atomic bomb program on 12 April 1945, after he took office. But, it was not until 16 July, the day he arrived at the Potsdam Conference, that the first nuclear device was detonated in a test at Alamogordo, New Mexico. Truman was notified of the test through Secretary of State, James Byrnes, by a cryptic statement, "Operated on this morning....Diagnosis not yet complete but results seem satisfactory and exceed expectations." Neither General MacArthur nor Admiral Nimitz knew the atomic bomb development status until that date; therefore, their plans to end the war were without consideration of nuclear weapons.
Four days later, at the Potsdam Conference, Stalin told Truman that the Soviet Union would enter the war against Japan by mid-August. As the conference was breaking up on 24 July, Truman offhandedly told Stalin, "we have perfected a very powerful explosive which we are going to use against the Japanese and we think it will end the war."  

On 28 July, Premier Kantaro Suzuki, an infirm old man who may have been drunk, held a press conference in Tokyo to address the Potsdam Declaration. "I consider the joint proclamation to be no more than a repeat of the Cairo Declaration (November and December 1943). We will press forward resolutely to carry the war to a successful conclusion." The message was interpreted as a contemptuous brushing aside of the Declaration and its ultimatum. U.S. Secretary of War, Henry Stimson, wrote that, "we could only proceed to demonstrate that the ultimatum meant what it said." President Truman issued an order to U.S. forces on Tinian Island to proceed.

Meanwhile, on 25 July, the Japanese government sent ex-Prime Minister Koki Hirota to Moscow. He met with Soviet diplomat Jacob Malik in an effort to persuade Russia to act as a broker in peace talks. He got no immediate encouragement. The U.S. continued with its plans and dropped atomic bombs on Hiroshima (6 August) and Nagasaki (9 August) as described in Subsection 2.2. But between these events, on 8 August, the Soviet government informed the Japanese Ambassador that on the next day, the Soviet Union would consider itself to be in a state of war with Japan. The Soviet statement said that its policy, "is the only means that can hasten peace, deliver the peoples from further sacrifice and suffering, and give the Japanese people the possibility of avoiding the dangers and destruction that were experienced by Germany after her refusal to surrender unconditionally."

2.1.4 Termination of the War.

In the early hours of 9 August, while the second atomic bomb was being delivered to Nagasaki, the Soviet army with a force of 40 divisions invaded Manchuria over a 600 km wide front and in the Far East, a second force of 30 divisions attacked over a 450 km wide front. That same morning, Hirohito ordered Premier Suzuki to work speedily to terminate the war; he believed there was no alternative but to accept the Potsdam Declaration. He met with the Supreme Council later that day to discuss the Soviet invasion and showed little emotion when a messenger informed them of the Nagasaki attack. They showed neither fear nor indignation, neither sorrow nor pity. Although a small majority favored accepting the Potsdam Declaration, the rest including the service
ministers and their chiefs of staff resisted. They wanted terms of no occupation, no prosecution of war criminals, and no humiliation of the military. The Army Chief of Staff, Umezu, advocated a final battle and the Navy Chief of Staff, Toyoda, supported him.\(^1\)

On 10 August, the Japanese sent a telegram to the Allied powers accepting the Potsdam Declaration with the proviso that the Emperor and Imperial Line be maintained and guaranteed.\(^1\) However, Minister of War, Anami, revolted and exhorted the armed forces to fight on to the death. Thus, for 22 more days, a power struggle continued in Japan. On the night of 14/15 August, a group of young officers killed General Mori, Commander of the Imperial Guards Division. With false orders, they occupied the Imperial Palace and Tokyo Broadcasting Station. They planned to kill Suzuki and other ministers of the Privy Council. When it became clear that the coup had failed, Anami and the commanding generals of four District Armies committed hara-kiri (suicide).\(^8\)

On 16 August, the Emperor sent Prince Takeda to Changchun to demand that the Kwantung Army surrender. But, the army continued to fight until 24 August.\(^3\) By that time, the Russians had advanced 950 km and the Japanese Army had lost 677,000 personnel (84,000 killed).\(^8\) Russia captured Manchuria, North China, South Sakhalin Island, North Korea, and the Kurile Islands.

Since the surrender was still uncertain, the U.S. continued to prepare Operation Olympic for the 1 November invasion of Kyushu. The U.S. 21st Bomber Command flew reconnaissance and target planning missions until 14 August. Based on the telegram of 10 August and a formal letter on 14 August in which Japan accepted the surrender conditions, the U.S. and British moved naval forces towards Tokyo Bay. On 2 September 1945, representatives of Japan signed the statement of surrender aboard the U.S. Battleship Missouri with representatives of all Allied nations present.

2.2 SPECIFIC NUCLEAR WEAPON MOVES AND PLANS.

2.2.1 Deployment and Characteristics of the Weapons.

The U.S. 21st Bomber Command, headed by General Curtis LeMay, was headquartered on Tinian Island in the Marianas Island group. By the end of June 1945, it was equipped with nearly 1,000 B-29 aircraft and had just completed a series of missions in which entire wings of bombers hit four Japanese cities: Omuta, Hamamatsu, Yokkaichi, and Kogoshima. The aircraft flew about twice each week, burning out three or four cities on each mission with incendiary bombs. The air
campaign had devastated 66 urban centers with damage averaging over 50 percent (a total of 102 square miles of destroyed urban area). Nearly 80 percent of the industrial capacity had been destroyed or was functionally out of operation.⁹

June reinforcements to the Bomber Command included the 509th Composite Group of 15 modified B-29s. They were under command of Colonel Paul Tibbets and were assigned an isolated area of the North Tinian Airfield.⁶ The 509th Group was unusual in that it was restricted from normal missions. It flew only training missions to Truk Island with large orange bombs with a bulbous shape, called “pumpkins”. Bombing practice was always done from high altitude (30,000 feet) and the pumpkins weighed 10,000 lbs.⁴ Outside Tokyo, an expert crew of Japanese radiomen detected and recorded all radio signals emanating from U.S. transmitters. They detected the 509th Group in mid-July and tagged it the “New Task Company”. On the morning of 6 August, when Colonel Tibbets took off for Hiroshima in the Enola Gay B-29, they picked up and monitored its call signs.⁴

The 509th Group was given four dummy “Little Boy” devices on 23 July for separation and fusing mechanism tests. Three days later the cruiser Indianapolis delivered the gun mechanism and the Uranium U-235 projectile for the first bomb assembly (see Figure 2-1). The Indianapolis was sunk by a Japanese submarine four days after this delivery. On the evening of 28 July, three C-54 transport aircraft landed at Tinian with the remaining components for the bomb assembly. Components for the first Plutonium “Fat Man” bomb were en route to Tinian by that time.⁷

The characteristics of the two bomb designs are shown in Figures 2-1 and 2-2. Two different design approaches had been taken to insure at least one success and the yield of Fat Man was nearly twice that of Little Boy.¹¹ The Little Boy (originally called Thin Man) was shortened to reduce its final weight by a few hundred pounds. It achieved a critical mass to sustain the fission reaction by firing a 5 lb bullet of uranium-235 into a 17 lb U-235 target.¹⁸

On 28 July, when the Japanese refused the Potsdam ultimatum, President Truman signed the order to use the atomic bombs and it was flown directly to Tinian Island.⁴ Targets had already been selected by a Target Committee established on 27 April by Secretary of War, Henry Stimson.
CHARACTERISTICS

- Gun-Design
- Yield: 12.5 kt
- Length: 120 in
- Diameter: 28 in
- Weight: 9,700 lb

Figure 2-1. Little Boy bomb dropped on Hiroshima (August 6, 1945).
CHARACTERISTICS

- Implosion-Design
- Yield: 22 kt
- Length: 128 in
- Diameter: 60 in
- Weight: 10,000 lb

Figure 2-2. Fat Man bomb dropped on Nagasaki (August 9, 1945).
2.2.2 Target Committee.

The Target Committee consisted of eight military officers and a four-man panel of technical advisors. It included:

- J. Robert Oppenheimer, Director of Los Alamos
- General Lauris Norstad, U.S. Army Air Force
- General Leslie R. Groves, U.S. Army (Manhattan Program)
- John Von Neuman, mathematician

The committee’s function was to study candidate aimpoints and estimate probable damage areas. At its first meeting (first week in May), the committee decided that the bombs should be dropped visually rather than by radar, despite possible cloudy conditions over Japan, so that observations of results could be made. The Committee considered bombing the Emperor’s Palace in Tokyo, Kyoto, Hiroshima, Kokura, Nagasaki, Niigata, and Yokohama. Committee notes showed that, from a psychological point of view, there was an advantage to destroying the Emperor’s Palace or Kyoto (former capital, center of culture, and religious shrine since 1610). The Japanese people were more apt to appreciate the significance of the new weapon. Tokyo had already been burned out but Kyoto was virtually unscarred by bombing.

At the second meeting, 11-12 May, Oppenheimer stressed that the nuclear material itself was lethal and would fallout from the explosion. He also noted that a fire-storm might be generated by thermal effects. None of the committee members chose to dwell on these matters since they thought the bomb blast would claim its victims long before the radiation effects. During the meeting four targets were selected: Kyoto, Hiroshima, Yokohama, and Kokura Arsenal plus Niigata (a city at longer range from Tinian) as a fifth reserve.

By the third meeting, 25-26 May, the target list was in order: Kyoto, Hiroshima, and Niigata. Furthermore, the committee had decided to aim at the center of each city when it was noted that radiation effects would be dangerous to life at a radius of at least two-thirds of a mile. Oppenheimer predicted that 20,000 Japanese would be killed by each bomb.

The debate on the final target set continued through July. At one point the committee studied dropping two bombs at the same time on the same city. However, several members stressed
that the horrible damage would be viewed throughout Japan and elsewhere as excessive. The bombs would be assessed, "as terror weapons to intimidate Japan to surrender." The committee noted that severe damage might subsequently be used to intimidate other nations (e.g., Soviet Union) into accepting U.S. positions. On the grounds that nuclear weapon effects would be sufficiently distinct from conventional weapons, Henry Stimson prevailed upon President Truman to remove both the Emperor's Palace and Kyoto from the target list by 1 August. Yokohama was also dropped from the list since it had already suffered 57.6 percent damage from attacks. It would not provide sufficient evidence of the atomic bomb effectiveness.

Also on 1 August, General LeMay flew to Washington, D.C., to meet with General Hap Arnold and the Joint Chiefs of Staff. His message was that Japan could be burned out and forced to surrender with incendiary weapons. On 2 August, the city of Toyama was destroyed (97 percent of the built-up area) by a force of 855 B-29s dropping 6,632 tons of incendiary munitions. LeMay reported that there were only five cities left to bomb and burn: Kyoto, Hiroshima, Kokura, Nagasaki, and Niigata. The Joint Chiefs appeared disinterested in his briefing but they directed that the remaining cities be put on hold for bombing. LeMay was disturbed by this direction but flew back to Tinian determined to destroy Japan's remaining oil refining, oil storage, and coastal defenses preparatory to the planned invasion.

When the final list including Hiroshima, Kokura, and Nagasaki (in that order) was submitted to President Truman for approval, he told Secretary of War Stimson to, "use the bombs on military objectives and not for the mass deaths of women and children." It is probable that he did not fully comprehend the magnitude of the weapon effects. Hiroshima was described simply as an important port and Army base. Kokura was a steel production city with a large Army arsenal. Nagasaki was described as a large port and Naval base. Each city contained several explicit military facilities. The original Joint Chiefs order to Tinian stated that the targets should be attacked, "as the weapons are made ready." The entire arsenal of atomic weapons in early August was three bombs (one Fat Man, one Little Boy, and one Little Boy still being built).

2.2.3 The Hiroshima Bombing.

The first bomb ready was Little Boy, which was loaded on the Enola Gay B-29 on the morning of 6 August by driving the aircraft over a trench in the parking apron of Tinian airfield. The aircraft
took off before sun up and 6 hours later, at 8:13am, the bomb was released at high altitude. Lt. Colonel Paul Tibbets put the Enola Gay into a 60° dive, turning sharply to distance the aircraft from the burst. The bomb went off 43 seconds later at an altitude of 1,890 ft over the Shima Surgical Hospital. It exploded with the equivalent effect of 1,000 tons of incendiary weapons.¹⁰

About 20 minutes later, a firestorm developed and within six hours 4.7 square miles of the city had been destroyed.¹¹,¹² Estimates of casualties ran from 80,000 to 100,000 dead and 68,000 injured.¹¹ More recent analysis suggests that total casualties may have exceeded 200,000 dead when long-term radiation effects were taken into account.²¹ Figure 2-3 shows the Enola Gay returning to Tinian Island following the mission. It must be noted that the results of the attack did not cause Hirohito or the Cabinet to accept the Allied ultimatum.¹

Figure 2-3. B-29 Enola Gay returns to Tinian after Hiroshima.

2.2.4 The Nagasaki Bombing.

The second bomb (Fat Man) was available two days later and was intended for use against Kokura. It was loaded on the Bockscar B-29 in the early morning hours of 9 August. The
Bockscar and its captain, Fred Bock, are shown in Figure 2-4. Three B-29s flew the mission to Kokura (Bockscar, a weather observation aircraft, and an instrumented bomb-damage assessment aircraft). As the aircraft approached Kokura at about noon, they found the city obscured by clouds and smoke. The bad weather caused Captain Bock to turn and head for the alternate target, Nagasaki.

![Bockscar B-29 dropped bomb on Nagasaki](image)

Figure 2-4. Bockscar B-29 dropped bomb on Nagasaki (R. Uppstrom, USAF Museum, Dayton, OH).

Nagasaki is a hilly city that lies along both sides of a long, narrow, V-shaped harbor. The intended aimpoint was the Mitsubishi shipyard along the right leg and near the open end of the V. Running low on fuel, Captain Bock made only a single pass over the city and released the bomb. It fell two miles from the intended aimpoint near the left and pointed end of the V. It detonated over the Urakami Roman Catholic Cathedral which was rebuilt in 1959. The damage assessment portion of the mission was canceled and its aircraft headed straight for Okinawa where it landed after the 12-hour flight.

The Nagasaki bomb killed at least 25,000 and injured 23,345. Post war analyses suggest that nearly 100,000 died when long-term radiation effects were taken into account. Although the Fat
Man bomb had nearly twice the yield, Nagasaki suffered far fewer casualties than Hiroshima because the hilly terrain shielded large areas from prompt blast and radiation effects. By contrast, the massive incendiary raid on Tokyo on 9/10 March killed 83,793 and destroyed 15.8 square miles of the city. Therefore, incendiary raids on Hiroshima and Nagasaki could have achieved the same damage objectives.

On 10 August, when President Truman realized the magnitude of the damage and casualties from the two bombs, he told his cabinet that he did not want to kill any more women and children. Rejecting demands to drop the third bomb, he stated that, "he hoped not to use them again." Japan did not respond to the damage and losses at Nagasaki because the leadership was struggling over control of the government. However, on 14 August the Japanese offered to surrender under the condition that the Emperor be retained. President Truman accepted this condition and put a halt to the bombing.

2.2.5 Plans to Support the Invasions.

During the period 10–14 August about 1,000 B-29 sorties were flown to bomb oil reserves and defenses. It is probable that 15,000 Japanese were killed, not counting the large losses suffered by the Kwantung Army in China. Not knowing that the Japanese would surrender, plans for Operation Olympic continued. General George Marshall, Chairman of the Joint Chiefs of Staff admitted (in 1959) that the possibility of using tactical nuclear weapons to support the ground operations was under consideration. In fact, plans called for six bombs to be used in direct support of the invasion after 1 November.

The U.S. had only one operational bomb left at the time of Japan's surrender and two by the end of 1945. In 1946, seven more production models of the Little Boy design (Mark 1) were built under peacetime funding and work schedules (about one every six weeks). This implies that at least three bombs would have been available for Operation Olympic and three or four more in time for Operation Coronet. These estimates tend to confirm General Marshall’s claim that six would be used to support the invasions. If the invasions had proceeded, there is a strong likelihood that nuclear weapons would have been used for tactical operations.
2.2.6 Japan’s Efforts to Develop Nuclear Weapons.

After the war, Tatsusaburo Suzuki revealed that Japan had a program to develop nuclear weapons. The modest program involved 50 army and university scientists who produced 11 lb of enriched uranium and developed theories of how to build a bomb. During early 1945 they proposed that the Imperial Navy scrap a damaged battleship so that its steel could be used for atomic experiments. The Japanese army destroyed all records of the program before the surrender but American military personnel found research equipment which they dumped into Tokyo Bay.\textsuperscript{24}

Suzuki, a physicist, reported that the research team was confident it could produce an atomic bomb and no one ever mentioned ethical concerns. Military officials had already discussed using the bomb, “against U.S. air bases around the Pacific that were being used to bomb Japanese cities.”\textsuperscript{24}

2.3 LESSONS LEARNED FROM THE BOMBING OF JAPAN.

The nuclear bombing of Japan has been a controversial subject for 50 years. However, several fundamental conclusions can be reached as outlined below.

- The war could have been concluded successfully by the Allies without the use of nuclear weapons.
- The use of nuclear weapons was driven by two considerations: a time-urgency to bring about the surrender before the Soviet Union could enter the conflict and the desire to avoid large Allied and Japanese casualties during the planned invasions. The first objective failed but the war ended earlier and the invasions were avoided.
- There was concern for collateral damage and civilian casualties by the president, target planners, and several military staff officers, but there was no nuclear taboo. President Truman and others supporting the decision to use the bomb viewed it as a technical issue of efficiency, not a moral or ethical issue. They saw little or no difference in using uranium munitions than in using incendiary munitions to destroy targets; accepting the probability of higher collateral damage and civilian casualties.
- Neither the Hiroshima nor the Nagasaki bombings were by themselves sufficient to cause Japan to surrender:
  - Powerful Japanese leaders were still determined to continue the war...and it did continue for three weeks.
  - Soviet intervention contributed to the decision to surrender but it also was not sufficient to force termination.
  - Japanese casualties that occurred after the bombing in subsequent air strikes and in China about equaled those caused by the two nuclear weapons.
• It is probable that the Nagasaki bomb was not needed since the power struggle in Japan was already in progress and the surrender would have occurred in any event. However, the U.S. was unaware of these events or the possible outcome.

• If the surrender had not occurred shortly, it is likely that:
  
  – The Allies and Japan would have suffered extensive casualties. The Japanese islands would experience more extensive damage during the planned invasions.

  – The U.S. probably would have used more nuclear weapons against Kokura and in tactical support of the invasions.

  – The Soviet Union would have extended its gains in Manchuria, Korea, and possibly invaded Hokkaido from the Kurile Islands.

Recently, the Japanese mayors of Hiroshima and Nagasaki have made further observations concerning the use of the bombs.

• Mayor Hitoshi Motoshima of Nagasaki conceded that the attacks hastened the end of the war. He considered the attacks as criminal but also called for Japan to educate its people to Japan's aggression against Pearl Harbor, invasion of China, and war atrocities.¹⁴

• Mayor Takashi Hiraoka of Hiroshima claimed the bombs were dropped to intimidate the Soviet Union, verify the weapon effectiveness, and justify the $1.4 billion dollars spent to develop them. He posed the important question, “Does avoiding the deaths of servicemen justify the sacrifice of tens of thousands of guiltless non-combatants?”¹⁴

The debate concerning the decision to use the first two nuclear bombs is likely to continue. However, it is important to document and understand the situation and arguments that existed at the time of their use.
SECTION 3.0
NUCLEAR WEAPONS FOR THE KOREAN WAR
W. C. Yengst

3.1 GENERAL DESCRIPTION OF THE CONFLICT.

Nuclear weapons were seriously considered three times during the Korean War (25 June 1950 to 27 July 1953); once in an offensive mode, once for defense, and finally, as a threat to hasten peace negotiations. To understand the context for these applications, it is instructive to review the conflict phases and leadership issues.

3.1.1 Background and the Invasion.

In the waning days of World War II, after the nuclear bombing of Hiroshima, the Soviet Union invaded Manchuria and fought its way into northern Korea before the peace treaty was signed on 2 September 1945. By the time the U.S. landed occupation forces in southern Korea on 8 September, the Soviets had already moved down the peninsula past the 38th parallel.

For two years, a newly formed United Nations (U.N.) "Temporary Commission on Korea" struggled with issues of boundaries and forms of government for the northern and southern portions of the country. Korea was formerly split into North and South along the 38th parallel in May 1948 and on 13 July, Syngman Rhee was elected president of the Republic of Korea (ROK). Two days later, Kim Il Sung was named Premier of the Democratic People’s Republic of Korea (DPRK). The U.S. removed all its troops from the ROK in July 1949 and on 25 December 1949, Russia withdrew its forces from the DPRK. This withdrawal of forces left an unbalanced political and military situation.¹

The North (DPRK) under Communist leadership had eight infantry divisions and a few armored brigades (about 135,000 troops) with Soviet supplied tanks, guns, and other equipment. By contrast, the U.S. Army trained and equipped a newly formed ROK Army of about 95,000 troops but they had no combat experience and their equipment was surplus quality. There were no medium or heavy caliber guns, no tanks, and no combat aircraft. Kim Il Sung discussed the possibility of unifying Korea with Josef Stalin and Mao Tse-tung during the winter of 1949, while the U.S. was preoccupied with reconstruction of Japan.
Mao Tse-tung appears to have encouraged Kim Il Sung to invade South Korea since China redeployed large numbers of troops from southern and central provinces to Manchuria in the spring of 1950. China provided quantities of small arms and other equipment and assisted in training DPRK troops. In a surprise move on the morning of 25 June 1950, the DPRK attacked South Korea with a major thrust in the west across the Demilitarized Zone (DMZ) towards the capital, Seoul. Other assaults took place in the central mountains and down the east cost (supported by an amphibious landing).

When informed, President Harry S. Truman immediately ordered his Far East Commander, General Douglas MacArthur, to send ammunition, equipment, and supplies to aid the ROK Army. That afternoon, the U.N. Secretary General Trygve Lie called a Security Council meeting and it voted a resolution (unanimously with Yugoslavia and Russia absent) to declare "a breach of the peace and calling for an immediate cease fire and withdrawal." The following day, MacArthur reported that the ROK Army was on the verge of collapse. The president authorized him to use American Air and Naval Forces to support the ROK south of the 38th parallel.

By 29 June, Seoul was lost and the DPRK forces were moving swiftly southward as shown in Figure 3-1. That day, MacArthur flew to Korea to assess the situation and he informed the President that Korea would be lost without the use of U.S. ground forces. President Truman responded on the 30th of June with approval to use elements of the four 8th Army divisions under his command in Japan. MacArthur was also appointed Commander in Chief for all U.N. forces in Korea.¹

The U.S. 24th Infantry Division arrived in Pusan on 1 July and after heroic defensive fighting at Taejon, the U.S. and a few ROK units established the Pusan perimeter defensive line along the Naktong River by 4 August. During this period, the U.S. employed Naval carrier aircraft and 5th Air Force tactical aircraft to interdict the southward moving DPRK infantry and tanks. The need for low-yield tactical nuclear weapons for battlefield applications was identified when the Pusan perimeter was under serious stress in early September 1950.³⁵
On 4 July, only nine days after the DPRK invasion, MacArthur began planning for an amphibious landing somewhere on the west coast, north of Seoul, to cut the peninsula from west-to-east. Original planning, called Operation Blue Heart, was ultimately focused on Inchon and renamed Operation Chromite. The landing at Inchon took place on 15 September based on plans by the Joint Strategic Plans and Operations Group (JSPOG) of the Far East Command. This operation was MacArthur’s greatest triumph during the Korean War and it succeeded in recapturing Seoul by 22 September. At that point, MacArthur turned the ROK and U.N. forces north toward the 38th parallel as seen in Figure 3-2.
3.1.2 A Fundamental Difference in Strategy.

President Truman and General MacArthur found themselves to be fundamentally at odds over the strategy for concluding the war in Korea. Specifically, General MacArthur requested the resources and authority to wage total war to win victory over North Korea. He held the view that if force was sanctioned, it was necessary to eradicate the evil, in which case all resources should be used without mercy. By contrast, Truman saw the use of military power as an extension of the other instruments available to conduct foreign policy. Based on his doctrine of 1947, Truman sought only to stop the spread of communism. He had no intention to destroy communism where it was in place.
Thus, Truman departed from the traditional American concept of waging a war to defeat an enemy. He was satisfied to restore the preconflict status and was worried that the conflict would escalate to one of global proportions. This fundamental difference in thinking led to the controversy which resulted in Truman’s removal of MacArthur as Commander in Chief in the spring of 1951. This action by Truman became an issue of national significance since MacArthur was a recognized military hero of two wars. It is important to follow this controversy through the next two phases of the conflict.

3.1.3 The U.N. Offensive.

On 1 October, Chinese Premier Chou En-Lai made a speech for the anniversary of the communist state in which he stated, “China will not tolerate foreign aggression and will not stand aside should imperialists wantonly invade the territory of their neighbor...North Korea.” This threat was ignored in Washington; in fact, the Joint Chiefs of Staff cabled MacArthur to direct him to, “proceed with your operations without any further explanations or announcements.”

The afternoon of 3 October 1950, the ROK 3rd Division crossed the 38th parallel under the command of General Chung. He claimed to be operating under the authority of President Syngman Rhee but also acknowledged that General MacArthur was commander of all U.N. forces. MacArthur did not report this move to the U.S. Joint Chiefs of Staff until later in the day. At that time, the JCS told him that Truman wanted to downplay the move because, “it might precipitate embarrassment at the U.N.” However, MacArthur regarded all of Korea as open for military operations.

The crossing was noted with grave concern in Peking (Beijing). Chou En-Lai contacted India’s Prime Minister Pandit Nehru and told him that if U.S. forces invaded North Korea, China would be forced to intervene. Kim Il Sung and the Chinese Ambassador conferred on 11 October and that same day, Chairman Mao decided to send troops to Korea. Mao had discussed the considerations of sending troops with the Chinese Central Committee on several occasions since early August. These discussions included the possibility that the U.S. might use atomic bombs. The following perceptions prevailed during the discussions:
• Public opinion was that Soviet atomic bombs offset the U.S. nuclear advantage but America might use nuclear weapons if China entered the war.

• Ten percent of China’s 13th Army in Manchuria had heard rumors of a nuclear holocaust and were calling the Yalu River bridges the “gates of hell.”

• The U.S. arsenal of nuclear weapons was small (after weapons were set aside to deter the Soviet Union) and therefore, nuclear strikes against Chinese cities would be highly destructive but would not decide the outcome of the war.

Consequently, Mao argued that the U.S. had invaded North Korea and was threatening northeastern China, only a river away. In support of his position, he stated:

- “If the United States wants to invade China...sooner or later the tiger will devour the man; the timing only depends on the tiger’s hunger.”

- “When a neighbor is in mortal danger, it is hard just to stand by and watch.”

During the period from 3 to 11 October, Truman began to have concerns for MacArthur’s mode of operation. The U.N. General Assembly passed a resolution giving implicit assent to MacArthur’s conquest and occupation of North Korea. On 7 October, he ordered the U.S. 1st Cavalry Division under General Walker to cross the 38th parallel. He also directed an ultimatum to Kim Il Sung demanding that the DPRK surrender. When Truman learned that two U.S. fighter aircraft (F-80s) had strafed a Soviet airfield at Sukhaya Rechka (near Vladivostok) on 8 October, he ordered MacArthur to Wake Island for private talks. Much of the Wake meeting on 8 October has not been released but Truman’s press reports focused on how to reunify North and South Korea and “what chance there was of Chinese or Soviet intervention.”

MacArthur assured Truman that 100,000 to 125,000 Chinese were distributed along the Yalu River but 50,000 were lightly armed and of no concern to him. By 14 October, MacArthur’s intelligence operations reported that elements of the Chinese 4th Field Army had been spotted in Manchuria...but none had entered Korea. The report concluded that the opportune time for intervention had passed since U.N. forces had encircled Pyongyang and were moving toward the Yalu River. This report was in error since the Chinese 38th Division started crossing the bridges from Antung (now known as Dandong) to Sinuiju, Korea, that same day. Between 14 and 25 October, nearly 200,000 troops of the 4th Field Army crossed these bridges.
Pyongyang was captured on 19 October and elements of the U.S. Army were within sight of Sinuiju by 25 October. Although tens of thousands of Chinese had been reported in the nearby mountains, MacArthur refused to take their threat seriously. His methodology for dealing with the intervention threat was to bomb the many bridges and tunnels leading from Manchuria and Vladivostok. He told General Hoyt Vandenberg (Air Force Chief of Staff) and General Joseph Lawton Collins (Army Chief of Staff) on 13 July that he saw these targets as a unique use of atomic weapons.

As the U.N. forces reached the Changjin River and Chosin Reservoir, Vandenberg became a sharp critic of the over-ambitious offensive. He feared that reconnaissance missions along the border would become offensive strike sorties which could draw China or Russia into the war. He felt that the USAF could attack either China or Russia, but not both. The appearance of MiG fighters along the Yalu about 1 November convinced MacArthur that the Chinese airfields in Manchuria should be added to the target list.

On 26 October, the day that the U.S. 7th Regiment and ROK 6th Division reached the Yalu River, a disaster hit another element of the 6th Division 50 miles south. An entire battalion was overrun by Chinese troops and the ROK II Corps began to fall back in disorder. By 6 November, Chinese troops were reported in action all along the Yalu River. As enormous forces of Chinese troops overran supply lines and split U.S. forces on either side of the Chosin Reservoir. MacArthur ordered the bombing of the Yalu bridges on 8 November, but little damage was done by the conventional munitions. He ordered a counteroffensive for 15 November but by that time, nearly 200,000 Chinese had entered the battle.

3.1.4 The Chinese Offensive.

The U.N. forces were compelled to retreat. MacArthur directed a report to Truman saying, "To give up any portion of North Korea to the aggression of the Chinese Communists would be the greatest defeat of the free world in recent times." The President's advisors knew that something was seriously wrong but they did not want to attack MacArthur. Even the JCS told MacArthur that the offensive should, "be kept under review but should not be changed."

While heavy fighting occurred near the Chosin Reservoir on 30 November, President Truman was asked in a news conference what would be done about the Chinese intervention. Truman
target selection is something for military people to decide, and the military commander in the field will have charge of the use of the weapons, as he always has.” He added, “I don’t want to see it used. It is a terrible weapon and it would not be used on innocent men, women, and children who have nothing to do with this military aggression.”³, ⁴

Later that day, a White House press release attempted to “clarify” what the president said. It stated:

“Naturally there has been consideration (about the use of the atomic bomb) since the outbreak of hostilities in Korea, just as there is consideration of the use of all military weapons whenever our forces are in combat. Consideration of the use of any weapon is always implicit in the very possession of that weapon. However, it should be emphasized that, by law, only the President can authorize the use of the atomic bomb, and no such authorization has been given.”⁴

The press debated for several days whether the U.S. should use nuclear weapons in desperate situations. For a four day period, 20,000 U.S. Marines were surrounded by Chinese troops near the Chosin Reservoir. They fought their way out and moved to the coast where they were evacuated by Navy ships. Amphibious evacuations took place at Hungham and Wonsan harbors as noted in Figure 3-3. U.N. troops holding Pyongyang also retreated south of the 38th parallel. By Christmas, 105,000 troops, 91,000 refugees, and 17,500 vehicles had evacuated or crossed back into South Korea.⁵

On 27 December, Lieutenant General Matthew B. Ridgeway took command of the 8th Army when General Walker was killed. The U.N. forces dug in about 25 miles south of the 38th parallel by 4 January 1951 and the retreat ended.⁵ General Peng Teh-huai was commander of the Chinese in Korea.* Chairman Mao realized it would be foolhardy to press the attack and outrun their supplies; therefore, he ordered Peng Teh-huai to cease attacking; his troops were in need of rest and recuperation. They had crossed the Han River and were approaching the 37th parallel.³

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* MacArthur’s intelligence indicated that General Lin Piao was in command of the “Phantom 4th Army”; however, Lin Piao never entered Korea but was seriously ill in China.²⁸
3.1.5 U.N. Advance and Armistice.

General MacArthur was disappointed over the withdrawal and in early January, he requested sizable forces to renew the offensive and wage all-out war against China. The JCS cabled a response that there was little possibility of sending more ground forces to Korea, nor could a military blockade of China or air attacks against China be authorized. In fact they told him that, "if evacuation is essential to avoid severe losses of men and material, you will at that time withdraw from Korea to Japan." General Ridgeway asked MacArthur to approve use of gas weapons, "as a last resort to cover withdrawal and evacuation where pressure might be so great as to justify resorting to extreme measures."

After regrouping and resupplying, the U.N. forces under Ridgeway's leadership began to move northward again on 16 January 1951. In 15 days, they initiated the recapture of Seoul and by 14
March, they advanced to the 38th parallel on the west coast. On 24 March, General MacArthur issued an ultimatum to General Peng Teh-huai, demanding that the Chinese surrender and hinting that atomic reprisals could be used if there was a failure to accord with the U.N.'s terms.\(^2\)

On 11 April 1951, President Truman removed MacArthur from command and replaced him with General Ridgeway. Truman said (on 17 April) that this was the final straw. MacArthur should have first coordinated his proposition with the JCS and he exceeded his authority in threatening use of atomic weapons. Excessive use of authority undermined that of the President and was the cause for removing MacArthur from command.\(^2\)

The battle of the hills (Bloody Ridge, Finger Ridge, Heartbreak Ridge, Old Baldy, and Pork Chop Hill) in the center and eastern areas of Korea continued through the summer of 1951 as shown in Figure 3-4. During this period, the nuclear weapon debate in the White House continued. On 26 June, General Joe Collins (JCS) submitted a study on the effectiveness of tactical nuclear weapons

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**Figure 3-4.** U.N. counteroffensive (25 January–22 April 1951) and armistice line (27 July 1953).
in Korea. The study concluded that: 1) there were few current battlefield targets suitable for nuclear weapons, 2) capabilities for delivering low-yield nuclear weapons should be studied, 3) targets might be discovered by a thorough search, and 4) practice in nuclear strikes should be made with simulated weapons. Specifically, General Collins advocated the use of nuclear artillery.4

The Army and Los Alamos National Laboratories had initiated development of a 280 mm nuclear projectile (Mark 9/W-19 with a yield of 15 kt) and mobile gun in 1950. On 31 August, President Truman met with Atomic Energy Commission Chairman, Gordon Dean, to discuss the weapon. Truman was under the impression that it was available if needed in Korea. Dean explained that the first firing would occur in May 1952; however, manufacturing problems with the guns would permit only a few operational units before the fall of 1952. Although the nuclear artillery projectile entered the U.S. inventory in late 1952, the first test was delayed until 25 May 1953 as shown in Figure 3-5.6 7 Dean noted that air-dropped weapons would be equally effective against troop concentrations. Truman’s primary interest was to break the stalemate along the 38th parallel.4

Jacob Malik, the Soviet delegate to the U.N. proposed a cease-fire in June 1951. Truce talks began on 10 July at Kaesong and moved to Panmunjom in October. Fighting continued in a series of skirmishes while negotiations over the exchange of prisoners dragged on for more than a year. Most North Korean and Chinese captives refused to go home and the Communists would not accept that some of its citizens were not loyal.

Dwight D. Eisenhower resigned as Commander-in-Chief of NATO to run for President on 28 April 1952. He ran on a platform that included ending the Korean War. He promised to visit Korea to review the situation first hand; therefore, after being elected on 4 November, he prepared to start immediately. On 19 November he was given a thorough briefing on the status of the nuclear stockpile and weapon developments. On 26 November, he was briefed on the situation in the Far East by the National Security Council and on the 29th he left for Korea with Charles Wilson (incoming Secretary of Defense), General Omar Bradley (Chairman of the JCS-designee), Admiral Arthur Radford, and Herbert Brownell (Attorney General-designee).4 From 5-7 December, the President-elect visited the front where he talked openly with troops and had meetings with Generals Van Fleet and Mark Clark and President Syngman Rhee.8

During this trip, Eisenhower spoke strongly of, “working out a plan that would bring a positive and definite victory without running the grave risk of enlarging the war.” Euphemistically, he
implied the use of nuclear weapons. He exceeded any statements Truman would have sanctioned.² His published plan included four points:⁹

1. Strengthen South Korean military and use more ROK troops in front lines to replace Americans.
2. Increase economic aid to South Korea.
3. Avoid military actions that might involve risks of another world conflict.
4. Strengthen cooperation between the U.N. allies.

After inauguration in January 1953, Eisenhower initiated actions to implement these plans; one required the JCS to generate options to bring the Korean war to an end.⁴ Although the six options that were defined did not explicitly call for use of nuclear weapons, the JCS outlined several advantages and disadvantages of using atomic bombs as presented in Section 3.2.2. One of the ideas that was considered was to clear enemy forces by nuclear bombing and sowing fields of radioactive materials (waste from nuclear reactors) to cut the entire peninsula off from its Communist supply routes. This concept had been proposed to President Truman on 5 December 1952 by Representative Albert Gore (Senior) and to Eisenhower by General MacArthur a few days later.⁴ The resulting JCS report on 27 March made no recommendation concerning the best course of action or the use of nuclear weapons.

Eisenhower’s determined approach to bring the war to an end, “using whatever means might be necessary,” had the intended effect on the Communist leaders. They watched his presidential actions and knew his military reputation. On 27 July 1953, they signed the armistice at Panmunjom and Munsan.¹ In this case, the convincing threat of using nuclear weapons was sufficient without the need for detailed planning and force deployments.

The Korean war ended with 34,000 American dead and 105,000 wounded. The ROK Army lost 50,000 dead. By contrast, North Korea was estimated to have suffered 500,000 dead and the Chinese Army lost 900,000 troops.

3.2 WARFIGHTING AND NUCLEAR PLANNING.

Primary interest of this paper is focused on the first six months of the conflict (illustrated by the force movements of Figures 3-1 and 3-2). During these phases of the war, nuclear weapon
planning was most active. It is possible to focus on air-delivered atomic bombs since the U.S. had no other nuclear delivery systems at the time. For this reason, it is instructive to review conventional air operations before addressing nuclear planning.

3.2.1 Conventional Air Operations.

**Line of Command.**

General MacArthur operated from the theater General Headquarters located in Tokyo. He had a staff which included members of the major services, each of the allied nations, plus intelligence and planning organizations. His headquarters maintained continuous communications with the operational commands including the Navy carrier battle groups, the 8th Army and ROK Army Headquarters at Taegu (Korea), and Headquarters of the Far East Air Forces - FEAF (5th Tactical Air Force, Strategic Bomber Command, and Allied Air Forces) located in Tokyo. The operational commands are described in greater detail below.

**Naval Air Operations.**

On 26 June, President Truman authorized Naval air support for the ROK and a blockade of shipping to and from North Korea. This was accomplished by U.S. carrier battle groups stationed off the east coast of Korea in the Sea of Japan. After 16 August, the navies of the U.S., Britain, Canada, and Australia formed a unified command.\(^{10}\) The allied navies stationed one or two carriers off the west coast of Korea in the Yellow Sea.\(^{13}\) Because North Korea had no submarines and few combat aircraft, the carriers deployed relatively close to shore near the 38th parallel to permit short mission ranges and longer aircraft endurance over target areas.

General MacArthur ordered initial air strikes to take out North Korean airfields on 29 June. When it was realized that there was virtually no air threat, this order was revised to strike NKPA armor massing to cross the Han River.\(^{11}\) For the remainder of the year, the U.S. Navy operated two carrier battle groups off the east coast using mothballed F4U-5 Corsair and F8F-1 Bearcat fighters. Most carrier aircraft missions were focused on close-support strikes against NKPA armor and troop concentrations, air cover and reconnaissance.

The week of 30 July, the U.S. Navy ordered 2,000 additional F8F and F4U aircraft taken out of mothballs to permit deployment of a third carrier battle group off the east coast.\(^{12}\) This deployment
was requested by MacArthur in November following the Chinese intervention (see Section 3.1.4).\textsuperscript{11} The Navy also deployed newly developed F9F Panther jet fighters in early 1951 to offset the temporary enemy advantage when Russian piloted MiG-15 jet fighters entered the war. Figure 3-6 shows F9Fs from the carrier U.S.S. Philippine Sea flying over Wonsan harbor in July 1951.\textsuperscript{1}

![Figure 3-6. Navy F-9F Panther jets over Wonsan harbor (July 1951).](image)

President Truman approved the storage of nonnuclear components of atomic bombs on deployed aircraft carriers after 11 August 1950.\textsuperscript{4} Three carriers (Coral Sea, Midway, and Franklin D. Roosevelt) were outfitted to carry nuclear weapons by autumn but none of the carriers in Korean waters were nuclear-capable during the period when atomic bomb strikes were under active consideration.

**Tactical Air Force Operations.**

On 26 June, when President Truman authorized air strikes to support the ROK, the U.S. 5th Air Force had access to airfields at Suwon (Kimpo AFB), Taegu, Pusan, Sunchon, Kunsan, Chongju, and a few minor airstrips as shown in Figure 3-7. General George E. Stratemeyer, Commander 5th Air Force, deployed P-51 Mustang and F-82C Twin-Mustang fighters at these bases. On 27 June, five F-82Cs shot down three Russian-built North Korean Yak-9s fighters over Kimpo for the first airborne kills of the war.\textsuperscript{14} MacArthur landed at Kimpo AFB two days later when he flew
Figure 3-7. South Korean airfields at the beginning of the war.
to Korea to survey the situation. All but the airfields at Taegu and Pusan plus a field under construction by a battalion of engineers immediately west of Pusan were captured by the NKPA by 8 September.

Fortunately, the 5th Air Force had a few bases in Japan where F-80 jets, P-51s, F-82s, and B-26s were deployed. Japanese airfield locations were kept secret for two reasons: 1) to reduce the possibility of North Korean bombing or commando attacks and 2) to minimize tension with Japanese anti-war groups that resented the U.S. presence. One of the F-80 bases was located on Kyushu Island, about 350 miles from the front around Pusan. The F-80s required large wing-tip reserve fuel tanks to make the round trip flight and allow 15-20 minutes over the target areas.

With little notice, General MacArthur ordered three squadrons of F-80s from Japan to air bases on Formosa (Taiwan) on 31 July 1950. This deployment was done to deter China from attacking Formosa as a counter move to the U.S. invasion of North Korea.

From 25 June to 5 September, the 5th Air Force flew 16,689 sorties (from both Korean and Japanese bases) of which 90 percent were in direct support of ground operations. The remaining 10 percent were for elimination of enemy air power and interdiction of supplies and communications. It was found that the jets were more accurate and durable in ground support missions than the slower propeller driven aircraft. However, the Air Force ordered 2,000 additional P-51s taken out of storage by the end of June to operate from forward Korean airstrips to support the offensive following the Inchon landing. When U.N. ground forces moved further north in November, F-80 and F-84 jets based in Japan were “staged” into Taegu for refueling to carry out close-support and air-superiority missions along the Yalu River.

None of the tactical aircraft, including the F-86 Sabre jets deployed in mid-December 1950, were capable of delivering nuclear weapons. This was noted as a deficiency by both the Air Force and Navy in reviews of their air operations.

Bomber Command Operations.

Major General Emmett (Rosie) O’Donnell, commander of the Strategic Far East Bomber Command, arrived at his headquarters in Tokyo on 8 July. Again, bomber airfields were
considered secret, but they probably included Haneda and Yokota (large U.S. strategic bases near Tokyo) as home for the 19th Bomb Group. General Curtis LeMay, Commander Strategic Air Command, deployed the 22nd Bomb Group to Kadena AFB, Okinawa, and the 92nd Bomb Group to Japan. Additional aircraft and maintenance functions were located at Andersen AFB, Guam. These bases were assigned slightly over 100 B-29 bombers for conventional operations. Missions from Haneda to the Yalu River and back covered roughly 1,800 miles (requiring about 5 hours), from Okinawa the range was about 2,200 miles (taking nearly 7 hours), and from Guam the round trip range was nearly 4,000 miles (taking over 11 hours). Bomb payloads varied from 6 to 8 tons per sortie depending on the base location and the intended targets.

The first bombing raid occurred on 13 July 1950 when 50 B-29s dropped 500 tons of munitions on the railroad center and industrial facilities at Wonsan. Despite F-80 escorts, one bomber was lost to anti-aircraft fire. The second raid was made on 16 July by 50 aircraft with 400 tons of bombs against marshalling yards at Seoul and tracks leading to Taejon. The same day, 70 tons of bombs were dropped on the road and rail center at Chungju. By 16 August, the Bomber Command was able to mount a 98 aircraft raid; dropping 962 tons of munitions, on infantry and massed armor northwest of Taegu. Other targets that were heavily damaged during the first few months included the Kan-ri Arsenal (major munitions plant), Pyongyang Arsenal (production of artillery guns and shells), Wonsan (locomotive works and maintenance), and Chosan (oil refinery).

Table 3-1 provides a summary of the B-29 bombing operations during the first year of the war. Several important observations can be made by studying the attack sorties and targeting priorities of this table.

- During the initial three months, as the U.N. and ROK forces retreated to the Pusan perimeter, heavy emphasis was placed on attacking Roads & Railroads and Marshalling Yards. Although Industrial Areas (war materials factories) were also heavily bombed, this activity dropped off dramatically during the second and subsequent three-month periods.

- After the invasion of Inchon (second three-month period), bombing emphasis focused on Supply Areas, Roads & Railroads, and Marshalling Yards. During the first six months, the Bomber Command flew no sorties against Troop Deployments (the primary mission of the Tactical Air Forces).
Table 3-1. B-29 operations in Korea (first year).

<table>
<thead>
<tr>
<th>Operations</th>
<th>1950</th>
<th>1951</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>July-Sept</td>
<td>Oct-Dec</td>
</tr>
<tr>
<td>Total Aircraft Assigned</td>
<td>110</td>
<td>108</td>
</tr>
<tr>
<td>Total Crews Assigned</td>
<td></td>
<td>103</td>
</tr>
<tr>
<td>Total Personnel Assigned</td>
<td></td>
<td>11,781</td>
</tr>
<tr>
<td>Hours per Sortie Flown</td>
<td>8.0</td>
<td>9.5</td>
</tr>
<tr>
<td>AC Attrition (Losses)</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Attrib. Rate/100 Sorties</td>
<td>0.16</td>
<td>0.28</td>
</tr>
</tbody>
</table>

|                                     | Jan-Mar   | Apr-June |
| Total Attack Sorties*               | 3,159     | 2,151    |
| • Day Attacks                       | 2,228     | 896      |
| • Night Attacks                     | 931       | 1,255    |
| Total Reconnaissance+               | 132       | 241      |

| Attack Target Sorties               |           |          |
| • Airfields                         | 23        | 8        |
| • Supply Areas                      | 0         | 865      |
| • Roads & Railroads                 | 939       | 574      |
| • Industrial Areas                  | 656       | 92       |
| • Marshalling Yards                 | 822       | 338      |
| • Troop Deployments                 | 0         | 0        |
| Percent of Sorties                  | 77        | 87       |

| Attack Target Tonnage               |           |          |
| • Airfields                         | 183       | 64       |
| • Supply Areas                      | 0         | 6,628    |
| • Roads & Railroads                 | 6,712     | 4,082    |
| • Industrial Areas                  | 5,541     | 749      |
| • Marshalling Yards                 | 6,713     | 2,869    |
| • Troop Deployments                 | 0         | 0        |
| Average Tons/Sortie                 | 6.1       | 6.7      |

* B-29s and + RB-29s
Source: Ref. 17 (Korean Air War Summary--FEAF)
Following the Chinese intervention, and particularly the first three months of 1951, emphasis shifted to many attacks against Troop Deployments and enemy Airfields. During this period, massed Chinese troop concentrations made good targets. China also generated a serious air threat and temporarily achieved air superiority. This threat started in December 1950 and caused a shift from day to night bomber missions (which became nearly total by 1951).  

There was a significant drop in bomber sorties after the front stabilized near the armistice line in April to June 1951.

The Air Staff Strategy.

It is useful to review the command staff strategy. On the day the war started, President Truman asked General Hoyt Vandenberg at the Pentagon if the Air Force could destroy the Soviet air bases in the Korean region if necessary (see the map of Figure 3-8). Vandenberg answered that it could be done but would take some time unless atomic bombs were used. The President told him to prepare plans but not to attack. General O'Donnell in Tokyo noted that North Korea had relatively few strategic targets (i.e., a few airfields, ports, five main industrial complexes including the capital at Pyongyang, hydroelectric plants on the Yalu River, and some petroleum storage areas). The senior Bomber Command officers were thinking in terms of destroying war-making capabilities.

However, when Generals Vandenberg and Collins met with MacArthur in Tokyo on 13 July, they learned that his strategy was much different. He intended to use air power to seal off the peninsula from China and Russia. He told his visitors, "the only passages leading from Manchuria and Vladivostok have many tunnels and bridges. I see here a unique use for the atomic bomb...to strike a blocking blow...which would require a six-month repair job." Consequently, the early emphasis on destroying military industries and airfields in North Korea shifted to attacks against enemy communications systems (i.e., highways, railroads, ports, petroleum storage, and supply dumps).

On 14 July, General Collins asked MacArthur about the use of nuclear weapons to soften up ports prior to amphibious landings based on a 30 June Army study, "Employment of Atomic Weapons Against Military Targets." This idea was probably considered in the planning process for the Inchon landing (implemented on 15 September) but it was not found to be attractive, necessary, or politically acceptable.
Figure 3-8. Chinese and Russian airfields within MiG combat radius of the North Korean border.
One of the targets hit on 12 August was the oil refinery and storage facility at the North Korean city of Najin (formerly Rashin) which is located on the rail line 17 miles to the Soviet border. This bombing alarmed the State Department which feared that the Soviet border would be violated. Following discussions with the Department of Defense, a Presidential Directive was issued on 14 August to regulate bombing operations north of the 38th parallel. It specified that aircraft should "stay well clear of the Manchurian and Siberian frontiers." Subsequent bombing of bridges and targets along the Yalu River required that aircraft approach on east-west headings to avoid the risk of infringing on Chinese or Soviet airspace.\textsuperscript{4,13}

When U.N. ground forces approached the northern border in late October, MacArthur focused the Bomber Command on closing all supply routes from China and Russia. There were about three dozen primary roads, 14 railroad lines and two dozen bridges across the borders.\textsuperscript{22} The most important areas were from Antung, China to Sinuiju in the northwest corner and from Kraskino, Russia to Najin in the northeast corner of the country. Although intelligence showed concentrations of troops and supplies existed on the Chinese side of the border, they were off limits for bombing.

On 1 November, Russian MiG-15 interceptors crossed the Yalu and attacked U.S. aircraft.\textsuperscript{4} Bomber crews reported that they could see enemy fighters scrambling from sanctuary bases at Antung, China.\textsuperscript{13} By 5 November, MacArthur ordered a two week, around the clock, all-out air offensive to, "intercept MiGs, destroy supply routes, bridges, and prevent any more Chinese Communist forces from entering Korea."\textsuperscript{4}

**The Soviet and Chinese Air Threats.**

At the beginning of the war, the NKPA had about 150 piston-engine Yak fighters and some Il-10 Sturmoviks. Effective engagements by the U.N. fighters and bombing strikes against the unsheltered NKPA aircraft decimated the North Korean air threat as the army was pushed back to the Chinese border. When the Chinese Army entered the war, the Soviet Air Force committed help to their North Korean allies. The Soviet Union had about 1,000 combat aircraft in the Far East plus 200 to 300 in its 5th and 7th Fleets near Vladivostok.\textsuperscript{11} They deployed a significant number of MiG-15 jets and pilots to Antung and other expedient airfields in Manchuria. These aircraft began to intercept formations of B-26s and B-29s in what became know as "MiG Alley".
The MiGs, with a speed of 450 miles per hour and combat radius of 300 miles, were a surprise to the U.N. Air Forces. They were sturdy jets and good gun platforms; although, they lacked radar sighting and most of the pilots were there to gain experience. During early air engagements, the inexperienced Soviet pilots lost ten times the number of aircraft lost by U.N. air forces. Two U.S. F-80 interceptors followed MiGs back to their base at Sukhaya Rechka, Russia, on 8 October and strafed the airfield, 60 miles north of the Korean border. The incident nearly caused the Russians to retaliate until American authorities acknowledged, “a navigation error and poor judgment with anticipated disciplinary action against the pilots involved.” The Chinese and Russian airfields within MiG combat radius of the Yalu are shown in Figure 3-8. On 17 December, the first U.S. F-86A Sabre jets went into combat along the Yalu and shot down a MiG-15.

The Russians learned from early losses to refine the design of the MiG-15 and they produced the improved MiG-17 by the summer of 1951. Meanwhile, they assisted China in building airfields and training its fledgling Air Force. In late 1951, Russia provided China with MiG-15s and some MiG-17 interceptors to operate along the Yalu River. Until that time, China’s Air Force was very limited and outside the tradition of the People’s Army. However, by early 1952, China started producing its own MiG-15s and built up forces quickly. In December 1952, the U.N. reported 3,997 MiG sightings along the DMZ, 1,849 were engaged, and 27 were shot down.

3.2.2 Nuclear Weapon Planning.

Policy Considerations.

Public opinion became an early consideration with respect to the use of nuclear weapons in Korea. Paul Nitze’s Policy Planning Staff initiated a study of the conditions under which American citizens would support using nuclear weapons. On 15 July, the study results were reported and concluded that nuclear weapons could be used if:

- They were deemed essential for reestablishing peace and saving the lives of American Troops.
- Chinese and Soviet forces were openly committed in Korea.
- The weapons would restore the situation, assure decisive results, and not appreciably deplete the nuclear stockpile.
These results were rebutted two days later in an article by Hanson W. Baldwin of the New York Times. He commented that, "as the going becomes tough, expediency replaces ethics." His conclusion that atomic weapons were not appropriate for Korea was based on four points:

1. The U.S. had few atomic bombs, so few that even if their use was justified, targets must be of strategic importance.

2. Atomic bombs were primarily useful against area targets--cities, great industrial facilities (including oil), large communications centers, and troop concentrations (such as an amphibious landing). There were no targets of these types with sufficient importance in North Korea.

3. Ground armies required continuous round the clock tactical bombing. Large numbers of aircraft with conventional bombs, rockets, and napalm were better suited for close support.

4. Russia was an immediate threat with five to 20 atomic bombs and the U.S. must deter its entry into the war.

**Nuclear Weapon Stockpiles and Delivery Systems.**

It is clear, from the above, that both the public and military were concerned about the U.S. and Soviet nuclear weapon stockpiles; therefore, it is useful to review this issue. On the U.S. side, President Truman decided to place thermonuclear weapon development on a crash basis in January 1950. A parallel effort was initiated to develop efficient, usable, tactical fission bombs. These programs were accelerated to expand the nuclear arsenal after the outbreak of the Korean War. Figure 3-9 shows the buildup of U.S. atomic bombs between World War II and the Korean War.

The U.S. stockpile consisted of Mark I, Mark III, and Mark IV fission bombs. The Mark I was similar to the Little Boy bomb used against Hiroshima but only a handful of these bombs with a yield of 12.5 kt were built. The Mark II design was cancelled. The Mark III, as illustrated in Figure 3-10, was derived from the Fat Man bomb used against Nagasaki. Operationally, this bomb with a yield of 21.5 kt was a problem. Its weight and bulk made it awkward to load and dangerous. Tests showed that it could produce a nuclear explosion in the event of a crash on takeoff. B-29 pilots and armorers worried about accidental explosions or, conversely, if it would work when needed. About 120 Mark III bombs were built before 1949, then the improved Mark IV design was developed.
Figure 3-9. U.S. and Soviet nuclear weapon stockpiles.
CHARACTERISTICS

- Implosion-Design
- Yield: 22 kt
- Length: 128 in
- Diameter: 72 in
- Weight: 10,300 lb
- Tail Assembly:
  - Weight: 500 lb
  - Span: 60 in

Figure 3-10. Mark III nuclear bomb (derivative of Fat Man design).

The Mark IV was also a derivative of the Fat Man design and a few hundred were built by the time of the Korean War. Some of the early bombs were replaced with Mark IV designs between 1949 and 1951 as indicated in Figure 3-9. In 1994, the Department of Energy reported the actual production and retirement rates shown in the figure; therefore, it is estimated that the operational inventory contained about 275 weapons in October 1950.

In December 1949, the Strategic Air Command included 386 B-29s, 99 B-50s, and 36 B-36s. Although many of the B-29 bombers did not have the Silverplate modifications (i.e., high-capacity hoists, special bomb shackles, and arming/safety wiring) needed to make them nuclear capable, there was little concern about the ability to deliver A-bombs. To be safe, a squadron of nuclear-capable B-50A bombers was deployed to Andersen AFB, Guam, on 30 July. These aircraft, shown in Figure 3-11, were part of the 43rd Wing and were recognized as being, "available to General MacArthur for an atomic capability."
CHARACTERISTICS

- Improved Version of B-29
- Length: 99 ft
- Wing Span: 141 ft, 3 in.
- Gross Weight: 164,500 lb
- Payload: 20,000 lb or 16,000 lb plus fuel drop tanks
- Speed: 400 mph
- Range: 6,000 miles

Figure 3-11. B-50A nuclear-capable bomber.

On the same date (30 July 1950), President Truman directed the Atomic Energy Commission to transfer custody of nuclear bomb capsules (minus their nuclear components) to the Air Force and Navy. This was done to set up overseas storage of bomb assemblies, increase readiness, and reduce the airlift required to support atomic air operations. By the spring of 1951, he directed that a small quantity of nuclear components be positioned on Guam.
It is useful to review the U.S. stockpile with respect to Soviet nuclear forces. The first Soviet nuclear detonation took place between 26-29 August 1949 according to U.S. nuclear test sensor networks. The Soviet news agency TASS reported the first atomic explosion on 23 September. Subsequently, the U.S. JCS projected that Russia would have 10-20 bombs by mid-1950, 20-45 by mid-1951, and 45-90 by mid-1952. Hanson Baldwin indicated 5-20 bombs by mid-1950 which agrees fairly well with the JCS estimate. But on 16 August 1950, U.S. Ambassador to Russia Joseph E. Davies estimated that the Soviets had more than 100 bombs. These trends are shown as a cross-hatched area in Figure 3-9 to contrast the Soviet stockpile.

Before the Korean War, the U.S. strategic doctrine for deterring Soviet aggression was built on the methodology of destroying major industrial and population centers using atomic bombs delivered by B-29, B-50, and B-36 bombers. Consequently, military planners in late 1950 probably felt the need to maintain a two-to-one advantage in weapons to cover potential losses from a Soviet first strike, reliability, and attrition of bombers during the delivery process. Furthermore, Russia had more, large population centers than the U.S.; therefore, it is likely that a strategic stockpile of 200 to 250 nuclear weapons was considered necessary. Figure 3-9 shows that this margin existed by mid-1950. Consequently, the expenditure of up to a few dozen bombs in Korea was probably within reason. But use of 50 or more weapons was probably not prudent.

Targets at Antung/Sinuiju.

Early in October 1950, Navy Lieutenant Eugene Clark was sent on a dangerous spying mission to islands near the delta of the Yalu River. With four ROK patrol boats and 75 guerrilla agents, he searched for hidden radars on the islands and mainland on 16-17 October. He was also searching for, 1) areas where Air Force pilots could ditch damaged aircraft, 2) sites from which the enemy was floating mines south into Inchon harbor, and 3) evidence that Chinese forces were building up near the cities of Antung and Sinuiju. About 10 miles from Sinuiju several of his agents returned with reports from natives that the Chinese boasted that they were coming into Korea with 300,000 troops. Clark promptly reported this buildup by radio on 18 October and provided confirming data two days later (see Section 3.1.3).
Figure 3-12 shows the area around Antung (China) and Sinuiju (North Korea); located on opposite sides of the Yalu River and separated by a small island and two bridges. The bridges support a primary road and rail line which terminates at a large switch yard in downtown Sinuiju. China had built two military airfields southwest of Antung (now known as Dandong) and North Korea had a third airfield northeast of Sinuiju. Both cities had populations of nearly 500,000 people in 1950. Sinuiju was an industrial center with a large electric power plant, chemical plant, and military factories. Anti-aircraft positions were dispersed throughout the city to protect key targets.\(^4\)

Figure 3-12. Map of Antung/Sinuiju showing three airfields and two bridges over the Yalu River.
In mid-October, General Stratemeyer proposed to eliminate military targets in Sinuiju by all-out tactical air strikes. MacArthur turned down the request because of Washington’s guidelines and his lack of concern for the Chinese threat. On about 1 November, Stratemeyer again requested permission to eliminate the anti-aircraft defenses throughout the city. By this time, the Chinese intervention was confirmed and the importance of the bridges was well established. On 5 November, MacArthur authorized strikes on the Korean end of the bridges. The Air Staff in the Pentagon specified use of radio-guided, glide bombs (i.e., RAZON – Range and Azimuth Only), aimed at the Korean side of the bridges. However, before the strike could be made that afternoon, the State Department protested, claiming that the British Cabinet was concerned that attacks would be made on the Manchurian side of the river. Consequently, the JCS instructed MacArthur not to attack within five miles of the border and give them his reasons for requiring missions against Sinuiju.

MacArthur responded to the JCS that, “men and material in large force are pouring across all bridges over the Yalu from Manchuria.” He undoubtedly informed them of the MiG threat from the nearby airfields. This would have been the appropriate time for employing up to four nuclear bombs to destroy the three airfields and two bridges. But A-bombs were not authorized. Weather prevented any strike missions against Sinuiju on 7 November. However, the next day, MacArthur was permitted to attack the bridges under the proviso that, “there must be no violation of Manchurian territory.” The Bomber Command attack by B-29s on 8 November was preceded by F-80 jets and P-51 fighters to suppress the anti-aircraft positions. MiG-15s flew from the Antung airfields to engage the F-80s in history’s first all-jet air battle.

**The Bridge Between Najin and Kraskino.**

The oil refinery, storage tank farm and rail yard at Najin (Rashin) were bombed by B-29s on 12 August. The attack delivered 500 tons of bombs using radar aiming but failed to hit the intended targets and did little damage. This raid caused the State Department great concern because it was only 17 miles from Russia. The Bomber Command scheduled to hit Najin against with 64 B-29s under the new JCS guidelines on 22 August but the attack was diverted to Chongjin because of bad weather. Due to State Department pressure, Najin was removed from the target list by 11 September.
However, all of the bridges from Manchuria and Russia into North Korea were important targets from the end of October to early November according to General MacArthur. One of primary interest was the road and railroad bridge connecting Najin with Kraskino, Russia, over the Tumen River delta as shown in Figure 3-13. This bridge was not used by intervention troops but it was critical to the supply of Soviet war materials. Furthermore, it was located in a rural, swampy area more than a mile from the nearest village, Namjungsan-dong. Therefore, it was a good candidate for nuclear bombing since conventional weapons could not guarantee success. By 29 November, the Yalu river was frozen over and the value of destroying the bridges was greatly reduced.

![Figure 3-13. Road and railroad bridge between Najin (NK) and Kraskino, Russia.](image)

**The Chinese Offensive.**

As the Chinese offensive gained momentum, Paul Nitze held a meeting on 4 November with General Paul Loper, Assistant for Atomic Energy on the Army Chief of Staff for Logistics. They discussed the possible use of atomic bombs to counter Chinese troop concentrations and artillery support positions. It was concluded that few targets of sufficient value existed but targets might be
created by friendly force maneuvers. Even then, few targets could be created before the enemy got wise to the maneuvers. However, the bombing might deter further Chinese aggression and was unlikely to cause large civilian casualties. Nitze pointed out that use of atomic bombs against Manchurian cities such as Mukden, Fushun, Anshan, Garbin, and Dairen would cause many civilian casualties and could draw the Soviet Union into the war.\(^4\)

During the critical period from 30 November to 7 December, as U.N. ground forces retreated from the Chinese offensive, President Truman made his statements to the press concerning the use of nuclear weapons. The Truman remarks initiated scary headlines, street demonstrations and debates in Congress. An Indian newspaper, for example, warned that Asia would erupt in fury if the bombs were used again on a nonwhite people. Commentator Drew Person warned a national radio audience that, “using atomic bombs could leave the United States to fight a world war without allies.” It was argued that if the bombs could not be used as weapons, they were no better as threats. Their existence did not prevent the Korean War from starting and did not keep it from dragging on.\(^{33}\)

Even the Joint Chiefs of Staff wanted to avoid the use of nuclear weapons. General Joe Collins worried that Soviet aircraft would inflict devastating casualties on the closely bunched allied troops and supplies along the roads leading south. He envisioned a bloody evacuation similar to Dunkirk. The Bomber Command would certainly have to strike back at airfields in Manchuria and Russia (see Figure 3-8). That could draw the Soviet Union fully into the war. Collins stated, “the only chance in that scenario was to use...or threaten to use atomic bombs. Use of A-bombs in that context could well invite Soviet nuclear retaliation on America itself, bringing on global war.\(^{11}\)

The U.S. did not possess tactical nuclear weapons at that time and apparently no plans were made to implement atomic bomb attacks against Chinese ground forces. After the U.N. defensive line was established on 25 January 1951, Secretary of State Dean Acheson made the following observation:

“The threat represented by our stockpile of atomic bombs was not a political advantage or asset, but, rather a political liability. The threat of its use by us would frighten our allies to death but not worry our enemies.”

His idea was that the U.S. should make political use of the atomic bomb in dealing with the Soviet Union and other nations. The bomb did not have to be a military threat but it could well be a political ace.\(^4\)”
The Kaesong Buildup.

By January 1953, the North Koreans had 140,000 and China had 350,000 troops manning the front along the DMZ. Because of the peace negotiations, the Kaesong region contained a 28 square mile area created as a sanctuary from attack. For several weeks, intelligence had noted a strong buildup of forces in this area. Within days after Eisenhower's inauguration, General Mark Clark informed the Joint Chiefs of Staff that he believed the Chinese were preparing an imminent offensive from this area. On 11 February, General Omar Bradley, Chairman of the JCS, informed Eisenhower and requested permission to attack the buildup.4

Eisenhower asked about the possibility of using atomic weapons..."troop concentrations provide a good target for this type of weapon," he noted. He added that he did not like the atomic option but, "we cannot go on the way we are indefinitely." General Bradley thought it was unwise to use atomic weapons and John Foster Dulles mentioned the moral problem of attacking a sanctuary with nuclear weapons.4

Eisenhower's Threat to Use the Bomb.

Shortly after the Kaesong buildup discussion, Eisenhower decided to apply Acheson's idea of using nuclear weapons for political leverage. He directed the JCS to provide Secretary of Defense Charles Wilson with options for bringing the Korean War to a successful end. On 27 March 1953, the JCS outlined six courses of action as follows:4

1. Continue aggressive air and naval action along the current ground position while developing the capability of ROK forces to assume the responsibility for the defense of Korea.

2. Continue aggressive air and naval action while increasing the tempo of ground operations.

3. Extend and intensify military operations in Korea but increase pressure against Communist China and Manchuria.

4. Extend and intensify military operations against China and Manchuria with a phased intensification of operations in Korea.

5. Employment of Chinese Nationalist forces in operations against Communist China and in connection with operations in Korea.

6. Continue aggressive air and naval action in Korea with coordinated ground operations designed to cause maximum enemy casualties along the current line.
None of these options explicitly called for use of nuclear weapons or other weapons of mass destruction. However, the JCS cited advantages and disadvantages of using atomic weapons as indicated below.

Advantages of Using Atomic Weapons:

1. Would considerably augment U.S.-U.N. forces and somewhat offset implications of developing a conventional capability to produce equivalent military effects outside Korea.

2. Would result in curtailment of Communist Chinese capability of continuing present hostilities, of threatening U.S.-U.N. security in Korea, Japan, or elsewhere.

3. Might serve to increase the deterrent effect of our atomic capability on the USSR, as pertains to both global and limited war.

4. Threats to our military position in Korea could be eliminated more effectively, quickly, and cheaply than by use of conventional weapons.

5. Sino-Soviet solidarity might be seriously strained if Soviet aid were not sufficiently increased to offset the adverse effect of atomic weapons.

Disadvantages of Using Atomic Weapons:

1. Unless the use of atomic weapons results in a decisive military victory, the deterrent effect might be reduced.

2. Public opinion in the United States, allied and neutral nations might be adversely affected.

3. Any profitable strategic use requires extension of hostilities outside of Korea.

4. Increased threat of Soviet intervention or retaliation in kind might result.

5. A precedence would be established, and U.N. forces and installations are, in general, better targets for atomic weapons than those of the enemy. For example, the ports of Inchon and Pusan, U.N. airfields and concentrations for amphibious operations would be prime enemy targets.

6. Use of substantial numbers will reduce the U.S. stockpile and global atomic capabilities.

The JCS did not attempt to choose between the various options for concluding the war or the use of atomic weapons. In fact, they relied on the perception of this serious consideration of using nuclear weapons to have an impact on the Communist Chinese. The next day (28 March 1953), the Communists agreed to an exchange of sick and wounded prisoners of war. Two days later, Premier Chou Enlai suggested that prisoners unwilling to be repatriated should be transferred to a
neutral state. The U.S. interpreted this as a positive step toward resolving the impasse in the armistice talks. Because the JCS recommendations were made available to the news media, the nuclear planning considerations were politically effective in bringing the conflict to an end.

Before the Chinese troops withdrew from Korea in September 1953, Brigadier General Edwin H.J. Carns (Deputy to Secretary of State John Foster Dulles) sent a memorandum to President Eisenhower. It revealed a continued willingness to use nuclear bombs in light of the Chinese capability to launch a massive ground offensive. Specifically, it stated, “U.S. air support operations, including use of atomic weapons, will be employed to inflict maximum destruction of enemy forces.”

3.3 LESSONS LEARNED FROM THE KOREAN WAR.

In 1954, after the Korean armistice, Secretary of Defense Charles Wilson said, “We can’t afford to fight limited wars. We can only afford to fight a big war, and if there is one…it will be a nuclear war.” As a result of this thinking, the American military establishment during the 1950s emphasized strategic nuclear weapons at what some critics said was the expense of conventional forces.

The paramount leadership issue that emerged from the Korean War was the need for the President and civilian authorities of government to firmly and clearly define the goals, ground rules, and constraints for conducting the war before military leaders are selected to implement their policies. The disagreement between Truman and MacArthur concerning war objectives was disruptive. It caused confusion and inefficient use of planning staffs and forces, it concerned allied governments, and it sent inaccurate or spurious messages to enemy leaders. While the civilian leadership is clearly responsible for setting policy, they must not over manage and permit the military to fight the war within established guidance.

President Truman referred to the Korean War as a “limited war or police action.” It was only the first of several such wars that the U.S. became involved in during the next 40 years. None of these wars lessened the danger of escalating to a bigger war or the potential requirements to rapidly retaliate with nuclear weapons. Consequently, the U.S. military developed active, rapid reaction conventional forces in parallel with their tactical and strategic nuclear forces. John Foster Dulles noted that the Soviet strategy was to “set atomic weapons apart from all other weapons as being in
a special category." By contrast, the U.S. tried to break down such distinctions, making it possible to integrate nuclear weapons into war planning and fighting.30

Two nuclear weapon arsenal deficiencies were noted during the war:

- Both the Air Force and Navy required tactical nuclear weapons of various yields to support ground force operations. The development of small, lightweight tactical nuclear bombs (Mark 5, Mark 7, and Mark 12) for use by both services became operational in 1953 through 1954.7

- There was a need for a second nuclear weapon design and development laboratory (in addition to Los Alamos) to permit alternative development activities and "red-team" designs before production. This step was accomplished in April 1952 when Dr. Edward Teller and Marshall Holloway set up the Lawrence Livermore National Laboratory.4

During the debates and planning for use of nuclear weapons, the concern for unwanted civilian collateral damage and casualties became a decisive consideration. The only situations under which nuclear weapons were considered acceptable were "all-out global warfare" and "tactical battlefield engagements where there were no (or few) civilians present." Delivery accuracies at the time were relatively poor...high altitude bomb drops often missed their aimpoints by up to half a mile. Therefore, it was difficult to plan specified aimpoint missions with low collateral damage potential.

The impulse to use nuclear weapons in desperate situations such as the retreat during the Chinese offensive deserves in-depth analysis. Three times in history, when nuclear weapons were available under these stressful conditions, they were advocated but not used (i.e., Korea, Dien Bien Phu, and Khe Sanh). Precision delivery accuracy, refined low-yield weapon designs and improved operational doctrine could make use of nuclear weapons in these situations more acceptable (assuming no attractive conventional weapon options).
SECTION 4.0
NUCLEAR WEAPONS FOR DIEN BIEN PHU
W. C. Yengst

4.1 GENERAL DESCRIPTION OF THE EVENT.

In early 1954, President Dwight D. Eisenhower requested the Joint Chiefs of Staff to devise strategic plans for stopping the Chinese Communists aggression in Indochina.\(^1\) The Joint Chiefs described their proposals as, “planning for a limited war,” and they included options for:

- Intervention in the French Indochina War
  - Conventional attacks to relieve Dien Bien Phu
  - Nuclear attacks to neutralize the Viet Minh
  - Amphibious landing to reinforce the French in Haiphong and Hanoi
- Blockading the coast of China
- Encouraging the Nationalist Chinese troops on Taiwan to invade China.

A classified memorandum by Brigadier General Edwin H. J. Carns, secretary for the Joint Chiefs, noted that they did not contemplate a massive atomic strike against China and its population, for fear that the Communists would be triggered into renewing the war in Korea or elsewhere.\(^1\) Thus, this paper is focused on the first option, intervention in the French Indochina War.

4.1.1 Background for the French Conflict.

After Japan’s surrender at the end of World War II, France tried to return to power in Vietnam, along the border of Laos (where King Sisavang Vong declared independence), and in Kampuchea (Cambodia). Within Vietnam, an independent Revolutionary League known as the Viet Minh led by Ho Chi Minh called for independence and formation of the Democratic Republic of Vietnam.\(^2\) Although Ho Chi Minh was primarily interested in independence, he had been trained in Moscow and his followers were strongly supported with military arms and advisors from Communist China. The French tried to settle their differences with the Viet Minh peacefully through 1946 but war broke out in December. The French built the De Lattre defensive line and maintained control of the major cities but the countryside was mostly contested.
By 1953, the war demanded a growing commitment of resources. In June, Paul Reynaud, Vice Premier of France, proclaimed, "this war must stop being a French war supported by Vietnam and become a Vietnamese war supported by France." General Henri-Eugene Navarre (counseled by U.S. Lieutenant General John O'Daniel) made an advisory trip to Hanoi. Navarre developed a plan to tempt the Viet Minh forces into open combat by setting up French fortresses as bait at key points throughout the country. At the time, a huge army was under his command (over 500,000 troops including 80,000 French officers and men, 48,000 Foreign Legion, 20,000 Algerian and 370,000 Indochinese soldiers). After 1950, the U.S. supplied the French with hundreds of tons of war supplies including aircraft, patrol boats, tanks, heavy guns, small arms and ammunition.

Dien Bien Phu was a small village of 112 farm houses in a valley 12 miles long and 4 miles wide within 10 miles of the Laotian border as shown in Figure 4-1. The main crops of the valley were rice and opium but the site was on the route used by Viet Minh forces moving supplies from the China border towards Luang Prabang, Laos. By placing a fortress astride the Viet Minh supply route, the French could force the set-piece battle they desired. Thus, in November 1953, they seized Dien Bien Phu as part of Operation Castor. Paratroops dropped on the valley and linked up with loyal Tai Mountain natives to control the isolated site 170 air miles from Hanoi.

As the French began to build their fortress at Dien Bien Phu, the U.S. State Department made several statements to justify its substantial military aid and emphasize that America could not accept a Communist victory in Indochina. Secretary of State, John F. Dulles noted that the Viet Minh were supplied with artillery and ammunition fabricated by the Skoda Works in Czechoslovakia and transported across Russia then down through China to Vietnam. He warned the U.S. would meet the threat with "unified action" and "if Red China sends its own army into the area, the grave consequences might not be confined to Indochina."

By March 1954, the French were tiring of the conflict and the Eisenhower administration held that Indochina was too valuable to be permitted to fall into Communist hands. During a press conference on 7 April 1954, Eisenhower pointed out the natural resources of the area including tin, tungsten, rubber, and oil as vital to the interests of the free world. Then he introduced the broader principle of "falling dominoes." Specifically, he asserted that the loss of Vietnam could set off the loss of Burma, Thailand, the Malay Peninsula, Indonesia and could threaten Australia, New Zealand, and Japan. The domino theory became the focus of American political and military debate regarding Southeast Asia for nearly 20 years.
4.1.2 Development of the Dien Bien Phu Defenses.

Dien Bien Phu was an unlikely site for a military fortress, located in the center of a valley surrounded by 1,000 ft high hills as shown in Figure 4-2. The French troops rapidly built two airstrips to permit air supply from Hanoi. A hardened command headquarters bunker was set up in the center of the original village. The village was enclosed in earthen walls, barbed wire, and bunkers under the name, fortress Eliane. Three strongpoints were constructed: Huguette on the west, Claudine to the south, and Dominque to the northeast. Four smaller outposts (Gabrielle, Beatrice, Isabelle, and Anne-Marie) formed an outer ring of defenses. The base layout is shown in Figure 4-3.
Figure 4-2. Viet Minh view of Dien Bien Phu.

To provide a scale for Figure 4-3, Anne-Marie was two miles west of Beatrice which was one mile southeast of Gabrielle. The main airstrip was within the defended perimeter of Eliane but the smaller airstrip and strongpoint Isabelle were isolated four miles to the south. By March 1954, the fortress was defended by 10,814 troops armed with most of the French heavy artillery in Southeast Asia: two groups of 75mm guns, 24 105mm, 4 155mm howitzers, and 3 120mm mortars.\(^8\) Transport aircraft flew in parts for 10 Chaffee light tanks which were assembled at the base. Finally, 6 Grumman Bearcat fighter planes with bombs and napalm were stationed on alert at the main airstrip.\(^9\) C-47 and C-119 air transports, flown by American civilians, were the only life support line for the garrison.\(^4\)

The Viet Minh, under command of General Vo Nguyen Giap, reacted to this buildup by withdrawing units from around Luang Prabang, Laos. He recalled troops throughout Vietnam (some walked nearly 200 miles) to surround the French garrison. Viet Minh coolies formed "human anthills," carrying disassembled weapons up the hills piece by piece, then reassembling
Figure 4-3. Layout of Dien Bien Phu and key battles.
them in camouflaged emplacements. These guns opened fire on the French positions after 31 January. Although fire was sporadic, the French gave up ideas of expanding their fortress by 15 February. Meanwhile, Giap moved in a total of 37,500 troops from five divisions. This buildup of troops with nearly three hundred 105mm guns were sheltered in a complex series of trenches that astonished French military experts. China provided military advisors to the Viet Minh at both high-command and division command levels. By 7 April, at least one complete Red Chinese regiment with 64 73mm guns joined the Viet Minh; bringing the total force to over 40,000 troops.

All battles and campaigns depend on the ability to move troops, equipment, and supplies in a timely manner. The French failed to appreciate the Viet Minh ability to accomplish this function with old Russian trucks and brigades of civilians using bicycles to push through the forests. Figure 4-4 shows a typical supply unit, each person carrying 150–400 lb of food or ammunition. The French had at most 200 combat aircraft near Hanoi but few had sufficient range and endurance to interdict the flow of supplies to Giap. On a few occasions, B-25 and B-26 medium bombers halted the several hundred trucks carrying supplies but they never stopped the brigades of bicycles.

![Viet Minh bicycle brigade with supplies.](image)

Figure 4-4. Viet Minh bicycle brigade with supplies.
4.1.3 The Viet Minh Campaign.

Giap's plan for attacking Dien Bien Phu was implemented in three phases. The first phase attempted to eliminate outlying strongpoints. The attacks began on 11 March with an overmatched artillery barrage and probing assault against Gabrielle. This was expanded in two days to include the other northern outposts (Beatrice and Anne-Marie) as noted in Figure 4-3. The French Foreign Legion 3rd Battalion returned heavy fire but by 15 March, they were forced to give up Gabrielle. The bombardment of Beatrice was so severe that Colonel Christian de Castries, the garrison commander, ordered its evacuation. The Viet Minh then turned to concentrate on Anne-Marie. Its Tai-Mountain battalion deserted en masse late on 17 March.

The loss of these three strongpoints permitted Giap to direct accurate artillery fire at the north end of the main airstrip. All flights in and out of the airfield were halted after 23 March. Giap had lost roughly 2,500 killed but the French were in desperate condition, relying on air drops along the runway for resupply. The Viet Minh laid down a day-and-night artillery siege while the French ran short of ammunition and had to husband their shells. During this period, the French Chief of Staff, General Paul Ely, flew to Washington, D.C., to meet with Admiral Arthur Radford, Chairman of the Joint Chiefs of Staff, and high-ranking members of the administration. His objective was to request U.S. intervention in the conflict and help in saving the beleaguered garrison. Results of this meeting are presented in Sections 4.1.4 and 4.2.1.

Phase two of the campaign began on 30 March with a massive assault focused on strongpoint Dominique. It was parried by stubborn defense of Algerian troops. The attack was repeated on 1 April, focused on Huguette, Eliane, and Isabelle. The Viet Minh lost nearly 2,000 more men by 4 April and achieved virtually no gains. Severe losses and the possibility of mutiny forced Giap to pause. He put thousands of civilian laborers into the front lines to dig trenches and tunnel to the face of the French bunkers ... "gnawing away," he called. Bombing with napalm, rockets, and shelling had little effect on the trench lines, some of which advanced as much as 100 yards a night.

The French received reinforcements when a battalion of Foreign Legion paratroops were air dropped on the night of 10/11 April. Many were killed when they landed in the middle of the fighting. Monsoon rains began to fall on 22 April, reducing the prospects for resupply or
 evacuation. At times the airstrip was covered by a foot of water. Several of the French
strongpoints were flooded and Giap realized that his opportunity for success was limited by the
impact of the rains on his supply lines.

The Viet Minh renewed their attacks on 1 May, beginning phase three of the campaign. Assaults
were focused on Huguette and Claudine; then on 6 May, Eliane was captured. Outnumbered more
than two to one, the French fought in close-combat through the afternoon of 7 May. At that time,
newly promoted General de Castries surrendered the command post. Fortress Isabelle on the
south attempted to break out but they also joined the surrender before midnight. The garrison had
suffered about 4,000 dead and the remainder were led into captivity. General Giap had won an
important victory but with the loss of over 8,000 dead and 15,000 wounded.

4.1.4 The Political Maneuvers.

When French General Paul Ely flew to Washington on 20 March to give American leaders a
firsthand report on the Indochina situation, he was deeply concerned about the possibility of
Chinese intervention. He also estimated that the chance of saving Dien Bien Phu was no better
than “50-50.” The initial discussion focused on the French government and population attitudes
towards the war in Vietnam and the leadership of the pro-French government and forces in
Vietnam. General Ely proceeded to summarize the political and military situation including actions
to date at Dien Bien Phu. Then he provided a detailed list of the most urgent needs starting with 40
more B-26 aircraft and 800 Type G-12 parachutes. He emphasized the need for offensive air
forces. However, he was impressed to find that some members of the Joint Chiefs of Staff were
already interested in intervention and had done initial planning.

A private, undocumented, meeting was held between President Eisenhower, General Ely, Admiral
Radford, and selected senior members of Congress later in the day. In a follow-up meeting
between General Ely, Admiral Radford, and the French Chargé d’Affaires (General Valluy) on 23
March, the French openly requested U.S. participation in the Indochina war, particularly if
Chinese Communist jet fighters entered the conflict. They made it clear that France could not
stay in the war much longer and that loss of Dien Bien Phu would have serious political
consequences throughout France.
The French government concluded that an air strike offered the only hope to saving Dien Bien Phu so they formally requested help from the U.S. on 5 April. The JCS had prepared both conventional and nuclear air strike plans for President Eisenhower by 15 April as described in Section 4.2. Eisenhower briefly considered the idea of a, "single strike flown by U.S. pilots in unmarked aircraft," but he was unwilling to intervene unless he could extract major concessions from France. Specifically, he wanted France to make a firm commitment to keep its troops engaged, accelerate moves to give Vietnam its independence, and permit the U.S. a role in formulating strategy.

Before the final battles, on 16 April, Vice President Richard Nixon told the American Society of Newspaper Editors, "as a leader of the free world, the U.S. cannot afford further retreat in Asia." Admiral Radford stated that the loss of Indochina would prelude the loss of all Southeast Asia. These hard-line statements caused many Congressmen to fear an enlarging war with the U.S. carrying the majority of the burden in troops and funding. Taking a position of "no more Koreas," Congressional leaders demanded that the U.S. receive allied support before they would even approve air strikes; therefore, Secretary of State Dulles hurried to England to confer with Prime Minister Winston Churchill and Foreign Minister Anthony Eden. Eden voiced three objections: 1) British military advisors did not believe air strikes alone could be effective, 2) intervention would destroy the upcoming Geneva Conference focused on unity for Southeast Asia, and 3) Sino-Soviet agreements might lead to general war. Churchill refused to commit forces because, "if Britain refused to fight to stay in India, he saw no reason why it should help the French stay in Vietnam."

The debate continued through 23 April when the Geneva peace conference started. At the conference, the French foreign minister showed Secretary Dulles a telegram from General Navarre in Indochina. It said the only way to save Dien Bien Phu was by immediate massive American air strikes against the Viet Minh surrounding the base. By this time, two U.S. carrier battle groups had moved into position in the Gulf of Tonkin. However, Dulles replied that the American government no longer felt it was possible to save Dien Bien Phu by bombing attacks. He emphasized that President Eisenhower could not order such an attack without approval of Congress.
4.1.5 The Reinforcement Plan.

When President Eisenhower decided against the air strikes and nuclear options on 15 April, Admiral Radford and the JCS assumed that the U.S. would ultimately have to help the French in its fight against Communism. It is also possible that they felt the French were being let down following initial U.S. military encouragement. Therefore, a high-priority plan was prepared to send U.S. Army forces into the Red River Delta area of North Vietnam to stabilize and reinforce the French forces.\textsuperscript{36}

This plan involved a landing at Haiphong or near Hanoi. However, it would take weeks to prepare the force and move it into position. Admiral Robert B. Carney, Chief of Naval Operations, was unwilling to risk a landing fleet in the Haiphong area because of the imminent collapse of the French plus communist Chinese forces on Hainan Dao Island across the narrow Gulf of Tonkin. The Navy insisted on the capture of Hainan before the landing at Haiphong and this would clearly risk war with China. General James M. Gavin and the Army Staff also resisted the plan because they anticipated a long and bloody war with Vietnam and China.\textsuperscript{36}

In early May, Army Chief of Staff General B. Ridgway wrote President Eisenhower informing him of the hazards of the reinforcement. Again, the president decided not to commit U.S. forces in Southeast Asia. When the defenders of Dien Bien Phu surrendered on 8 May, the French governments in Saigon and Paris fell. The French army in Indochina remained a cohesive force of over 450,000 troops under the command of General Ely but the government sought a peaceful, less costly solution to the conflict. Anthony Eden of Britain assisted with negotiations and ultimately, proposed that the country be divided into North and South Vietnam (with a Demilitarized Zone – DMZ) similar to Korea and Germany. This settlement was accepted when the conference ended on 21 July 1954.\textsuperscript{15}

4.2 ATTACK PLANNING AND PREPARATION.

Only portions of the attack planning have been released for public review; however, the weapon inventories and movements of forces permit a reasonable assessment of the operation.
4.2.1 Conventional Air and Nuclear Attack Plans.

The plans to perform air strikes were based on a scheme originally devised by French and American officers in Saigon during June 1953. Detailed planning by the JCS started in early March. Two specific plans, one conventional and the other nuclear, were formulated by a "Joint Advanced Study Committee" according to U.S. Navy Captain George W. Anderson (Assistant to the Chairman of the JCS). The study group was a forerunner of the Joint Strategic Target Planning Staff (JSTPS) and its plans were code named Operation Vulture.

Conventional Air Strikes.

Two hundred aircraft would be used from carriers in the Gulf of Tonkin and B-29 bombers from Clark AFB in the Philippine Islands. The flight routes were reported as shown in Figure 4-5. Because the weapon system options available at the time were relatively few, it is possible to

![Map of Indochina showing air strike routes](image)

Figure 4-5. U.S. aircraft strike routes.
reconstruct the plans with some fidelity. For example, the Navy did not have operational air refueling tankers until the late 1950s.\textsuperscript{19} The Air Force had demonstrated airborne refueling with converted B-29 bombers using hose receivers in 1949 but the planned conversion of 92 KB-29 tankers was not complete.\textsuperscript{19} Hence, attack planning in early 1954 was based on the flight performance of the selected aircraft.

Consider the B-29 performance of Figure 4-6. For a combat radius of 1,500 miles (Clark AFB to Dien Bien Phu and return), the B-29s could deliver 10,000 lb of high explosive bombs (e.g., 250 lb or 500 lb) or one nuclear weapon of the Mark III or IV types. Roughly a quarter of the 216 B-29s in existence at the beginning of 1954, were deployed in the Pacific Theater; consequently, an attack size of about 50 aircraft was likely.\textsuperscript{20} The target in mid-April was probably an arc-shaped area immediately north of strongholds Gabrielle, Beatrice, and Anne-Marie. This explains why Eisenhower’s military advisors raised serious questions about whether the strikes could relieve the siege without destroying the fortress and causing high French casualties.\textsuperscript{18}

The Navy force included two front-line Essex-class carrier battle groups to provide roughly 150 tactical aircraft.\textsuperscript{26} The attack force probably included at least two squadrons of F-9F Panther jet fighters, operating near the limit of their flight radius to provide cover in the event of Chinese interceptors. Major General Claire L. Chennault reported in early April that China had moved MiG-15 and MiG-17 fighters to three new airfields near the Indochina border, one at Lungchow, within range of Hanoi.\textsuperscript{33}

The strike aircraft were probably A-1 Skyraiders (propeller driven bombers) of the type shown in Figure 4-7. Operating from the Gulf of Tonkin, their mission radius would be almost 350 miles and they could deliver 5,000 lb of conventional weapons. This force would carry mixed payloads of rockets, high explosive bombs (e.g., 250 and 500 lb) and napalm. They would concentrate on supply targets in the hills surrounding the fortress and captured strongpoints. Additional Navy strikes, including night raids, were planned if the initial attack was insufficient.\textsuperscript{17}

**Nuclear Air Strikes.**

The planning group proposed the use of three tactical nuclear bombs, “properly employed,” as an alternative attack.\textsuperscript{17,38} It concluded that, “three A-weapons would be sufficient to smash the Viet Minh effort there.” However, Admiral Radford wondered if the French would approve of using
Characteristics
- Length: 99 ft
- Wing Span: 141 ft, 3 in
- Weights:
  - Gross: 120,000 lb
  - Payloads:
    - Max. takeoff: 20,000 lb
      10,000 lb to 3,000 miles
    - Max. Range: 6,000 miles (no payload)
- Crew: 12
- Two Bomb Bays:
  - All standard conventional bombs and incendiaries
  - Nuclear options: Mk III, Mk IV, Mk 5, and Mk 6
- Max. Speed: 360 mph
- Armament: 13 x 50 cal. guns

1954 Force
- Total aircraft: 216
- Forward USAF/SAC deployment
  - Europe: ~100
  - North Africa: ~50
  - Philippines: ~50

References: 19, 21, and 22

Figure 4-6. B-29 bomber capabilities (1954).
Characteristics
- Length: 38 ft, 2 in
- Wing Span: 50 ft
- Weights:
  - Max. takeoff: 25,000 lb
  - Empty: 18,860 lb
  - Max. payload: 8,000 lb
- Max. Range: 3,000 miles (no payload)
- Crew: 1
- Max. Speed: 321 mph
- Payload Options:
  - All standard bombs, rockets, mines, depth charges, and torpedoes
  - Nuclear options: Mk 5, Mk 7, and Mk 8

<table>
<thead>
<tr>
<th>Design Models</th>
<th>No. Built</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD-1 Conventional Strike</td>
<td>242</td>
</tr>
<tr>
<td>AD-2 Conventional Strike &amp; ECM</td>
<td>212</td>
</tr>
<tr>
<td>AD-3 Night Attack (2 seat)</td>
<td>71</td>
</tr>
<tr>
<td>AD-4A Radar Search/Strike</td>
<td>347</td>
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<tr>
<td>AD-4B Tactical Nuclear</td>
<td>190</td>
</tr>
<tr>
<td>AD-5 Foreign Air Forces</td>
<td>270</td>
</tr>
</tbody>
</table>

References: 19, 24, and 25

Figure 4-7. Douglas A-1 Skyraider aircraft models in 1954.
atomic weapons in Indochina and if the U.S. leadership would participate in joint nuclear operations with the French, separate from the arrangements covered by NATO. These issues were directed to the State Department for consideration. Secretary Dulles felt that the French would not accept the responsibility for using A-bombs and U.S. allies in NATO (notably Great Britain) would cause "a great hue and cry."  

Admiral Radford, who had been Chief of the U.S. Pacific Fleet from 1949 to 1953 and was a recognized expert on naval aviation and carrier warfare, specifically referred to tactical nuclear weapons when he presented the plans to the President and State Department. It probably reflected a Navy operation based on use of the Mark 5 bomb which entered operational service in May 1952. By 1953, 140 Mark 5 bombs had been produced. With a yield of 40–50 kt and weight of 3,200 lb, a single Mark 5 could be delivered by an A-1 (AD-4B) to the target area as shown in Figure 4-7. Three weapons of this type delivered near Gabrielle, Anne-Marie and Beatrice would result in about 150 kt on the combined targets.

An alternative delivery option was described by General James M. Gavin (Army Chief of Plans) to employ two B-29 bombers from the Philippines with Mark 6 (B-6) bombs. The Mark 6 bomb, with a yield of 70 kt, entered production in July 1951 for use by the Strategic Air Command. One report indicated that B-29s in the Philippines were loaded up with these bombs and ready to fly, subject to authorization by President Eisenhower. This delivery option is illustrated in Figure 4-6. Two Mark 6 bombs dropped between the three strongpoints would result in 140 kt on the combined targets (i.e., nearly the same weapon effects coverage).

A third nuclear option was investigated by the JCS before 6 April. It postulated that a single "new weapon" (probably 150–200 kt) dropped on the reserve Viet Minh troop concentrations might cause sufficient casualties and overwhelming psychological effects to be decisive. In this case,

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* The Atomic Energy Commission (AEC) grudgingly transferred its hold on weapons to the military. In June 1950, President Truman permitted transfer of nonnuclear assemblies for 90 Mark 4 bombs to the services for deployment at overseas locations. In the spring of 1951, he directed the AEC to send a small quantity of nuclear components to Guam. Under intense pressure from the JCS and Secretary of Defense, the President agreed to permit some all-up weapons to be maintained outside the U.S. in September 1952. These moves were aimed at permitting training and prompt reaction if needed for the Korea war. By 1954, primary Navy aircraft carriers were permitted to carry nuclear weapons during overseas deployments.
the idea was to give the “new weapon” to France for delivery by its airmen.* The planners argued that use of a single weapon in Vietnam would deter Chinese retaliation; whereas, failure to use the weapon might encourage Chinese intervention. The uncertainty in Chinese responses plus expected adverse political reactions from other Asian countries remained the subjects of debate through the end of April.

The members of the Joint Chiefs of Staff held mixed feelings about the nuclear attack plans. General Nathan Twining of the Air Force strongly endorsed the attack but he insisted on conditions that the French were unlikely to accept.18 Army Chief of Staff General Matthew Ridgway was outspoken in his resistance to the plans. He had recently suffered through the ground campaigns of Korea, had little faith in air power, and was convinced that ground actions would be required. He did not want U.S. forces tied down in Southeast Asia.17 The notion of an atomic attack alarmed senior State Department personnel. They claimed that the story would certainly leak and cause negative reactions throughout the “free world.”

4.2.2 Attack Preparation.

Admiral Radford strongly advocated execution of Operation Vulture. He was sufficiently confident of administration backing, that he gave General Ely assurance that a request from France would receive, “a prompt and affirmative reply.”27 The 7th Fleet aircraft carriers, U.S.S. Essex and Boxer (as shown in Figure 4-8), had been on training operations with their support ships in the South China Sea between the Philippines and Indochina since early March. The first week of April, they were moved into the Gulf of Tonkin near the Red River delta.26 The carriers may have had nuclear weapons on-board under the new operational doctrine but it is more likely that the weapons would be flown to the carriers from Guam (2,400 miles) after presidential approval for the mission.

At that time, the U.S. was giving all aid permitted short of active warfighting in support of the desperate French military. For example, 200–300 U.S. ground-crew personnel were sent to Haiphong airfield to service American-supplied aircraft. About 25 American civilian pilots, employed by Major General Claire Chennault’s Civil Air Transport (C.A.T.), operated 50 C-47

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* The French Foreign Minister, George Bidault, disclosed several months later that he had turned down an offer for atomic weapons by Secretary of State Dulles during talks in April.17 Secretary Dulles described Bidault as, “close to the breaking point at the time.”
Characteristics
- Displacement: 30,800 tons
- Full Loaded: 39,800 tons
- Length: 820 ft
- Beam: 93 ft
- Flight Deck (straight design):
  - Length: 899 ft
  - Width: 147.5 ft
- Armaments:
  - 12 5-inch guns
  - 68 40-mm guns
  - 52 20-mm guns
- Aircraft Complement:
  - 80 to 108 total
  - Typical deployment:
    - 73 fighters
    - 15 to 36 bombers
    - 15 torpedo bombers
- Crew: 3,448
- Range: 18,000 miles @ 12 Kts
- Max. Speed: 33 Kts

References: 19, 24, and 25

Figure 4-8. U.S.S. Essex (CVA-9) and Boxer (CVS-21) class carriers.

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Commissioned</th>
<th>Retired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essex (CVA-9)*</td>
<td>12/1942</td>
<td>6/1969</td>
</tr>
<tr>
<td>Boxer (CVS-21)**</td>
<td>4/1945</td>
<td>12/1969</td>
</tr>
</tbody>
</table>

* Modified to angled deck in 1960.
** Modified to helicopter assault (CVH) in January 1959.
and C-119 transports. They airlifted two reserve battalions of French Paratroops to drop on Dien Bien Phu on 11/12 April. The U.S. supplied B-26s, Bearcats and Hellcats flew strike missions from Hanoi airfield. Major General John W. O'Daniel of the American Military Assistance Group in Indochina flew from Saigon to Hanoi on 15 April to meet with Lieutenant General E. E. Partridge, new Commander in Chief of the U.S. Far East Air Force. General Partridge reassured him of a positive outcome for the Dien Bien Phu battle.

On 15 April, Admiral Radford and the JCS made their final presentation to President Eisenhower to obtain approval for Operation Vulture. Because of rapid deterioration of the French position, Eisenhower’s military experience made him doubt that an air strike would be able to save the situation. Admiral Radford argued that the strike would defer the garrison’s fall until after the conclusion of the Geneva Conference. This was not sufficient reason to support U.S. intervention; therefore, the mission was not approved. But Radford had not changed his views and that afternoon, he made a talk for the American Society of Newspaper Editors in which he stated, “the free nations cannot afford to permit a further extension of militant communism in Asia.”

According to the United Press, “the aircraft carriers Boxer and Wasp (probably mistaken for Essex of the same design class) which had been maneuvering off Indochina headed back to Subic Bay Naval Base near Manila harbor on the afternoon of 16 April.” The report also indicated that French aircraft made their biggest raid of the war, hitting troop concentrations and supply bases. The strikes were centered on the northwestern, northeastern, and eastern sections of the area around the fortress. This was the area targeted in U.S. attack plans.

The battle for Dien Bien Phu lasted three more weeks; however, the political support from Great Britain, demanded by Congress and Eisenhower, was not forthcoming. During this period, the crippled French Air Force made numerous small raids to support the garrison; losing 50-70 aircraft to murderous anti-aircraft fire. Early on 7 May, two American C.A.T. pilots were killed when their transport was shot down flying final supply missions into Dien Bien Phu. Later that afternoon, the fortress surrendered and the following day, French and Viet Minh diplomats met in Geneva to agree on accords that would end the war.
4.3 LESSONS LEARNED FROM DIEN BIEN PHU.

The crisis caused by the Dien Bien Phu battle must be evaluated from both a French and U.S. perspective. As a turning point in French military history, it caused the fall of both the Paris and Saigon governments. The U.S. avoided military involvement in Vietnam until 1962; however, Dien Bien Phu provided an opportunity to refine its nuclear policy and planning processes.

4.3.1 The French Perspective.

The French government made a major political error in the late 1940s by not recognizing the nationalistic feelings in its Indochina colonies. An enlightened policy with realistic plans for providing independence during the negotiations with the Viet Minh in 1946 might have defused the situation leading to a long and costly war. The British faced similar problems after World War II in India, Pakistan, South Africa, Ceylon, and Burma. In many cases, they resolved the problems through political negotiations and democratic changes without recourse to war. Once the French committed to military suppression of the Viet Minh, Ho Chi Minh's movement was forced to seek military support and doctrine from China and Russia. Thus, communists had an opportunity for expansion in Indochina.

From a military standpoint, the Navarre plan for securing Vietnam was defensive. The De Lattre Line (see Figure 4-1) to protect the major cities and remote fortresses were throwbacks to siege warfare (i.e., sort of a Masinot Line according to De Lattre). The base at Dien Bien Phu was established like something of a “chip on the shoulder,” openly inviting a Viet Minh attack.31

With the exception of the courageous and stubborn defense of the fortress by Brigadier General Christian de Castries and his troops, the campaign was a tactical disaster.

- The base was built at an undefendable site surrounded by hills.
- It was too far from supply depots to the battlefield.
- There was no overland corridor for logistics support and too few transport aircraft to meet the needs of battle.
- There was too little artillery and close-air support.
- Intelligence concerning the Viet Minh build-up and deployments for the 100 days before the battle and during the 55 day campaign were inadequate.
Because the base was defended by the best French troops in Indochina, its loss was a major blow to French prestige and to that of the U.S. in its support role.

At the time of Dien Bien Phu, the French military had no nuclear capability. The French Commissariat a l’Energie Atomique (CEA) was established on 18 October 1945 by decree of General Charles de Gaulle as President.\textsuperscript{32} It was charged with developing atomic energy in addition to providing for national defense. For six years, its funding was focused on energy related research; however, in 1951, a five-year plan was prepared to develop nuclear weapons. The loss of Dien Bien Phu and the inability to depend on U.S. or other allies for nuclear support, caused Prime Minister Pierre Mendes-France to accelerate the program on 26 December 1954. On 20 May 1955, he transferred funds from the Armed Forces Ministry to the CEA to work on a bomb. The need for atomic weapons was further fueled by the Suez crisis of 1956. These events contributed to France’s decision to develop an independent nuclear capability. However, due to funding and development problems, its first nuclear test was not conducted until 13 February 1960 in the Algerian desert.

4.3.2 The U.S. Perspective.

Recently, Robert S. McNamara noted that the reunification of North and South Vietnam was primarily a nationalistic movement, not an unbounded expansion of Communism.\textsuperscript{7} The U.S. political leadership tied its logic to communist expansion, including the domino theory which predicted that all of Southeast Asia would fall unless it was stopped. Several political and military leaders including Secretary of State Dulles, Vice President Nixon, and Admiral Radford endorsed this theory. There was little hard data or analysis from the National Security Agency (formed in 1952 to study foreign intelligence information) or the Central Intelligence Agency to counter this hypothesis. Fortunately, President Eisenhower and Congress took a more cautious approach to U.S. intervention in the French conflict.

Admiral Radford was probably overly zealous in advocating the nuclear strike plan. As Chairman of the JCS, he spoke for himself on 20 March in arguing that, “carrier air strikes (presumably using atomic bombs) were necessary to retrieve the situation at Dien Bien Phu.”\textsuperscript{11} His strong advocacy caused negative responses by Congressional leaders and the National Security Council. Perhaps his determination was reinforced by the new operational control of nuclear weapons by the military. There was an opportunity to demonstrate the planning and effectiveness of these
weapons in a power projection role. Use of a few tactical nuclear weapons might establish them as credible warfighting elements of the U.S. arsenal.
SECTION 5.0
SUEZ: NUCLEAR THREAT AFTER A LIGHTNING WAR
W. C. Yengst

In late October to early November 1956, Israel, Great Britain, and France invaded Egypt in coordinated strikes aimed at control of the Suez Canal. The six-day lightning war relied upon surprise and conventional forces to achieve a decisive victory. However, the United States, which outlined the cease-fire conditions, found its mid-East policies in direct opposition to Israel and its North Atlantic Treaty Organization (NATO) allies. Meanwhile, the Soviet Union with its Middle East aspirations in jeopardy following the humiliating defeat of its Egyptian client, threatened nuclear alerts and attacks by mid-November. This caused the U.S. to reverse its position to strengthen NATO and deter Soviet actions.

The complex Suez scenario requires explanation before it is possible to understand the nuclear issues. Therefore, it is useful to review the background, conventional warfighting, and cease-fire conditions.

5.1 GENERAL DESCRIPTION OF THE CONFLICT.

The Suez conflict occurred in the middle of the period (24 October to 14 November) during which the Hungarian uprising against its Communist government was most violent. Therefore, most European theater nations and the U.S. were already preoccupied with the Soviet intervention and resolute destruction of the Hungarian threat to the Communist Party.

5.1.1 Key Countries Involved in the Suez Crisis.

The following countries were central to the development and resolution of the Suez Canal crisis.

Egypt.

Colonel Gamal Abdel Nasser, who had replaced the corrupt and complacent King Farouk as dictator of Egypt in 1952, attempted to lift his country socially and militarily to leadership in the Arab world.
• He negotiated with Great Britain for the withdrawal of British troops from the Suez Canal Zone in October 1954. They had been stationed there for 80 years.¹

• He blocked the navigation of Israeli ships in the international waterways of the Red Sea and Gulf of Suez. With Soviet military aid and strong anti-Israeli political sentiment, Nasser impounded Israeli ships, cargoes, and crews.¹

• On 27 September 1955, he established a massive arms transaction with the Soviet bloc (Czechoslovakia acting as the agent) to obtain modern weapons and training for the Egyptian military. Egypt received 530 armored vehicles (i.e., 230 tanks, 200 armored troop carriers, and 100 self-propelled guns), 500 artillery pieces, 200 fighters and bombers, transport aircraft, destroyers, motor torpedo boats, and submarines.¹, ²

• He negotiated with the U.S. and Britain for a loan from the International Bank of Reconstruction to finance construction of the Aswan Dam. However, he carried on covert negotiations with the Soviet government to construct the dam in counter to the U.S. and British proposal.¹ This negotiation caused the U.S. Secretary of state John Foster Dulles to withdraw the American offer in early July 1956. Nasser was infuriated by the U.S. withdrawal of funds and he responded by giving the construction contract to the Soviet Union and nationalizing the Suez Canal on 27 July.

The Suez Canal was critical to the shipment of oil from the Persian Gulf states to European and U.S. markets. Three-fourths of Europe’s oil came from the area and half was carried through the canal. In addition, four pipelines, shown in Figure 5-1, carried over 500,000 barrels of oil per day overland to bypass the canal. During the early days of the crisis, Egyptian inspired saboteurs blew up three of the pipelines. With closure of the canal on 29 October, Europe was dependent on 1.2 million barrels of oil per day shipped from the Persian gulf around the Cape of Good Hope.² This meant a shortage of tankers, high transportation costs, and increased gasoline prices in Europe.

Great Britain.

The British Government held a majority share of the Suez Canal Company and they saw a strategic threat to their oil supply and mid-East prestige when the canal was nationalized. In June 1956, Britain had pulled the last of its troops out of a huge Suez base, under pressure from the U.S. to abide by its earlier agreement. Construction of the Aswan Dam had originally been intended for a private British-French company and that was lost due to U.S. refusal to grant the loan.³ Furthermore, U.S. diplomats belittled the idea of imposing economic sanctions on Egypt to return the canal or to pay an estimated $500 million a year to ship the oil around Africa.³ The U.S. recommended that canal users pay Egypt 90 percent of the tolls they collected for using the canal instead of the 40 percent paid before the nationalization.
In 1956, France was involved in a bloody revolt in Algeria that the Cairo Radio (Voice of the Arabs) strongly encouraged. In late October, the French captured a yacht loaded with arms for the Algerian rebels. The arms were put on board at Alexandria by the Egyptian Army. Thus, the French government felt that if it could control Egypt, it could end the Algerian uprising by destroying its motivating source. France was also dependent on Persian Gulf oil and suffered the same economic impacts as Britain when the canal closed. Therefore, after the canal was nationalized, France approached Britain to determine a course of action as described in Section 5.1.2.
Israel.

In addition to the curtailment of its shipping rights mentioned above, Israel viewed Egypt’s rearmament with alarm. Therefore, during late summer of 1956, it negotiated with France for a substantial upgrading of its military equipment. The resulting agreement included about 30 Meteor F8 and Mystere IVA fighter jets to supplement Israel’s old piston-engine P-51 Mustangs. On the surface, this reequipment appeared to be an economic move in competition with the U.S. and others. However, on 23 September, France secretly shipped Israel 30 more Mystere jets. Israel’s Premier David Ben-Gurion joyfully announced that they had at last found “a true ally.”

For eight years, people living in areas along the Sinai border had suffered from “fedayeen” (Arab extremist) attacks. But in 1956, the Arabs stepped up their raids and penetrated into Tel Aviv. Destruction of the fedayeen bases, protected by Egypt, became a top priority for the Israeli government. On the eastern border, Jordan received military aid including small arms and five jet fighters from Iraq and Egypt in early October. This caused Britain to encourage Iraqi troops to enter Jordan to prevent an Egyptian influenced government from taking over, but on 12 October, Israel protested, saying that the move would mean war. Britain backed off and Jordan shifted its support to Egypt.

United States.

During the summer of 1956, Americans were involved in a presidential election. President Eisenhower was running for reelection on a platform of peace, stability, and economy. The U.S. was opposed to the use of force or even stringent economic measures against Nasser. John Foster Dulles suggested a Suez Canal User’s Association which was unacceptable to Britain, France, and many other nations. The U.S. reduced its financial and force commitments to NATO, arguing that its nuclear weapon umbrella would deter Soviet or Warsaw Pact aggression. When the Hungarian uprising began, President Eisenhower expressed great regrets but viewed intervention as, “an invitation to World War III.” He saw no alternatives but noted that, “had Hungary been accessible by sea or through the territory of allies who might have agreed to react positively...but Hungary was not accessible.” Sending U.S. troops into Hungary would have involved America in a general war.
Soviet Union.

The Soviet Union supplied most of the arms for the Egyptian military buildup during the year before the crisis but in mid-October 1956, it was preoccupied with the disintegration of Hungary. By 1 November, Russia had committed over 75,000 of its troops and armored forces into Hungary. As the Suez crisis developed, Soviet Prime Minister Nikolai Bulganin notified Nasser that Russia could give him diplomatic help but no military aid for a few weeks.

Consequently, each of the six primary countries involved in the Suez conflict had diplomatic or military positions that motivated or constrained its subsequent moves.

5.1.2 The Conspiracy.

Although Israel, Britain and France each strongly denied any conspiracy, evidence of premeditation was apparent two months before the conflict began. France moved first, a few days after Nasser seized the Suez Canal Company. Premier Guy Mollet sent his Minister of Defense to London to present a joint military plan for reoccupying the canal. A joint Anglo-French organization was set up named Hamilcar (after Hannibal’s father) to coordinate planning. While diplomatic agreements were being made in London, British and French forces were gathered on the island of Cyprus.

- Both countries committed about 45,000 troops (90,000 total).
- Britain provided 300 and France 200 aircraft.
- Britain earmarked 100 of the 130 ships needed for an amphibious operation. The force included seven aircraft carriers (five British and two French).
- Civilian air transports were requisitioned.
- Attack plans were prepared and targets identified.
- Occupation currency was printed for use in the Canal Zone.

The planning was confused for a few weeks, while two approaches were debated: 1) an attack launched against the canal itself, or 2) an attack against Alexandria with an advance into Cairo. The accepted plan called for parachute landings on both sides of the canal and an amphibious landing to capture Port Said. The intent was to secure the entire length of the canal. The French
estimated it would take about four days but the British felt a week to ten days were needed to accomplish all objectives.  

While the British and French plans were being formulated, the Israeli government separately planned to drive Egypt from the Sinai Peninsula. On 16 October, Prime Minister Anthony Eden and Foreign Secretary Selwyn Lloyd of Britain flew to Paris to meet with Guy Mollet and Foreign Minister Christian Pineau. They agreed to reoccupy the Suez Canal on the pretext of protecting it from Israel’s attack; hence, they knew the Israeli plans shortly after 12 October.

On 20 October, the British shifted gears on the plan and suggested collaboration with the Israeli invasion. The French Prime Minister expressed concern that heavy Egyptian bombing of Israeli forces in the Sinai could destroy their operation. Therefore, on 21 October, Mollet and several French diplomats flew to Israel to reassure them that if they invaded Sinai, French planes would provide the necessary air cover. The British and French invasion plans, known as Operation Musketeer, was amended to include bombardment of Egyptian airfields in support of Israeli operations.

Nasser’s intelligence gained knowledge of the Anglo-French buildup on Cyprus so he withdrew nearly half his forces from the Sinai to protect the canal. Thus, by 26 October, fewer than 30,000 troops were left to protect the three main routes into the peninsula. Israel noted that the time to act had arrived. With maximum secrecy, its active army of 11,000 troops was augmented by mobilization of 40,000 conscripts. In less than 12 hours, 12 Army brigades and the entire Air Force were ready for action. The Israeli plan, code named Operation Kadesh was implemented with covert deployments along the Sinai border.

Britain and France felt the U.S. had let them down on Suez because of the impending election. American policy was wedded to peace at any price; therefore, the U.S. was excluded from any knowledge of Operation Musketeer. Allen Dulles, Director of the Central Intelligence Agency, summarized developments for President Eisenhower in late-October but information was limited. The CIA’s newest surveillance aircraft (U-2s with long-range photography) detected the Israeli mobilization and had spotted the 60 late-model Mystere jets. The U.S. Ambassador in London did not get official word of the Anglo-French intentions until Anthony Eden told Parliament of the agreed ultimatum they planned to issue on 29 October.
The ultimatum released by Britain and France to Egypt ordered it to keep military forces 10 miles from the Suez Canal because they intended to occupy the zone and would use force if resisted. The same message was sent to Israel as a constraint on its operations.\textsuperscript{5} At midnight on 30 October, Foreign Minister Golda Meir transmitted Israel’s reply to London and Paris, accepting the Anglo-French conditions. Nasser’s reaction was to summon his cabinet, announce his rejection, and dramatically issue potassium cyanide capsules to every member of the cabinet.\textsuperscript{9}

President Eisenhower was incensed over the British and French unilateral move. The U.S. had been ignored in the planning process. Only a year earlier, Anthony Eden had traveled to Washington to ask for greater U.S. support of the Tripartite Agreement of 1950. The agreement called for the U.S., Britain, and France to act in concert “within and outside the United Nations” against any aggression in the Middle East. Furthermore, Britain and France had committed forces normally reserved to support NATO while asking the U.S. to provide more resources and troops to defend NATO.\textsuperscript{6}

5.1.3 The Lightning War.

The lightning war was dominated for five days by the Israeli invasion of the Sinai Peninsula. Only on the fifth and sixth days of the war did the Anglo-French invasion of the canal take place.

Israel’s Operation Kadesh.

On Friday night, 26 October, Colonel Ariel Sharon moved an airborne battalion north, away from Sinai, toward the Jordanian border. This was a feint which worked for four days. The Egyptian high command was convinced that the attack was aimed at Jordan.\textsuperscript{8}

Egypt had built and maintained two roads and a railroad line running west to east across the Sinai to serve as its logistics routes for troops along the border. These were the routes the Israeli invasion planned to follow. By Sunday 28 October, Israel had formed a striking force in the Negev Desert and an armored brigade at Eilat, as shown in Figure 5-2. In late afternoon (1600 hours) on 29 October, Sharon’s brigade crossed the frontier into the Sinai at Suweilma and one hour later, his parachute battalion dropped 15 miles east of the Mitla Pass. These moves were made to capture the Gaza Strip (eliminate the main fedayeen bases) and capture the pass leading to Ras Sudr on the Gulf of Suez. On 31 October, the Israeli 9th Parachute Brigade was dropped at
Figure 5-2. Israel's Operation Kadesh.
al-Tur on the Gulf of Suez and moved south toward Sharm es-Sheikh. Meanwhile, the armored brigade from Eilat moved south along the Gulf of Aqaba to converge at Sharm es-Sheikh.\textsuperscript{8,9}

Sharm es-Sheikh had been reinforced by Egyptian troops from Ras Nasrani and resisted for three days. It was a primary objective of the invasion since it commanded the narrow channel between the Sinai coast and Tiran Island. Although there had been serious fighting at Mida on 30 October and Sharm es-Sheikh, the southern half of the peninsula was captured by 4 November. It cost the Israeli military 180 dead, 4 captured, 20 aircraft lost, and 2,000 worn out vehicles.\textsuperscript{9} The Egyptians had suffered 2,000 dead, 6,000 prisoners, and lost 100 tanks, 200 artillery pieces, 1,000 vehicles, 7,000 tons of ammunition, and half a million gallons of fuel.\textsuperscript{9}

On the northern front, Abu-Agheila and al-Arish were secured by ground forces within two days. The Israeli forces exploited the Kantara road to move west through Bir Gifgafa toward the Suez Canal. As they approached the canal, late on 30 October, Colonel Sharon was notified of the Anglo-French ultimatum, requiring that they stop 10 miles from the canal.\textsuperscript{8,11} The Israeli forces stopped within sight of their objective and dug defensive positions.

During this blitzkrieg operation, 500 Russian advisors serving with the Egyptian Army broke ranks and rushed to the Sudanese border. They were turned back at the frontier on the grounds that their papers were not in order.\textsuperscript{13}

\textbf{The Air Campaign.}

The Israeli Air Force provided cover during ground operations in the eastern Sinai but their command became very nervous when no British or French air cover was provided on the west. Fortunately, the Egyptian Air Force did not become active until Tuesday morning (30 October). Nasser may have withheld his aircraft, expecting a British and French invasion.\textsuperscript{8} At 5:30pm on 31 October, a day and a half behind schedule, French jets finally launched bombardment strikes on Egyptian airfields.\textsuperscript{9} The several Egyptian aircraft that got into battle were no match for Israeli pilots. Four MiG-15s and three Vampire jets were shot down compared with two P-51 Mustangs lost by Israel.\textsuperscript{8}
On the fourth day of the war (1 November), the Commander in Chief of the joint Anglo-French air operations (headquartered in Cyprus) radioed that they were going to bomb targets in the Cairo area. The bombing concentrated on airfields, military barracks, and munitions depots. The warning was given for two reasons: to prevent civilian casualties and to spread despair in the Egyptian military. The raids were carried out by Canberra (B-57) bombers, Venom Mark IVs, and Corsairs. The following day, the bombers returned to finish destroying the Egyptian aircraft (few of which were sheltered), strafe motor convoys, and hit the transmitter of the Cairo radio.6

After the conflict ended, British intelligence reported secret information that Russia planned to send a fleet of jet fighters and bombers into Egypt immediately following Israel’s attack. The damage caused to Egyptian airfields by British and French bombing apparently prevented the Soviet aircraft from landing so the reinforcement was cancelled.32 By 4 November, there was no Egyptian fighter opposition and anti-aircraft fire was generally ineffective. The Anglo-French command took credit for destroying 200 Egyptian aircraft and damaging 70 others including most MiG-15s and a dozen Il-28 medium bombers. However, a week later, Nasser claimed his Air Force had been saved by deception ... “we put dummy planes on our airfields and flew our combat aircraft to Syria and Jordan.”10 This was considered a boast but in fact, several Il-28 medium bombers flew to Damascus to prevent their destruction.14, 21

The Egyptian Blockships.

On the day of Israel’s invasion, a record convoy of 36 ships moved into the canal, trying to transit before any hostilities.14 To insure that Britain and France could not capture the canal in a workable condition, Nasser ordered “blockships” to be sunk at strategic points along the waterway. One was sunk across the channel at the entrance to Lake Timsah. By the end of the fighting, midnight on 6 November, the canal was blocked with 49 scuttled and sunken ships.15 At that point, Nasser refused to allow clearing of the obstructions until Israeli forces withdrew from the Sinai.9 Figure 5-3 shows a Royal Navy salvage ship beside two sunken blockships a few days after the war.4, 12
The Anglo-French Operation Musketeer.

The British and French invasion of Egypt was intended to look like a response, "to protect the canal from capture by Israel." The British 16th Parachute Brigade planned to land by helicopter two miles beyond Port Said where it would capture the Raswa Bridge, shown in Figure 5-4. French troops from the renowned 10th Parachute Division would land east of the canal and capture Port Fouad. Both forces flew in from Malta shortly after dawn on 5 November. The British 3rd Infantry Division and French 7th Light Mechanized Division were scheduled to sail from Malta and make amphibious landings at Port Said about an hour later. These armored forces were to link-up with the airborne units.  

Unfortunately, the operation did not go according to plan. Due to a last minute change, the British paratroops were air-dropped at Gamil airfield (Port Said's airport). The French helicopter landings at Raswa went smoothly and within an hour they had captured their objectives. But the British had great difficulty securing Port Said where the Egyptians armed civilians and set up a street-to-street resistance. Finally, the amphibious force landings were postponed until 6 November because the
Figure 5-4. British and French Operation Musketeer.
invasion fleet was a day late leaving Malta. As a result, the airborne units had to maintain themselves for more than a day without support.

At dawn on 6 November, the amphibious landing occurred following an hour long bombardment. By noon, Port Said was captured and the link-up with the French at the intact Raswa Bridge was accomplished. Royal Navy salvage ships entered the harbor to clear docks and remove blockships sunk at the entrance to the canal. The 6th Royal Tank Regiment with French paratroops moved south along the canal to El Tina by nightfall. At 1900 hours, the British government announced its willingness to accept a cease-fire. The paratroops, knowing that time was limited, hurried on to El Cap (25 miles south of Port Said).

Thus, the fighting ended at midnight on 6 November. In less than a week, Egypt had lost virtually all of its Air Force, one-third of its Army, and the Sinai Peninsula was under Israeli control. The canal would be closed for about four months. Under these conditions, the central focus shifted to diplomatic maneuvers.

5.1.4 The Diplomatic Maneuvers.

Eisenhower was determined to oppose the Israeli invasion and any Anglo-French effort to restore control of the canal by force. Accordingly, on 2 November the U.S. Ambassador to the United Nations, Henry Cabot Lodge, submitted a resolution calling for an immediate cease-fire and withdrawal of all occupying forces. The resolution was approved and two days later, the General Assembly voted to create a U.N. Emergency Force that would replace the Anglo-French invasion by, “separating the combatants along the Suez Canal and elsewhere in Sinai.” When the U.N. Security Council met on the morning of 5 November, they were shocked to learn of the Anglo-French invasion.

Ambassador Lodge spoke with bluntness that he did not believe, “in any circumstances that the Anglo-French ultimatum and invasion was justifiable or...consistent with the purposes and principles of the U.N.” He insisted that all occupying forces be withdrawn. A resolution requiring their withdrawal and assuring Israel the right to use the canal obtained 9 of the 11 Security Council member votes. No votes by Britain and France, two permanent members of the council, caused the subject to be submitted for further consideration. While the U.N. Secretary General Dag Hammarskjold worked to raise the first international U.N. police force, the Soviet
Union made a proposal that the U.S. and Russia jointly send forces to police the canal. This was unthinkable to the U.S. and others who wished to keep the Soviet Union out of the Middle East.

A few hours after the Soviet proposal on 5 November, Egypt invited Moscow and China to send "volunteers" to assist in restoring the Sinai and canal to Egypt. Premier Bulganin threatened that unless Britain, France and Israel withdrew from Egypt, "they would be subjected to attacks by guided missiles and other terrible means of modern warfare." He also stated that he would not prevent Russian volunteers from proceeding to the Middle East. These threats were not merely propaganda:

- British intelligence reported large stocks of Soviet arms in Syria.¹⁶
  - At least 50 Il-28 bombers and 100 MiG fighters
  - About 300 medium and heavy tanks
  - 400 to 500 antitank and antiaircraft guns
  - 100 armored personnel carriers
  - 2 destroyers, 4 minesweepers, and 15 motor torpedo boats
- Israeli intelligence confirmed that 24 Russian-manned MiG-17s were seen in Syria and Soviet transports were bringing radars, ground equipment and troops into Damascus.¹⁴
- By 12 November, Moscow estimated that 50,000 citizens had volunteered.¹⁷ The Egyptian Embassy in Moscow claimed several thousand pilots, artillery men, tank men, and officers with World War II experience had submitted papers to enter Egypt.¹⁴
- Russia requested permission to move troops across Iran and Turkey to Syria, "to protect Arab independence." About 1,000 Soviet technicians were already in Syria.¹⁰
- The People's Republic of China offered to send 250,000 volunteer troops including medical, engineering, and transport personnel.¹⁸

Because the buildup of equipment was beyond the capacity of the Syrian military, analysts focused on the theory that it was being generated as a reserve so that the Soviet Union only had to fly in its own troops in the event of a general war in the Middle East. Others suggested that Egypt intended to lead the Arab states in a war against Israel in April 1957.¹⁶

The Soviet threat put the U.S. in a serious political position. After condemning the British and French invasion of Egypt, Eisenhower found it necessary to reverse and strongly support the NATO allies. Anthony Eden, for Britain, and Guy Mollet, for France, asked him to warn the Soviet rulers that the U.S. would go to war if the Russians entered the conflict or attacked their homelands. Eisenhower limited himself to saying that, "If the Soviet Union put its forces into

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Egypt, it would be the duty of the United Nations, including the U.S., to oppose any such effort.” Secretary of State Dulles stated that, “Russia appears ready to risk nuclear war by aiding Egypt and Syria with military equipment and armed volunteers.”

As a precaution, the U.S. placed its overseas forces on alert beginning 7 November. Admiral Radford, Chairman of the Joint Chiefs of Staff, indicated that: “we do not want to be caught flat footed, and at the same time we do not want to take any provocative actions which would get us involved.” Elements of the Atlantic Fleet (including the aircraft carrier Forrestal) put to sea from Norfolk, Virginia and Mayport, Florida. Large ships and aircraft of the Pacific Fleet were dispatched to new deployments. The Strategic Air Command stopped all flight operations and assembled its bombers for instant action. Jet bombers (B-47s) stationed in England and North Africa were placed on active alert. Royal Air Force B-29 (Washington) and Valiant bombers were placed on active alert when reports (later proven false) were received of Russian troops massing near the Polish border.

On 15 November, the U.N. police force of about 5,000 men began to move into Egypt in areas occupied by Israeli, British, and French forces. Israel removed its forces in return for assurances that the U.N. would guarantee peace along its border and that it would have free passage through the Suez Canal and Gulf of Aqaba. Soviet Communist Party Chairman, Nikita S. Khrushchev demanded that Britain and France be “severely punished” for their invasion and called for more volunteers and strengthening of Soviet armed forces. However, the Soviet threat diffused during the last weeks of November as British and French troops withdrew from the canal zone. On 22 December, the last Anglo-French troops left Port Said.

5.2 NUCLEAR FORCE RESPONSES.

At the time of the Suez War, none of the countries involved had nuclear missile systems. Premier Bulganin’s threat to use “rocket weapons” or guided missiles against Britain, France, and Israel was overstated since the Soviets were limited to aircraft with nuclear bombs or conventional weapons. The U.S. and British responses were likewise limited to aircraft delivered nuclear bombs. France had no operational nuclear forces in 1956. It is useful to review the options.
5.2.1 Nuclear Force Capabilities.

**British Forces.**

The British nuclear weapons program began in 1952, working in close coordination with U.S. bomb designers. This aided the development efficiency by reducing design times, number of tests required, and reduced costs. The first operational bomb, Blue Danube, was a large implosion design by the Atomic Weapon Research Establishment (AWRE) and the Royal Aircraft Establishment at Farnborough. The first test device was detonated in the Monte Bello Islands (off northern Australia) on 16 May 1956. On 10 November 1956, during the Suez Canal cease-fire negotiation, Britain exploded its first operational bomb over Maralinga, southern Australia. The bomb was delivered by a Vickers Valiant aircraft as shown in Figure 5-5.

The Valiant (first of three V-bomber designs) was operational after February 1955. Most of the 108 aircraft produced were used for dual-role (nuclear and conventional) strikes, as tankers, and for reconnaissance. Some of the Valiants were flown on bombing missions from Cyprus during the Suez fighting. Also, on 22 March 1950, the U.S. leased 87 B-29 bombers (called Washingtons) to Britain. These and the Valiants were the only aircraft capable of carrying the large Blue Danube bombs.

Britain conducted nine airburst nuclear tests by the end of 1956 and produced at least seven operational Blue Danube bombs. Only 20 bombs were built by 1962. Therefore, when Britain put its nuclear bomber force on active alert on 9 November, it included fewer than 10 Valients and B-29s plus an equal number of bombs.

**U.S. Forces.**

In July 1950, President Truman sent nuclear-modified B-29s to England for deployment in support of NATO. Two weeks later, he authorized overseas storage of bomb assemblies at staging bases in Iceland, Newfoundland, Great Britain, Alaska, and Guam. By November 1956, the U.S. had produced an operational inventory of over 2,115 nuclear bombs, including both strategic and tactical types. Roughly 675 of the bombs were older Mark III and Mark IV designs (modifications of the large, 10,000 lb, Fat Man). They could only be delivered by B-29 and B-50 bombers. The
Vickers Valiant B Mark 1

**CHARACTERISTICS**
- Length: 108 ft, 3 in
- Wing Span: 114 ft, 4 in
- Gross Weight: 138,000 lb
- Maximum Payload: 21,000 lb
- Ceiling: 54,000 ft

**SOURCES**
- References 23 and 24

Blue Danube Nuclear Bomb

**CHARACTERISTICS**
- Length: 24 ft
- Diameter: 65.5 in
- Weight: over 10,000 lb
- Yield: 5 to 20 kt

**SOURCE**
- Reference 22

Figure 5-5. Valiant bomber and Blue Danube bomb.
remainder of the inventory included 140 Mark 5, 1,100 Mark 6 and about 200 Mark 7 (all lightweight, 3,200 lb, implosion bomb designs).\textsuperscript{27}

The Mark 6 (or B-6) bomb had a yield of 70 kt and was produced primarily for the Strategic Air Command. It was deployed extensively with B-29 and B-50 forces. But it was also the primary weapon for use on new B-47 medium bombers deployed in England and North Africa. The B-47 Stratojet, shown in Figure 5-6, was the first pure jet bomber; employing a crew of only three men, automated twin 50 caliber rear-aiming machine guns, and a payload of 20,000 lb. About 1,800 were in service in November 1956; half located at bases in the U.S. and the remainder overseas.\textsuperscript{23} It is probable that about 250 were deployed in England and 150 between Kenita AFB, Morocco, and Benghazi AFB, Libya.\textsuperscript{23} Since there were no nuclear weapon storage sites in North Africa, the aircraft at those locations had no nuclear bombs in ready access but weapons could be flown in within a few days.

The Mark 5 tactical nuclear bomb had a yield of 40 kt and weighed 3,200 lb. In mid-1953, the USAF modified the F-84 Thunderjet to deliver the Mark 5. The resulting F-84G design was the first nuclear-capable single-seat fighter-bomber. The 49th Air Division used F-84Gs, shown in Figure 5-7, to develop the Low-Altitude Bombing System (LABS). The 49th was deployed to England in mid-1953. By 1956, the U.S. produced 3,025 F-84Gs, many of which served with the Strategic Air Command until 1956. In August 1953, as part of Operation Longstride, the 508th F.E. Wing flew from Turner AFB to Britain and on to Morocco (refueled by KC-97s). The system was intended to provide fighter escort for medium bombers in addition to tactical strike capabilities.\textsuperscript{28}

The first public showing of tactical nuclear bomb delivery was highlighted during the 56th Fighter Weapons air show at Nellis AFB during 1–5 November 1956. This timely, special demonstration used F-84G aircraft with dummy Mark 5 bombs to show "over-the-shoulder" toss-bombing. The demonstration was probably done to build public confidence while impressing Soviet and other foreign leaders.\textsuperscript{29} Unknown to the U.S. military, the French used F-84F and RF-84s on the same days to bomb and perform reconnaissance over the Suez Canal.\textsuperscript{30} These aircraft had been sold to France to support NATO missions.

The U.S. 6th Fleet in the Mediterranean Sea had two aircraft carriers plus the carriers Forrestal and Franklin D. Roosevelt which joined the Atlantic Fleet. Each carrier contained A-1 (AD-4B)
CHARACTERISTICS

- Length: 106 ft, 8 in
- Wing Span: 116 ft
- Gross Weight: 185,000 lb
- Normal Payload: 10,000 lb
- Maximum Payload: 22,000 lb (two in-line nuclear bombs)
- Armament: Twin 50 caliber machine guns
- Crew: Three (pilot, co-pilot/gunner, navigator/bombardier)

PERFORMANCE

- Speed: ~600 mph
- Ceiling: 40,000 ft
- Rocket Assist Take-off (18 built-in rockets)
- Range: 2,000 miles (unrefueled)

SOURCE

- Reference 28

Figure 5-6. B-47 bomber characteristics and performance.
CHARACTERISTICS

- Length: 38 ft, 1 in
- Wing Span: 36 ft, 5 in
- Weight Empty: 11,095 lb
- Gross Weight: 23,525 lb
- Payload: 2 x 1,000 lb or single tactical nuclear bomb
- Armament: 6 x 50 caliber machine guns and 32 5-inch rockets
- Crew: Pilot

PERFORMANCE

- Speed: 622 mph
- Ceiling: 40,500 ft
- Range: 2,000 miles

SOURCES

- References 23 and 28

Figure 5-7. F-84G Thunderjet characteristics and performance.
nuclear-capable strike aircraft. The carriers were authorized to carry nuclear weapons after 1954 and the AD-4Bs were outfitted to deliver Mark 5 bombs.\textsuperscript{33}

It is clear that the U.S. had more than 1,000 delivery aircraft with sufficient range from England, North Africa and the Mediterranean Sea to reach targets in European Russia. In fact, the U.S. had roughly three times as many nuclear bombs and delivery systems as the Soviet Union and when activated, the force helped to deter further Soviet threats and mobilization.

**NATO Forces.**

During 1954 and 1955, the U.S. reduced its conventional force support to NATO by almost one-third. The reduction was predicated upon America providing a “nuclear umbrella” for Europe. Shortly after the Hungarian and Suez crises, General Lauris Norstad, Supreme Allied Commander in Europe, was asked in an interview if NATO had sufficient ready strength to win a major war, if Russia attacked. His answer was:

“It’s very doubtful whether anyone would win a modern war. But I believe that anyone who attacked the NATO family of nations would be defeated. The U.S. Strategic Air Command and the U.K. Bomber Command would play a very important role in this. Although these forces are under national control, and separate from NATO’s tactical air forces in Europe, we place great dependence on their operations. We rely on their readiness, including atomic weapons, if war comes.”\textsuperscript{31}

5.2.2 Nuclear Weapon Alert.

Reports reaching Washington on Election Day (6 November) concerning Soviet intentions were unreliable. Allen Dulles of the CIA noted that the Soviets had promised Egypt that they would “do something.” There were unconfirmed reports of aircraft overflying Turkey, presumably on their way to Syria or Egypt. Admiral Radford, Chairman of the JCS, met with Eisenhower at his Gettysburg, PA, home to provide him with a list of 21 recommendations generated by the JCS for increasing military readiness. Admiral Radford was doubtful that the Soviets would intervene in the conflict. He observed:

“For them to attempt any operations in the Middle East would be extremely difficult. The only reasonable form of intervention would be long-range air strikes with nuclear weapons...which seems unlikely.”\textsuperscript{36}
President Eisenhower ordered the U.S. to maintain its alert status and employ U-2 aircraft along the Soviet and Warsaw Pact borders to monitor any deployment or movement of forces from 7 to 10 November. No signs of shifts or alert postures in Russian long-range air forces were noted. At the same time, the U.S. was ultracautious about making moves with Strategic Air Command units that might be misunderstood by Soviet leaders.\(^{34}\)

A few days later, President Eisenhower commented that he was very unimpressed by the British-French military operation in Egypt, particularly the planning and tempo of operations.\(^{19}\) He also confirmed that, “Hydrogen bombs were readied for actual use, as American forces were put on an alert in response to warlike threats of the Soviet Union directed at Great Britain and France.” One U.S. diplomat expressed concerns that, “Khrushchev might go on one of his drunks someday and give orders of a kind that could bring war.”

5.3 LESSONS LEARNED FROM THE SUEZ CONFLICT.

5.3.1 Primary Observations.

Many post-war analysts observed that Soviet Russia emerged as the sole victor in the Suez conflict. Its objective was to widen a foothold in Egypt, Syria, and other Arab nations. Its hard-line policies and willingness to provide equipment, training, tactics, and political support for its client states received messages of thanks from several Arab Parliaments.

The North Atlantic Treaty Organization had lapsed towards dissolution, with little sense of purpose, focus, or urgency concerning internal and external threats. NATO only made diplomatic moves in response to the Hungarian revolution. The British and French acted unilaterally in their own interests in response to the Suez crisis, using forces earmarked for NATO. The U.S. failed to develop or implement a realistic policy concerning the Middle East or to coordinate it with traditional allies. As a result, the Suez crisis was a “wake up” call for NATO.

The conflict was a disaster for Britain and France. Military planning was poorly conceived and rapid force deployment capabilities of both countries were inadequate...requiring four months to implement, including last-minute changes in troop maneuvers, and delays in amphibious support. On the threshold of success, British political leaders backed down to U.S. pressure and the threat of Soviet intervention. The French military felt let down by its political leaders in negotiating command positions with Britain, accepting an early cease-fire, and relying on the British for air...
support and nuclear capabilities if required. Israel gained enormous confidence and experience in its air operations and victorious capture of the Sinai but it resented strong American pressure to withdraw from the peninsula. By March 1957, Israel had given up all territorial gains made during the conflict in return for U.N. assurances that fedayeen raids would be prevented.

The U.S. political position was clarified before the end of November. The Eisenhower Administration assured the northern tier of Baghdad Pact countries that a threat to their territorial integrity and political independence “would be viewed by the U.S. with the utmost gravity.” This commitment was extended a few days later with a unilateral warning to the world that the U.S. would defend the whole Middle East against Soviet attack. The President presented this declaration of policy in a message to Congress on 5 January 1957 in what became known as the Eisenhower Doctrine.” A policy that clearly stated U.S. objectives, defined conditions, and showed serious intent was welcomed by most Arab states.

The concept of using the U.N. as the mediator and policy force to separate conflicting nations was used effectively for the first time. Several Arab nations gave credit to the U.N. for resolving the conflict and for establishing a just control over the canal and Sinai. In 1952, Sir Winston Churchill suggested that an international police force be set up to watch over the canal if Britain was forced to withdraw its military. The suggestion was brushed off within Britain and the U.N. but four years and one war later, it came to pass.13

5.3.2 Nuclear Related Observations.

The U.S. effectively employed its nuclear assets in response to the Soviet threats. Weapon systems were put on alert, dispersed, and moved with care to avoid sending the wrong message to Soviet leaders. The credibility of the U.S. and British nuclear forces were probably instrumental in deterring further Soviet force deployments and the use of “volunteers”.

French military authorities, annoyed at having to back down because of Soviet threats and their need to rely on Britain and the U.S., renewed their drive to acquire nuclear bombs and missiles. The Soviet threat that “rockets” might be launched caused General Alfred M. Gruenther of NATO to comment, “whether or not such rockets exist, they will not destroy the capacity of NATO to retaliate.” The French hailed this message and accelerated its funding to the Commissariat a l’Energie Atomique to develop a nuclear bomb. The first French nuclear test took place on
schedule in Algeria on 13 February 1960. The French intermediate range ballistic missile (SSBS S2) with a 120 kt warhead entered service in 1971.\textsuperscript{22}

Finally, the British showed an uncommon concern for civilian casualties as a result of its bombing of Port Said and Cairo. However, about 500 Egyptians were killed (some who were armed and fighting), during the two days of combat.\textsuperscript{14} British efforts to warn the populations before strikes caused the French military some concern but it became a common consideration for tactical weapon attacks in subsequent wars.
THE CIVIL WAR IN LEBANON DURING JULY 1958 HAD A PECULIAR AIR OF TRANQUILLITY AMID THREATENING DISASTER. ON THE SURFACE, BEIRUT'S NARROW STREETS CRACKED WITH SPORADIC REBEL GUNFIRE WHILE ONLY A FEW MILES AWAY ALONG GOLD COAST BEACHES, SUN BATHERS SIPPED DRINKS AND WATER-SKIED AT POSH HOTELS. AN UPRISING BY ABOUT 2,000 SOCIALIST MOSLEM TRIBESMEN WAS JOINED BY 3,000 TO 4,000 EGYPTIAN AND SYRIAN INFLTRATORS INTENDING TO OVERTHROW PRESIDENT CAMILLE CHAMOUN'S GOVERNMENT. THE RESULTING POWER STRUGGLE CAUSED THE U.S. AND GREAT BRITAIN TO CONDUCT PREEMPTIVE MOVES WITH SUPERIOR CONVENTIONAL FORCES TO RESTORE STABILITY. HOWEVER, ACTIVATION OF THEATER AIR AND NAVAL FORCES PLUS DEPLOYMENT OF TACTICAL NUCLEAR WEAPONS WAS NEEDED TO DETER SOVIET RESPONSES.

6.1 BACKGROUND FOR THE CONFLICT.

The crisis in Lebanon began in early May when President Chamoun and Commander in Chief, General Fuad Shehab, refused to employ military forces to subdue rebel terrorism. The rebels, operating from the Moslem quarter of Beirut, demanded a larger role in government including a Moslem president. They were led by Kamal Jumblat, who endorsed communism and resented the western influence on Lebanon's government. Most of the country's wealth was in the hands of Christians and political power was held by Christians; whereas, Moslems (who were in the majority) were assigned lesser administrative positions.

According to General Fuad Shehab, the military could not be used to suppress the rebels because its loyalty was in doubt; being half Christian, half Moslem. The rebels were well armed with thousands of small arms, submachine guns, mortars, and antiaircraft weapons supplied by the Syrian and Egyptian armies. In fact, Gamal Abdel Nasser (humiliated by the disastrous Suez war) and Shukri al-Kuwatly of Syria joined on 1 February 1958 to form the United Arab Republic. They openly supported the Lebanese rebels and provided military equipment with Soviet backing. A government attack in force against the rebels would cost thousands of civilian lives.

Near the end of May, U.S. Ambassador Robert McClintock told President Chamoun that the U.S. was anxious to preserve Lebanon's independence. This position was based mainly on the
Eisenhower Doctrine, presented in November 1957, after the Suez War. It guaranteed the territorial integrity and political independence of Baghdad Pact nations (i.e., Iran, Iraq, Turkey, Pakistan, and British protectorates) against attacks by external threats (e.g., Soviet Union). Early in 1958, President Chamoun requested 7,000 U.N. troops be sent to help suppress the rebels; consequently, the U.S. delayed in taking action, awaiting the promised U.N. response. In July, the U.N. sent only an observer team of 100 troops, supported by helicopters to monitor the 170 mile border with Syria.\footnote{This response was totally inadequate to deal with the uprising.}

Nasser saw two objectives in Lebanon. Control of the country would extend his influence to the neighboring Arab countries (Syria and Jordan). More important, Lebanon was the terminal end of oil pipelines from Iraq, Saudi Arabia, Kuwait, and the United Arab Emirates. Since Egypt already controlled the Suez Canal, Lebanon would insure a strangle hold on Western oil routes and supplies.

Meanwhile, a pro-Communist revolution was developing in Iraq. Following several weeks of anti-Western demonstrations, army officers under leadership of General Abdul Karim Qasim overthrew the government. Qasim declared the country a republic after assassinating King Faisal II and Prince Abdul Ilah at 5:00am on the morning of 14 July. He favored the Soviet Union for economic and military aid in opposition to Faisal's pro-Western government.

In the middle of this turbulent situation, 22 year old King Hussein I of Jordan (cousin of slain King Faisal II) was under severe pressure from Egypt and Syria to join the United Arab Republic. He called in U.S. and British representatives and told them, "I need help." The diplomats restrained him from leading Jordan's army into Iraq to restore his dead cousin's throne. Hussein appealed to the Eisenhower Doctrine for intervention, "to make sure the blood spilt in Baghdad was not in vain.\footnote{The U.S. and Britain offered him troops and equipment to save the Middle East from Communism and anarchy. The U.S. and British diplomats were convinced that as goes Lebanon, so goes Jordan, Iraq and the Persian Gulf Sheikdoms (a Middle East domino theory).}"

President Eisenhower and the Joint Chiefs of Staff were faced with a series of critical questions:

- If forces were sent to help Lebanon and Jordan, would the Soviet Union go to war in support of Egypt and Syria?
- Would there be a shooting war with rebel forces in Lebanon or against Egypt, Syria, or Iraq over Jordan?
• What would be done if the Soviet Union threatened use of nuclear weapons against the U.S. or Britain?

• What would be done if Russia took the opportunity to strike in Iran, Turkey, or Europe?

The evaluation of these contingencies was initiated by the JCS in mid-May and was coordinated with the British government. A combined military operation was formulated, employing conventional forces but including selected tactical nuclear forces. France’s Charles de Gaulle asked to participate in the combined operation but Britain opposed the idea because France was already at war with Arab Moslem rebels in Algeria. To avoid coupling eastern and western Mediterranean problems, France was excluded from the plans. Other inputs to the planning were:

• British Intelligence...There was little danger of Russian, Egyptian, or Syrian military counter moves if the Anglo-American operation was restricted to Lebanon and Jordan. If the U.S. or Britain entered Iraq, the Soviet response was uncertain.

• Premier Adnan Menderes of Turkey informed the U.S. that if Lebanon was permitted to join the United Arab Republic, it would be forced into a role of neutrality in the “cold war” on the grounds that it could not depend on the U.S. The U.S. was strongly dependent on Turkey for a shared strategic air base at Adana and naval supply base at Iskenderun.

• The Israeli military would be held out of the operation to insure that the action did not take on aspects of an Arab-Israeli conflict.

• The U.N. Secretary General Dag Hammarskjold was not informed of the Anglo-American plans because the U.N. had not responded in strength to the Lebanese request and it had done nothing to prevent the revolt in Iraq after being warned by the U.S.

As 14 July approached, the need to make decisions was critical. Some high level U.S. and British diplomats admitted that they made a bad mistake in October 1956 when they prevented Israeli, British, and French forces from finishing off Egypt and Nasser at the Suez Canal. Nasser had been nothing but trouble ever since and had spread the conflict to several additional countries.

6.1.1 The Decision to Act.

On (10 July), the U.S. 6th Fleet, with 5,000 Marines moved south of Turkey within quick range of Lebanon. The force of 70 ships, including two aircraft carriers (U.S.S. Essex and Saratoga) and amphibious assault ships, with a total of 270 aircraft and helicopters prepared for action. On (12 July), the U.S. Air Force began moving 150 land-based aircraft into Adana AFB. Specifically, 100
B-57 and B-66 light bombers, KB-50 tankers, F-100D, and F-101 fighter-bombers were moved from Langley AFB, VA, and C-130 and C-124 troop transports were moved from Donaldson AFB, S.C. The British activated 35,000 troops on Cyprus and Lebanon’s army made serious efforts to stop the infiltration of rebel forces and supplies from Syria.

On the morning of 15 July, President Eisenhower met with the National Security Council at 9:45am to review the Iraqi coup. Then he met with John Foster Dulles (State Department) and Allen Dulles (Central Intelligence Agency) to review a message from Ambassador McClintock. The message advised that President Chamoun urgently requested U.S. troops or Lebanon would collapse, and quickly. With Vice President Richard Nixon, the Dulles brothers, Deputy Secretary of Defense Donald Quarles, JCS Chairman Nathan Twining, and other military experts, Eisenhower made the decision to implement the aid plans for Lebanon and Jordan. He had learned early in his career that if military forces must be used, one must act quickly and with power to achieve the main objectives.

Even before the President’s decision, a wave of telephone messages were sent from the Pentagon by 50 plans officers to all services. They outlined the JCS contingency plans for Lebanon and provided authorizing orders. At 1:00pm, the JCS was notified by the National Security Council that the President approved the plan. The Navy was put on a four hour alert (i.e., all combat ships not in major repair were ready to sail on four hours notice) and the Air Force’s Strategic Air Command was placed on alert (i.e., bombers ready to take off).

At 6:00pm (Washington time), General Twining ordered the Navy to put troops ashore in Lebanon, not to fight rebels but to secure the government. The message was received by Vice Admiral James Lemuel Holloway Jr. with the 6th Fleet at 6:23pm. The fleet with two carriers (Saratoga and Wasp) and 40 escort ships provided air cover while amphibious landing carriers Essex and Antietam began putting troops ashore.

6.1.2 The Force Deployments.

All Services moved with exceptional efficiency to deploy forces in support of the operation. Three forces are described separately in the following subsections. The primary movement routes are illustrated in Figure 6-1.
Lebanon

At 3:04pm on 15 July, the first U.S. Marines jumped from a 6th Fleet landing craft onto Ouzai Beach near Beirut. Meanwhile, troops were airlifted directly from Furstenfeldbruck (West Germany) to Adana (Turkey) to the Beirut airport (see Subsection 6.1.4). Within 40 minutes, the airport was secured and a massive airlift began to bring in additional troops and supplies. The Marines also flew 800 troops from an air base at Cherry Point (N.C.) to the Navy’s Port Lyautéy base in Morocco and from there to Beirut’s airfield by the morning of 16 July. Marines from the 6th Fleet continued to land that morning on Beirut beaches which were soon filled with amphibious vehicles, self-propelled guns, and tons of ammunition as shown in Figure 6-2.

It appeared to the U.S. Marines that the Lebanese Army intended to resist the landing when 14 tanks and self-propelled artillery moved to the airport and beaches at 11:00am on 16 July. However, this concern was removed when they assembled to help march the U.S. troops into Beirut. Because of President Chamoun’s sensitive political situation, the Marines did not leave the beaches or airport until the following day (17 July). At that time, Ambassador McClintock impressed on Chamoun and General Fuad Shehab the need to disperse the troops and secure transportation choke points. By the end of three days, 7,000 troops were in Lebanon and a perimeter was established around the sectors of the city held by the rebels. Counting Air Force personnel, the U.S. had 10,000 troops in Lebanon by the end of one week.

In accordance with Eisenhower’s directive, the landings were made with little deception to underscore U.S. “readiness and determination without implying any threat of aggression.” On 15 July, Nasser flew unannounced to Damascus where he and the Syrian leaders were briefed on the situation. Nasser promptly made a speech from a palace balcony to thousands of cheering followers in which he stated, “We shall all carry arms to defend the torch of freedom...We shall fight to the last drop of our blood...We do not fear fleets of ships or atom bombs...The flag of liberation will be raised in Beirut, Amman, and Algeria.”

Nasser hurried from Syria to Moscow to meet with Nikita Khrushchev. He requested Russian arms, ammunition, and military intervention...at least in the form of volunteers. No immediate results were reported following this lengthy meeting for the reasons discussed in Subsection 6.1.5. It took several days for the Soviet Union to respond to the rapid sequence of events but immediate denunciations were made by Soviet and Egyptian diplomats at the U.N. As if by a preplanned
Armor leaving the dock area in Beirut

Supplies being unloaded by cranes at docks

Figure 6-2. Heavy armor landing at Beirut 16–17 July 1958.
signal, Communist nations around the world began demonstrations, demanding that the U.S. and Britain get their forces out of the Middle East.  

During the force buildup between 17 and 25 July, rebels moved freely within the encircled sectors of the city. Occasionally there was drive-by shooting, sniper fire, or small bombs. U.S. troops were under orders not to fire back if there was any danger that innocent people would be hit. Troops outside the city (dug in around the airport) were often fired on at night and they were permitted to return fire.

With the 6th Fleet within eyesight of the beach, an overflight demonstration was made by carrier aircraft on 23 July as a “salute to the people.” However, the rebels were not ready to accept a cease-fire since they expected Egyptian or Soviet intervention. Thus, on 2 August, the U.S. landed 1,800 Army personnel including a tank and artillery battalion. The following day, 2,200 additional Army troops landed to bring the total to 13,300 U.S. personnel.

General Twining of the JCS took a very hawkish view of the crisis. He argued in favor of arming U.S. Army troops with nuclear rockets and artillery. His orders from President Eisenhower were to, “be prepared to employ (subject to Presidential approval) whatever means might become necessary.” Eisenhower was referring to the possible use of nuclear weapons, a subject that was discussed several times during the crisis. The State Department resisted the implications of deploying nuclear-tipped rockets; therefore, the force deployments probably did not include these weapons as described in Subsection 6.2.

Jordan

The first response in support of King Hussein was an hour-long overflight of Jordan at low altitudes by 50 U.S. jet fighters from the carriers U.S.S. Essex and Saratoga on the morning of 17 July. By 8:30am the British implemented Operation Goldfish during which 300 paratroops from Cyprus were landed at Amman’s airport. During the day, a total of 2,000 troops and their equipment were unloaded from transports and by nightfall, the airfield was crowded with jeeps, piles of ammunition, and automatic weapons. By morning, the airport-mesa was an armed camp.
The British force intended to help the Jordanian government suppress a pro-Nasser coup. The leading coup conspirators had been seized on 14 July following the revolt in Iraq. But Hussein feared that pro-Nasser rebels would attempt to free them or take over the throne. British paratroops patrolling the streets of Amman enabled Hussein to transfer his most loyal battalions (Amman Garrison) to rebellious areas on the west bank of the Jordan River. Within a few days, tensions in Jerusalem, Nablus, and Ramallah were suppressed. Arab sheiks and Beni Sakher tribesman pledged allegiance to the King and offered funds to keep the army paid. A few days later, the U.S. began airlifting 1,000 tons of supplies per day into Jordan including oil and aviation fuel for the British forces. Financial support ($12.5 million) was also provided to tide the government over during the crisis.

Libya

Between 1951 and 1963, Libya was a monarchy of three loosely aligned provinces: Fezzan, Tripolitania, and Cyrenaica. Its King, Muhammad Idris al Mahdi as-Sanusi, was pro-Western and permitted U.S. and British bases in the country. But his government was under pressure from Moslem military officers to resist American and European influence. Consequently, Britain landed 400 commandos in Libya on 17 July to insure security of the allied military bases.

Kuwait

In response to British urging, Eisenhower also approved a plan by the JCS for the seaborne movement of a Marine regiment from Okinawa to the Persian Gulf. This regimental combat team in the gulf was on standby with orders to, “be prepared to prevent any unfriendly forces from moving into Kuwait.” The concern was that the Soviet Union might encourage Iraq to invade Kuwait as a counter move.

Tactical Air Forces

U.S. air defense fighter units were placed on alert the morning of 15 July at all North African bases and in West Germany. However, a unique “fire brigade” was formed at Adana AFB (Turkey) with a mix of aircraft including B-57s, B-66s, F-100Ds, and F-101s to provide a nuclear-capable strike force. This force, under the command of Major General Henry Biccelio, was operational by 16–18 July.
Strategic Air Forces

In 1958, the U.S. Strategic Air Command (SAC) was near its peak in bomber capabilities. It had 482 long-range bombers including 96 B-36s, 356 B-52s, and 30 B-58s dispersed at bases throughout the U.S., Alaska, and Guam. An even larger force (1,778 total) of medium-range bombers including 72 B-45s, 1,644 B-47s and 62 B-66s were deployed at forward bases in Europe, North Africa, Guam, and the Philippines. 10

The Strategic Air Command had nearly 5,500 nuclear bombs available for delivery by the total force. 12 A significant number of these bombs were stored at NATO bases; however, an Air Staff study indicated that strategic bombers would stay back at bases in Spain and Morocco rather than being moved forward to bases in Turkey, Algeria, or Libya. The concern was for Soviet Ilyushin (Il-28) bombers located in Egypt and Syria. The U.S. already had nuclear capable B-47 bombers at Wheelus AFB (Tripoli, Libya), Kenita AFB (Morocco), and Moran (Spain). In addition to placing these bombers on alert, KB-50 air refueling tankers were prepared for takeoff, and Tactical Air Command (TAC) fighters were armed to defend the bases.

By comparison, the Soviet Union introduced the MYA-4 (Bison) and TU-20 (Bear-A) long-range bombers in 1956 and 1957. Fewer than 100 of these aircraft existed in 1958. The Soviet Air Force also had about 1,600 medium-range bombers including 400 TU-4 (Bull -- copy of the U.S. B-29), 800 TU-16 (Badger), and 400 Il-28 (Beagle) bombers deployed in Warsaw Pact countries and client states including Egypt and Syria. 11 Soviet medium-range bombers could not reach targets in the continental United States but U.S. medium-range bombers in Europe could reach Russia. With only one-fifth as many long-range bombers, far fewer effective medium-range bombers, and a nuclear bomb inventory less than half that of the U.S., the Soviet Air Force was inferior in strength relative to U.S. forces. 13

Neither the U.S. nor Soviet Union possessed operational ICBMs, IRBMs, or MRBMs in 1958. Only four dozen Soviet short-range ballistic missiles (SS-3s) had been deployed in Europe. 13

6.1.3 Air Transport Operations.

Between 15 and 25 July, the U.S. 322nd Air Division (based at Evreux, France) carried out 418 sorties with C-130, C-124, and C-119 transports. It moved 3,500 Army troops from
Furstenfeldbruck (Germany) to Lebanon airport. Figure 6-3 shows one of the C-124C Globemaster transports arriving at Beirut airport.\textsuperscript{17} Top Secret security was placed on all airlift operations. This was done to insure surprise military deployments.

The first move under Operation Bluebat was initiated on the morning of 15 July. A fleet of 34 C-130s, 16 C-124s, and 22 C-119s picked up “Alpha Force” (1,749 paratroops plus supplies for five days) at Furstenfeldbruck and moved it to Adana, then on to Beirut. The supplies were limited even without combat...in event of trouble, the Navy would be called upon to resupply. The “Bravo Force” was prepared to move on the morning of 17 July but because the Lebanese situation was relatively quiet, it was held in Germany as a reserve. Instead, “Charlie Force” was airlifted between 17 and 25 July by 177 sorties. It included 2,000 fully-equipped troops along with 4,580,000 lb of cargo. In summary, Adana AFB served as the central terminal for all airlift activities. Nearly 8 million pounds of cargo and 5,870 personnel were delivered in 11 days.\textsuperscript{17}

6.1.4 Soviet Responses.

During his flight to Moscow on 15 July, Nasser landed at Pula, Yugoslavia, where he met secretly with President Marshal Tito.\textsuperscript{7} Cairo news reports covered this stop by claiming the plane refueled in Albania after leaving Syria. Tito headed an independent Communist government which refused to support the Soviet Union in its Cold War against Western democracies. Nikita Khrushchev learned of the meeting and was furious with Nasser for playing the two Communist countries against each other. As a result, he took a cautious, hands-off attitude toward the Egyptian request for prompt military action. However, the Soviet Union had a vested interest in Egypt and Syria and did not want to lose respect in the Arab countries.

Khrushchev’s first response was to propose a summit conference in Geneva during late July to convince the U.S. and Britain to pull out of Lebanon and Jordan.\textsuperscript{9} This proposal was delivered in a letter to President Eisenhower on 16–17 July. Eisenhower replied on 22 July, agreeing to the conference but suggesting it be held through United Nations sponsorship. On 5 August, Khrushchev withdrew his support for the summit after a visit to Beijing, China.\textsuperscript{8}

The second Soviet move was to perform army maneuvers in Turkestan and the Transcaucasus along the northern borders of Iran and Turkey. These maneuvers, held between 20–28 July, were
Figure 6-3. C-124C Globemaster transports at Beirut airport.
intended to threaten invasion of the two countries which were actively supporting U.S. operations. Khrushchev also reported that Bulgarian and Soviet troops would soon perform joint maneuvers.\(^7\)

Although Khrushchev had bluffed during the 1956 Suez War by threatening to fire nuclear missiles into Europe, he did not repeat the threat in 1958.\(^7\) Instead, the Soviets performed a show-of-force overflight demonstration with MiG fighters in Syria. This worried Western analysts, who felt that the Soviets might risk direct intervention with "volunteer" forces.

Unfortunately, the U.S. did not clearly articulate its limited objectives during the first few days of the operation. Therefore, the Moscow news media cryptically reported that Khrushchev and Nasser had discussed "the question of stopping the aggression of the U.S. and other colonial powers in the Near and Middle East."\(^7\) When the limited objectives became apparent by the second week, Nasser urged the Soviets not to take military action unless the Western forces invaded Syria or Iraq.\(^7\) It may be that Nasser feared the Soviet Union would take control and "run-the-show" if it intervened in the conflict.

6.1.5 Termination of the Crisis.

During early August, the U.S. mediated a compromise on the key issues of the Lebanese civil war. The disputed Presidency was given to General Fuad Shehab, a popular army commander who had remained neutral throughout the crisis. Shehab took office after President Chamoun's term ended on 23 September. He named a new cabinet and assigned government ministries to satisfy both Christian and rebel factions. JCS Chairman Nathan Twining claimed in mid-August that the Soviet and Egyptian bluff to take over Lebanon had been called. As the crisis eased, U.S. forces began to withdraw and the last contingent pulled out on 28 October. However, rebels still controlled a large section of Beirut and bombs continued to explode almost every day.\(^14\)

6.2 NUCLEAR WEAPON CONSIDERATIONS.

When the Soviet Union began maneuvers north of Turkey and Iran, the U.S. Joint Chiefs of Staff and President Eisenhower actively discussed the use of nuclear weapons.\(^8\) Their reported position was:
“Atomic weapons would be avoided. But they would not be renounced entirely if
judicious use in the right place could solve a particular tactical problem. If Russia
should take a desperate gamble and strike into Iran, Turkey, or any other area under
U.S. protection, the answer would be clear.”

The Pentagon emphasized that this was a pledge to its allies that would be kept.\textsuperscript{18}

Four nuclear weapon system options were deployed or alerted to implement this contingency.
These options were:

- Strategic Air Command (B-47) bombers normally deployed in Libya, Morocco, and
  Spain were placed on alert on 15 July.\textsuperscript{18}

- A “Composite Strike Force” (fire brigade) with self-contained nuclear capability was
  moved to Adana AFB, Turkey, on 16–18 July.\textsuperscript{15}

- Tactical nuclear bombs were normally carried on the supercarrier U.S.S. Forrestal
  deployed specifically for this crisis.\textsuperscript{5} The carrier U.S.S. Saratoga was also nuclear-
  capable in support of NATO and the 6th Fleet. It was deployed off the coast of
  Lebanon after 15 July.\textsuperscript{5}

- Nuclear-capable artillery was landed in Lebanon after 2 August.\textsuperscript{8}

Each of the above options deserves further discussion to assess its credibility.

\textbf{B-47 SAC Bombers.}

As indicated in the paper on the Suez War of 1956 (Section 5.2.1), the U.S. had roughly 150 B-47
medium-range bombers based in Libya, Morocco, and Spain. These aircraft could deliver Mark 7
bombs, of which 470 had been produced.\textsuperscript{12} They could also deliver the Mark 5 and Mark 6
tactical nuclear bombs of which over 1,200 existed. Because the U.S. did not store nuclear
weapons in North Africa or Spain, the bombs would have to be flown to these bases from Europe
to support operations. There is no evidence that this step was taken.

\textbf{Tactical Strike Force.}

The Composite Strike Force that moved to Adana had about 100 B-57 and B-66 light bombers.
Although there is no supporting evidence, it is likely that nuclear bombs were moved to and stored
at Adana by 18 July for these aircraft. The base was noted as a powerful, forward support facility
for NATO with extensive conventional weapon storage, fuel, and maintenance capabilities. It was
well defended by radar warning systems, antiaircraft artillery, and both Turkish and U.S. interceptor squadrons. The references to the Air Force "Composite Strike Force" (fire brigade) indicate that it was self-contained and able to operate with either conventional or nuclear weapons.¹⁵

The B-57 Canberra was the first foreign design (British) military aircraft produced in the U.S. Its characteristics and performance are shown in Figure 6-4. As a nuclear strike aircraft, it could carry one Mark 5 or Mark 6 bomb plus a variety of electronic countermeasures equipment (ECM and ECCM).¹⁹ The B-66 was a modified Navy A-3 Skywarrior and is shown in Figure 6-5. It was nuclear-capable with the same bomb types. However, it was often used for reconnaissance, target identification, and electronic countermeasures.²⁰ The F-101 Voodoo long-range interceptors were not nuclear-strike capable (until the F-101C model built in 1961). The F-100D fighters that completed the brigade were conventional interceptors.

Carrier Based Aircraft.

The 6th Fleet had four aircraft carriers on station in the Mediterranean: 60,000 ton displacement supercarriers U.S.S. Saratoga and Essex plus support carriers U.S.S. Wasp and Antietam.⁵ The Saratoga and Essex normally carried tactical nuclear bombs (e.g., Mark 5s of which 140 had been produced) in support of NATO readiness. The new B-28 (Navy Mark 113 tactical nuclear bomb) began production in August 1958 but it was not yet deployed operationally.²¹ Each of these carriers had about four dozen A-4D Skyhawk nuclear-capable bombers.

The support carriers Wasp and Antietam were outfitted with helicopters to support landing operations; consequently, they were unlikely to carry nuclear strike aircraft. However, the supercarrier U.S.S. Forrestal was ordered to Norfolk, VA, in mid-July to take on provisions (and probably nuclear weapons) before returning to the Mediterranean.⁵ Thus, by early August, the Navy was well prepared to perform nuclear strikes.

Nuclear Artillery.

The U.S. Army and Los Alamos National Laboratories developed the 280 mm nuclear artillery gun with the Mark 9 (W-19) warhead by early 1953 (see Korean conflict, Section 3.1.5). Because the weapon was difficult to produce and lacked mobility, the Army began parallel development of the
Figure 6-4. Tactical B-57 light bomber.

**PERFORMANCE**
- Speed: 582 mph
- Ceiling: Over 50,000 ft
- Range: 2,100 miles

**CHARACTERISTICS**
- Length: 65 ft, 6 in
- Wing Span: 64 ft
- Gross Weight: 55,000 lb
- Payload:
  - 4,000 lb on internal rotary launcher
  - 2,000 lb underwings
- Crew: 3

**SOURCES**
- References 19 and 20
CHARACTERISTICS
- Length: 75 ft
- Wing Span: 72 ft, 6 in.
- Gross Weight: 83,000 lb (Maximum)
- Payload: 5,000 lb
  - Conventional
  - Nuclear
- Crew: 5

PERFORMANCE
- Speed: 600–700 mph
- Ceiling: 45,000 ft
- Range: 1,500 miles

SOURCE
- Reference 20

Figure 6-5. Tactical B-66 light bomber.
M-109 (155 mm and M-110 (203 mm) self-propelled guns as replacements. The M-110 was fielded first in 1956 with the W-33/M422 nuclear warhead in addition to its conventional projectiles. This weapon is illustrated in Figure 6-6. The W-33 (203 mm or 8 inch) warhead, with either subkiloton or 12 kt yields, required field assembly and also suffered operational problems including reliability and handling difficulties.12

On 2 August 1958, an Army tank battalion plus 1,800 troops and support personnel were airlifted from West Germany to Beirut. An additional 2,200 troops including communications units, a field hospital and aeromedical evacuation group, and Army engineers arrived the following day, bringing the total force in Lebanon to 13,300 U.S. personnel.17 The Army tank battalion normally operated with self-propelled artillery and probably included a few batteries of four M-110 (203 mm) guns. The nuclear warheads for a battery were normally carried and stored in special 2.5 ton trucks, each with 1.5 ton trailers. Security was provided by the parent combat organization. Because the Army had M-110 units deployed in West Germany, Turkey and other NATO countries, trained units were readily available.12

General Twining recommended to President Eisenhower that nuclear-capable rockets be deployed in Lebanon.8 The only nuclear-tipped rocket in the U.S. Army inventory at the time was Honest John. About 300 of these weapon with W-7 (1–20 kt yield) warheads were produced and deployed in almost all European NATO countries after 1954.12 They were designed to provide longer range support (up to 23 miles) for armored and artillery units. Because of State Department objections to deploying nuclear weapons in Lebanon, it is unlikely that Honest John rockets were deployed. Furthermore, the M-110 nuclear artillery projectiles were probably withheld in West Germany since they could be flown to Beirut in less than 12 hours. The artillery units were probably removed from Lebanon shortly after 17 August.

6.3 LESSONS LEARNED FROM LEBANON.

By the rapid and purposeful deployment of conventional and nuclear-capable forces, the U.S. and Britain probably prevented the bloody expansion of the Lebanese civil war and escalation of the conflict to Jordan. In addition to thwarting Nasser's ambitious goals to extend the United Arab Republic and his power base, the moves may also have deterred the growth of Soviet influence over Iraq and Syria.
VEHICLE CHARACTERISTICS
- Gross Weight: 26.1 tons
- Speed: 35 mph
- Range: 450 miles
- Crew: 13
  - 5 firing
  - 8 support

GUN PERFORMANCE
- Range: 22,500 yards (12.8 miles)
- Elevation: -2° to 65°
- Range: 450 miles
- Warheads:
  - W-33 nuclear (yields: subkiloton to 12 kt)
  - 215 to 264 lb H.E. projectiles

SOURCES
- References 22 and 12

Figure 6-6. Eight inch M-110A1 self-propelled Howitzer.
Political Lessons.

By overtly deploying forces, the U.S. and Britain demonstrated to Turkey, to the Arab nations, and to observers from other nations, that they made good on pledges to stand by friendly countries. This important result had favorable side effects:

- The Turkish government strongly endorsed the U.S. actions. After the crisis, it renewed the agreement to provide U.S. air bases in Turkey and to accept a squadron of Jupiter missiles which were in final stages of development (see Cuban Missile Crisis, Section 7.1.2).

- Eisenhower’s programs for Foreign Aid, Reciprocal Trade Agreements, and Military Reorganization were all strongly supported by a previously reluctant Congress.

- The overwhelming majority of the U.S. public supported Eisenhower’s decision to send troops into Lebanon. Although Americans would have preferred to see the U.N. handle the crisis, they realized that it could not move quickly enough and it did not have credible forces to deter Soviet intervention.23

The leadership of the U.N. (i.e., Dag Hammarskjold), was timid and slow to respond when warned of the crisis situation. He explained that if armed U.N. intervention was brought to a vote it would be defeated by the Soviet Union and pro-Arab delegates. He threatened to resign as Secretary General, claiming that time was needed to enable the Arabs to give full attention to Eisenhower’s plan for peace and progress.24 The initial U.N. response of 100 officers was too little to stabilize the situation. When the U.S. pulled out of Lebanon, the U.N. force still had only 175 officers of the 200 it promised to monitor the border with Syria. A new U.N. plan in mid-August enabled Hammarskjold to strengthen the “presence” with border patrols in both Lebanon and Jordan.14

One lesson was that the use of force, unaccompanied by a clear statement of objectives, runs the risk of unintended escalation. The U.S. and British moves on 15 July came as a surprise to most nations including traditional allies at the U.N. Fortunately, the Lebanese and Jordanian events did not develop so quickly or in a manner that Khrushchev and Nasser were unable to determine that the operations were not the first stage of a larger invasion of Syria and Iraq. Several days elapsed before the limited goals of the intervention were fully apparent. The U.S. force buildups and deployments continued for more than a month.
Military Lessons.

When the JCS force deployment plans were made, there was little doubt that Nasser and Khrushchev would strongly protest and possibly intervene in the conflict. The deliberate deployment of strong conventional forces plus the nuclear-capable “Composite Strike Force,” U.S.S. Forrestal and 6th Fleet carriers, Army artillery units, and the alert of Strategic Air Command bombers throughout the Mediterranean area sent a strong message to the Soviet Union, Egypt, and neighboring Arab countries that the U.S. intended to implement its plans. Intervention by the Soviet Union or others would clearly risk escalation.

Khrushchev’s quick turn to propaganda and suggestion of a summit meeting was an attempt to conceal weaknesses. A few weaknesses that were noted in the media following the crisis were:

- Soviet and Egyptian intelligence organizations were caught by surprise by the quick U.S. and British actions.
- The Soviet Union lacked sufficient forward air bases and naval forces in the Middle East needed to counter the U.S. and British moves.
  - It had relatively few medium- or long-range bombers in the theater.
  - Its naval forces were no match for the 6th Fleet and NATO allied naval forces.
  - It had virtually no amphibious assault capability.
  - Working relationships with allied military forces (e.g., Egypt and Syria) were not well established or operational.
  - It had a healthy respect for the U.S. nuclear weapon options (i.e., the variety and numbers of strategic and tactical weapon types).
- Other Warsaw Pact satellite nations (e.g., Poland and Hungary) might take heart from the Middle East events and initiate additional rebellions.

The U.S. and British moves in Lebanon and Jordan were successful largely because they were well planned, implemented with efficiency, backed with ample resources, and supported by strong political resolve. While the outcome was achieved through superior conventional forces, the consideration and deployment of nuclear-capable forces underscored and reinforced the allied commitment. It may have deterred Soviet counteractions and uncontrolled escalation of the conflict.
SECTION 7.0
THE CUBAN MISSILE CRISIS
W. C. Yengst

In late spring 1962, Soviet policy makers decided to deploy a sizable force of nuclear-capable Medium-Range and Intermediate-Range Ballistic Missiles (MRBMs and IRBMs) plus medium-range bombers into Cuba by clandestine operations. The decision to initiate this dangerous venture was motivated by at least six considerations as described in Subsection 7.1.1. Although the Soviet planners probably expected that at some point the deployments would be detected and American patience would break, they hoped that the operation would be sufficiently complete to serve both political and military force balance purposes. When the military buildup was detected by U.S. intelligence in late summer, the American government was determined to have the offensive threat removed. The complex political and military events that followed from this direct, and most serious confrontation between the world superpowers involved nuclear weapon movements, alerts, and operations on both sides.

7.1 GENERAL DESCRIPTION OF THE CRISIS.

Any description of the Cuban crisis must take into account the impact on the Soviet leadership of a strategic “missile gap” which became apparent by the end of 1961 (see Subsection 7.1.2). Premier Nikita S. Khrushchev needed a means of redressing this inferiority; consequently, it became the dominant reason for deploying missiles in Cuba. However, other factors also influenced the decision-making process. The crisis involved stress generated by the Berlin Wall Crisis, NATO missile deployments, United Nation (U.N.) actions, and Cuban events. These considerations will be described before addressing the Cuban missile deployments.

7.1.1 The Soviet Rationale for Deploying the Missiles.

As viewed from the position of Soviet leadership, the following considerations probably supported the decision to prepare and implement Operation ANADYR.*

1. The U.S. development and production of strategic missiles that could reach Soviet homeland targets was rapidly exceeding the types and numbers of weapons that Soviet industries and military could deploy. This missile gap was aggravated on 16 June 1962 when U.S. Secretary of Defense, Robert S. McNamara, advocated a "no cities" bombing policy which was interpreted to imply the U.S. was focused on a counterforce strategy. The Soviets feared the U.S. was developing a first-strike policy.¹

2. The Soviet deployment of MRBMs and IRBMs in Cuba could be used as leverage for getting U.S. IRBMs out of NATO deployments in Turkey, Italy, and England. The missiles, under the control of Soviet forces, would offset some of the U.S. lead in strategic missile capabilities. If the U.S. was planning a strategic first-strike, it would have to eliminate the Cuban bases first, an exercise in launch timing that would give the Soviets advanced warning.¹

3. Premier Khrushchev apparently felt that President John F. Kennedy would not take strong actions if the deployment was detected because of the humiliating defeat at the Bay of Pigs on 10–14 April (see Subsection 7.1.5). This would be particularly true if the deployment was nearly complete before being detected.¹ By putting defensive weapons in place as a first move, the U.S. would probably not resist and the price would be high if it tried to remove the weapons by force.

4. Deployment of medium bombers on Cuban airfields under the control of Soviet forces would flank existing U.S. early-warning radars and defenses. This would offset some of the U.S. lead in strategic bomber capabilities.

5. Soviet planners probably assumed that the ship transport of the weapons could be masked from U.S. naval intelligence by the movement of economic, agricultural, and medical supplies for Cuba. If detected, there were a number of possible U.S. response options that would not invoke nuclear threats.¹

6. The nuclear capabilities and Soviet bases in Cuba would deter further invasion attempts by the U.S. or exile groups.⁹

While the deployment of the missiles and bombers might have had questionable military value, they would provide a semblance of strategic strength and a "political bargaining chip." Consequently, the Soviet leaders felt the risks of the operation would not be great.

7.1.2 The U.S. and Soviet Missile Balance.

The strategic missile competition between the U.S. and Soviet Union began after both countries developed and tested thermonuclear weapons in the mid-1950s. The Soviet ballistic missile program evolved from the World War II German V2 which was reengineered as the SS-1 Scunner and SS-2 Sibling missile designs in 1955. Both missiles could carry nuclear warheads but they were short range (e.g., less than 150 miles), liquid fueled, forerunners of Scud-class missiles. Neither were deployed in significant quantities. However, the scaled-up SS-3 Shyster, with a
range of 560 miles (first seen in 1957) and the Soviet launch of Sputnik using a new SS-6 booster on 4 October 1957 alerted the U.S. to the growing ballistic missile threat.²

Russia began development of its first MRBM by scaling up the Shyster design to create the SS-4 Sandal, a liquid propelled, single stage weapon capable of delivering a 1 megaton warhead to a range of 1,120 miles. First deployed in 1959, in support of Warsaw Pact countries against NATO targets, it played a primary role in the Cuban Crisis. By 1960 only 48 SS-3s and 72 SS-4s existed in the Soviet inventory as indicated in Table 7-1. However, production of the SS-4s picked up dramatically in 1961 to 236 units and the inventory approached 400 units by the time of the Cuban Crisis.⁴ Figure 7-1 shows the SS-4 Sandal MRBM being towed through Red Square in Moscow during November 1961.

Driven by a desire to hold European targets at risk without basing their missiles forward in Warsaw Pact countries, the Soviet Union scaled-up the SS-4 to create the SS-5 Skeeën, the first Soviet IRBM. Its development started in 1957 and with a range of 2,550 miles it used the same 1 megaton warhead as the SS-4.³ The SS-5 became operational in 1961 and it also played a significant role in the Cuban Crisis.

The first Soviet intercontinental ballistic missile (ICBM), SS-6 Sapwood, experienced a number of development difficulties and although it entered service in 1960, it was not considered operationally acceptable. Only a handful were deployed since many of the missiles were converted to Vostok space boosters.¹⁰ Russia hurriedly pushed development of the two-stage SS-7 Saddler missile. Thus, Saddler Mod 1 with a range of 6,800 miles and with a 3 megaton warhead entered service in late 1962 (about the time of the crisis). It was quickly replaced by a Mod 2 configuration in 1963.²³ Consequently, in early 1962, the Soviet Union had only about a dozen nuclear missiles with sufficient range to reach targets in the United States. Their long-range missile program was having development difficulties.

On the U.S. side, concern for an apparent Soviet technical lead in missiles caused the Army to initiate the Jupiter IRBM program in 1953, followed shortly by the Air Force Thor IRBM program. By 31 May 1957, a Jupiter liquid-propelled missile flew its full 1,500 miles and plans were made to build three squadrons of 15 missiles for deployment (two in Italy and one in Turkey).² These missiles became important during the Cuban crisis. The Jupiter missile successfully supported a Mercury capsule test flight on 31 January 1961 and launched astronaut
Table 7-1. Balance of U.S. and Soviet long-range missiles.

<table>
<thead>
<tr>
<th>Soviet Union</th>
<th>Range (miles)</th>
<th>Yield (M tons)</th>
<th>Year End Operational Inventories</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS-4 Sandal</td>
<td>1,120</td>
<td>1</td>
<td>-- 72 236 400</td>
</tr>
<tr>
<td>SS-5 Skean</td>
<td>2,550</td>
<td>1</td>
<td>-- few 24</td>
</tr>
<tr>
<td>SS-7 Saddler</td>
<td>6,800</td>
<td>3</td>
<td>-- -- 50</td>
</tr>
<tr>
<td>Total Inventory</td>
<td></td>
<td>48 124 294 547</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>U.S. and NATO</th>
<th>Range (miles)</th>
<th>Yield (M tons)</th>
<th>Year End Operational Inventories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jupiter</td>
<td>1,500</td>
<td>1</td>
<td>1959 -- 1960 -- 1961 45 1962 45</td>
</tr>
<tr>
<td>Thor</td>
<td>1,500</td>
<td>1</td>
<td>1959 60 1960 80 1961 80 1962 80</td>
</tr>
<tr>
<td>Atlas D</td>
<td>5,500</td>
<td>1</td>
<td>1959 9* 1960 72* 1961 ?? 1962 ??</td>
</tr>
<tr>
<td>Titan I</td>
<td>6,300</td>
<td>1</td>
<td>1959 -- 1960 -- 1961 -- 1962 45</td>
</tr>
<tr>
<td>Polaris A1+</td>
<td>1,200</td>
<td>0.5</td>
<td>1959 -- 1960 32 1961 80 1962 80</td>
</tr>
<tr>
<td>Polaris A2+</td>
<td>1,500</td>
<td>1</td>
<td>1959 -- 1960 -- 1961 -- 1962 64</td>
</tr>
<tr>
<td>Total Inventory</td>
<td></td>
<td>69 184 332 443</td>
<td></td>
</tr>
</tbody>
</table>

Could Reach Russia

Based on Sources:
Reference 2
Reference 4
* Reference 39, pg. 29
+ Notes from Adm. R. Wertheim
OPERATIONS
- Guidance: Early models were radio-controlled but those in Cuba were inertial
- Propellant: Storable liquid
- Required a few hours to erect, align, and launch
- Fired from hard concrete stands by 20 man crews

SOURCE

MISSILE CHARACTERISTICS
- Length: 52 ft
- Diameter: 63 in
- Weight: 59,500 lb
- Range: 1,120 miles
- Warhead: 1 megaton
- Accuracy: 1.25 miles (CEP)

Figure 7-1. SS-4 Sandal MRBM on display in Moscow.
Alan B. Shepard on a suborbital flight on 5 May 1961. Similarly, Thor was a single stage liquid-propelled IRBM with a range of 1,500 miles and carried a 1 megaton warhead. Its first flight was on 25 January 1957 and the first operational unit was ready in September 1958. In response to the Soviet buildup of SS-3 and SS-4 missiles in support of the Warsaw Pact, the U.S. quickly deployed Thor in Great Britain (four squadrons of 15 missiles...80 units including reserves)\(^2\).

In the middle of 1955, President Eisenhower initiated the U.S. ICBM program including Atlas and Titan I missiles under a directive of highest national priority.\(^10\) These missiles would use common guidance, control, and engine components to cut development times and costs.\(^2\) The Atlas ICBM with a range of 5,500 miles was accelerated to a first flight in 1957. After several modifications, the radio guided Atlas-D was deployed operationally in soft sites at the end of 1959. Improved, coffin launched Atlas-E and -F missiles with inertial guidance replaced the Atlas-Ds starting in 1960.\(^*\) By 1962, the U.S. had a force of 129 Atlas missiles with 1 megaton warheads. The first Titan I missile flew in February 1959. This large, silo launched, liquid propelled missile with a range of 6,300 miles and a 1 megaton warhead became operational by early 1962. In March 1962, the improved Titan II successfully flew 5,000 miles.\(^2\) Thus, the U.S. had already surpassed the Soviet Union in ICBMs and had nearly 125 IRBMs in Europe that could reach Russia.

As a hedge against the many development problems which might delay timely deployment of U.S. ICBMs, the Army and Navy were directed in November 1955 to jointly develop a sea-based missile system combining the Army's Jupiter with a Mariner class merchant ship. But the Navy did not consider taking the large Jupiter missile to sea on a surface ship as other than an interim capability to be replaced as soon as technology permitted by a solid-propellant submarine launched ballistic missile (SLBM). Given the rapid advances in warhead, solid propulsion, and inertial guidance technologies foreseeable by January 1957, the Navy was authorized to redirect its program to the accelerated development of Polaris, a small solid SLBM compatible with the size of existing nuclear submarine hulls.

The development of Polaris proceeded rapidly and in less than four years (during November 1960), the submarine George Washington departed the U.S. on its first operational patrol carrying 16 of the first generation Polaris A-1 SLBMs. The program ultimately led to deployment of 41 Polaris submarines; the first five carrying Polaris A-1s having a range of 1,200 miles with a 500 kt

\(^*\) The coffin launched missiles were deployed in long, horizontal concrete boxes covered by sliding concrete slabs to improve their hardness. The coffins had to be opened, missiles erected and fueled in preparation for launch.
warhead, the next 13 would carry the improved Polaris A-2 missile having a range of 1,500 miles with a 1 megaton warhead, and 23 would receive the 2,500 mile range Polaris A-3 missile well after the crisis was over.\textsuperscript{2,10} By the end of 1962, nine Polaris submarines were operational as shown in Table 7-1 (i.e., five A-1 and two A-2 submarines existed at the time of the crisis).

Senator John F. Kennedy campaigned for the presidency in 1960 on the idea that Eisenhower’s “sufficiency doctrine or massive retaliation” might not be appropriate for the emerging Soviet threat. His administration initiated a new doctrine based on “flexible response.” This doctrine sought a systematic and measurable procedure for selecting targets to destroy and determining “How Much is Enough?” It took into account the size of U.S. forces and their survivability if attacked by Soviet missiles. Further expansion of the U.S. missile force was advocated including greater dispersal, hard silos, and submarine deployments to survive a potential Soviet first strike attack.

The Minuteman-I ICBM with a range of 5,500 miles with a 1 megaton warhead completed flight testing in February 1961 and the first 20 missiles were deployed in hard silos shortly after the crisis in December 1962. The Pershing 1A tactical nuclear missile with a range of 400 miles and a 490 kt warhead entered development in 1957 and was completing its flight test program as the Cuban Missile Crisis began. It would be deployed in Germany to offset Soviet missiles.\textsuperscript{10}

The U.S. superiority in long-range missiles is apparent from Table 7-1 which shows the U.S. and NATO could employ five times as many missiles against the Soviet homeland as the Russians could deliver to the U.S. This situation was aggravated by the fact that the U.S. had a larger strategic bomber force (i.e., 1,711 aircraft including 591 B-52s, 112 B-58s, and 1,008 B-47s) compared with Soviet strategic aviation (i.e., 1,135 aircraft including 1,000 TU-16s, 100 TU-20s, and 35 MYA-4s). The U.S. also had a more effective air defense system anchored by the Distant Early Warning (DEW) Line radar system across northern Canada and 18 surface-to-air missile battalions (Nike Ajax and Hercules) deployed near key cities and targets. These were backed by 34 air defense squadrons including F-89, F-101, F-102, and F-106 all-weather interceptor aircraft.\textsuperscript{10}

From the Soviet perspective, the strategic missile and bomber aircraft balance strongly favored the U.S. American military industries were far outpacing the Soviet capabilities to field nuclear missiles by early 1962. However, the Russians possessed a number of SS-4 MRBMs which could help redress the force balance if they were deployed forward in Cuba.
7.1.3 The NATO Missile Bases.

The Thor missiles in England were operated by RAF Bomber Command but their warheads were controlled under a dual-key arrangement with the USAF. Likewise, the Jupiter missiles in Italy and Turkey were deployed and operated by armies of the respective countries but their warheads were under the control of U.S. Army personnel. The same arrangement was used in 1963 when Pershing missiles were deployed in Germany.

With the operational deployment of Polaris A1 on submarines, the need for forward based Thor and Jupiter missiles became less important. Upon taking office in 1961, President Kennedy made a serious effort to withdraw both of these weapon systems. He issued an executive order to remove the missiles from Turkey in August 1962 but deactivation was delayed.\(^1\) The 15 Jupiter missiles were located at sites along the Black Sea which included a complex with a large early-warning over-the-horizon radar station and an elaborate network of electronic intelligence gathering stations.\(^2\) Neither the Turkish government nor the U.S. intelligence agencies wanted to give up these facilities. They argued that the sites were crucial NATO power elements. These missiles and sites were particularly annoying to the Soviet Union; therefore, they became critical issues during the missile crisis.

Similarly, England and Italy resisted the removal of their Thor and Jupiter missile sites. They believed in a "trip-wire" philosophy in which an attack on the sites would draw the U.S. and its nuclear assets into the conflict. There were also delays while the economic impacts of deactivation on local villages were evaluated. The Thor missiles were finally removed from England on 14 August 1963 and the Jupiter missiles were removed from Italy and Turkey about the same time (10 months after the Cuban missile crisis).\(^2\)

7.1.4 The Berlin Crisis.

West Berlin was a convenient doorway through which people could escape communism and the harsh living conditions in East Germany. From 1950 to 1960, an estimated 4 million people used this route and the flow threatened the stability of the country. In November 1958, Khrushchev threatened to sign a separate peace treaty with East Germany if the NATO powers did not withdraw from Berlin and thereby, block the exodus of people. The U.S., Britain, and France refused. By June 1961, over 1,000 East Germans were fleeing to the west each day. The problem reached crisis proportions; therefore, Khrushchev ordered Soviet tanks to surround the city in early
August. The first makeshift barriers were erected on 13 August and within weeks the wall was built to divide the East and West. The wall successfully stabilized the situation but the problem remained.\(^8\)

When the Soviet Union started to supply conventional weapons to Cuba in the summer of 1962, the U.S. and Organization of American States protested in the United Nations. The State Department predicted the Russians might precipitate a new crisis in Berlin as a counter move. Indeed, at the onset of the missile crisis on 15 October, Khrushchev offered to, "refrain from supplying Cuba provided that Western troops leave West Berlin." He offered to visit the United Nations, address the General Assembly, and meet with President Kennedy. He suggested that both Western and Communist troops take up stations in Berlin for a temporary period until the city was demilitarized.\(^11\)

7.1.5 The Cuban Situation.

After the Cuban Revolution in January 1959, the communist-leaning government seized American owned sugar estates and in 1960, it took over U.S. owned oil refineries. Many Cubans who opposed Fidel Castro and the government moved to the United States where they set up exile groups. The U.S. stopped buying Cuban sugar and refused to sell arms to Cuba. As the Cuban economy deteriorated, the U.S. broke off diplomatic relations and restricted travel to Cuba by American citizens in January 1961.

On 10 April 1961, Cuban exile groups (heavily funded and trained by the Central Intelligence Agency – CIA) initiated the Bay of Pigs invasion of Cuba. Although President John F. Kennedy approved the invasion, he refused to send air support or aid to the encircled beachhead when Cuban forces overwhelmed the exiles three to five days later. The humiliating defeat of the Kennedy backed invasion at the Bay of Pigs almost certainly encouraged Nikita Khrushchev in his plans for the missile movement, according to former CIA Director William E. Colby. Fidel Castro’s prestige was enhanced and he turned to the Soviet Union for both economic and military support after the Bay of Pigs.\(^9\)
Plans for Operation ANADYR were accelerated in mid-April. In addition to SS-4 MRBMs, SS-5 IRBMs and Il-28 medium-range bombers, the plan included:

- Agricultural, medical, and financial aid to strengthen the Cuban economy including building infrastructure such as roads, ports, and airfields.
- Arms to strengthen the Cuban Army and new jet aircraft to improve air defenses.
- Training and operational doctrine support for the Cuban military by Soviet advisors.
- Deployment of SA-2 surface-to-air missile sites to protect the entire island.

A Cuban delegation headed by Raul Castro, Chief of the Armed Forces, traveled to Moscow in early July 1962. Their objective was to consolidate agreements and plans for aid. By the end of July, a stream of ships started to leave Soviet Baltic and Black Sea ports to carry materials to Cuba. Some of these ships docked at Mariel, a deep water port 35 miles west of Havana.\textsuperscript{5} Russia also shifted from using private charters for transporting cargo to Cuba to using only their own ships.\textsuperscript{3} The unusually large quantities of shipping was an early indicator to U.S. intelligence that something was happening.

Other indications that something was amiss came from HUMINT agents near the Cuban docks. They watched crates being unloaded and routinely reported to the CIA.\textsuperscript{7} Civilians living near the docks were forced to evacuate their homes and Russian sentries guarded the unloading of ships.\textsuperscript{5} Cuban émigrés talked of missiles and jet aircraft in their homeland. Naval intelligence said there were Il-28 Beagle bombers, identified from crates aboard ships bound for Cuba (observed in Egypt and Indonesia).\textsuperscript{3} The CIA cautioned that much of this information might be erroneous and could actually have been planted by Castro's counterintelligence.

Construction of the first defensive SA-2 Guideline SAM sites was begun in western Cuba in mid-August. The first hard data obtained by the U.S. occurred when a U-2 reconnaissance aircraft photographed eight SA-2 SAM sites being prepared on 29 August.\textsuperscript{7} Two SAMs were noted in launch positions at one site.\textsuperscript{5} Figure 7-2 shows one of the sites (photographed near a military airfield). Altogether, the Soviets planned to install 24 SAM sites in hexagonal layouts (six launchers per site) by the end of October.\textsuperscript{6,13} Each site could protect about 25 miles in radius such that the entire area of Cuba would be covered by mid-November.\textsuperscript{47}
MISSILE CHARACTERISTICS
- Length: 35 FT
- Warhead: 349 lb
- Range: 25–31 miles
- Ceiling: 60,000 ft

OPERATIONS
- 6 launchers per site plus reload missiles

Figure 7-2. SA-2 Guideline SAMs in Cuba.

The Cuban Air Force received about 100 jet aircraft during August. The equipment was older MiG-15, MiG-17, and MiG-19 fighters. However, as the crisis escalated in mid-October, 39 new MiG-21 Fishbed fighters were photographed at Santa Clara AFB. About 42 Il-28 Beagle nuclear capable bombers (combat radius of 750 miles) were uncrated, assembled, and flew shakedown missions during September and October. Support equipment including radars, radios, electronic jammers, fuel trucks, jeeps, and antiaircraft defenses were provided. Soviet pilots and up to 4,500 advisors actively trained Cuban personnel. Other weapons supplied to Cuba included 35–40 light and medium tanks, artillery, multiple rocket and Frog missile launchers, coastal guns, anti-tank
guns, motor torpedo boats, gun boats, and coastal patrol craft. A large shipyard and submarine base was built at Matanzas on the north coast under the guise of being a fishing village.

The military build-up was sufficiently impressive that President Kennedy ordered close surveillance of the island at the end of August. In Havana, the long waterfront was provided with antiaircraft guns, police patrols were strengthened, and unloading of Soviet trucks and equipment from ships was performed by East European workers. CIA Director, John McCone, advised Kennedy, “I question the value of SAMs except as a means of making possible the introduction of offensive missiles.” On 2 September, Kennedy expressed these concerns to Khrushchev and two days later, Khrushchev responded by assuring that there would be no offensive weapons in Cuba. He added, “the weapons reaching Cuba would be useful in fighting off an invasion...and, he wouldn’t give Kennedy any trouble during a Congressional Election year.”

7.1.6 The Missile Sites.

The first SS-4 offensive missiles arrived at the Cuban port of Mariel on 8 September aboard the Soviet freighter Omsk. CIA agents spotted the large open-hatched ship designed for carrying lumber in port. Within a few days, a second ship, the Poltava, arrived with more MRBM’s. The flow of missiles, trailers, erector vehicles, radars, vans, and other equipment continued throughout September and October. Figure 7-3 shows two ships carrying missiles at a Mariel dock.

The Soviets went to great lengths to prevent detection. All Cuban civilians were evacuated from the port and construction sites. Even senior Cuban military commandants including Fidel Castro were excluded from visiting the sites. Trucks were lowered into the ship holds to be loaded, covered with tarpaulins, then hoisted out. Trips from the port to construction sites were made at night. All Soviet military personnel working on the ships, wharves, and construction sites wore civilian clothes. On 21 September, an agent reported spotting a shrouded missile with a larger than normal tail on a long truck trailer. On the same day, Defense Intelligence Agency personnel evaluating U-2 photographs of the SAM site at San Cristobal noted that the launchers were arranged in the same manner as used to protect medium range missile sites in the Soviet Union.
Figure 7-3. Soviet missile carrying ship at Mariel.

Although U-2 aircraft continued to make reconnaissance flights, zipping in and out of Cuba to avoid the SAM defenses, they failed to provide hard evidence. However, Soviet bulldozers started preparing sites on 15 September near the cities of San Cristobal, Remedios, Guanajay, and Sagua La Grande. Subsequent analysis showed that four sites at San Cristobal and two at Sagua La Grande were intended for MRBMs (SS-4s) while two sites at each of Remedios and Guanajay were intended for IRBMs (SS-5s). Construction was only done at night and camouflaged during daytime. Estimates of construction completion and schedules are shown in Figure 7-4 based on subsequent analysis of photographic data.

In order to build, operate, and defend these weapons, Russia had sent 22,000 additional soldiers and technicians to Cuba. Each site contained launch pads for 4–6 missiles as noted in Figures 7-5 through 7-8.¹ ⁷ ⁹ Because the MRBMs were relatively mobile, their sites required little more than dirt roads for access, a flat piece of ground, concrete slabs for launching, and storage for warheads
Figure 7-4. Construction of MRBM and IRBM sites in Cuba.
1. Five trucks under camouflage netting
2. Power and instrument cables
3. Erector-launcher vehicles for SS-4s
4. Theodolite station for guidance alignment
5. Long tents for ready missiles
6. Heavy-duty tractor tread trucks
7. Tank-trailers for carrying fuel
8. Oxidizer tank trucks for SS-4s

Figure 7-5. San Cristobal close-up (23 October 1962).
Figure 7-6. Saguа La Grande No. 2 MRBM site with personnel distribution.
Figure 7-7: Sagua La Grande launch pad (23 October 1962).
Site status on 5 November 1962

Figure 7-8. Guanajay IRBM site at two times.
and rocket propellants. Each site was occupied by 400–500 personnel who lived in camouflaged tents. Once these primitive requirements were met, the missiles could be towed in and made operational within three days. It took longer to build the SS-5 sites at Remedios and Guanajay because their pads required launch rings, flash deflectors, storage bunkers, and control buildings not needed for the SS-4s.

The Soviet plans called for deployment of 48 SS-4 MRBMs and 24 SS-5 IRBMs by early December. The U.S. U-2 flights over the island were curtailed by bad weather during the last week in September and early October; therefore, little evidence was found. A CIA agent reported that Castro's private pilot boasted while drunk that Cuba no longer feared the U.S. because she had acquired long-range missiles with atomic warheads. The bad weather leading to Hurricane Ella from 9–13 October kept U.S. planes grounded. But on 14 October, low-level (200 ft altitude) flights by RF-101 aircraft returned with pictures showing gleaming missiles, some of them already angled up on their mobile launchers. A 17 October picture of Guanajay showed prefabricated concrete arches built in the Soviet Union for IRBM missile silos. By 23 October, when President Kennedy declared a quarantine (blockade) on shipping, at least 12 MRBM launchers were operational. None of the IRBM sites reached operational status.

Inspection of Figure 7-6 shows a nuclear warhead storage bunker near the top left of the picture. It also shows that missile launch stands and missile ready tents that were considered primary targets for the purpose of U.S. air strikes. Because there was concern for how many Soviet casualties might occur, the figure shows estimates of the personnel who might be located near each of the primary and ancillary targets. This point deserves further discussion. In mid-October, an exile group (Alpha 66) operating out of Florida boasted of attacking two vessels in a north Cuban port. It claimed to have killed 20 defenders, including Russian troops. The U.S. Administration promptly warned the exile groups of the sensitive situation and requested that they curtail attacks.

Figure 7-7 shows the details of a Sagua La Grande launch site with its inertial guidance alignment theodolite, missile stand, and cherry picker to connect launch cables. Figure 7-8 shows one of the Guanajay sites at two stages of preparation. Note the nuclear warhead storage bunker near the center of the lower picture.
7.1.7. The Political Maneuvers.

On 4 September, Soviet Premier Khrushchev sent an ambassador to see Attorney General Robert Kennedy in Washington with a confidential message promising that he would create no trouble for the United States during the fall election. Two days later, he reiterated the message to presidential advisor Theodore Sorensen. Another message stated, “No missile capable of reaching the United States would be placed in Cuba.” On 11 September, the Soviet government news agency Tass, stated that their nuclear weapons were so powerful, “there was no need to search for sites for them beyond the boundaries of the Soviet Union.”

The U.S. Board of National Estimates released a report (SNIE 85-3-6) on 18 September in which it judged that it was highly unlikely that the Soviets would place missiles on Cuban soil. But CIA Director, John McCone, recorded a dissenting opinion. Kennedy was deeply involved in political campaigning during the later part of September when there was mounting criticism of his “do nothing policy concerning Cuba.” On 13 October, Senator Homer E. Capehart campaigned outright for a blockade or invasion. Kennedy responded firmly the next day that the build-up was defensive and that, “self-appointed generals and admirals who want to send someone else’s sons to war did not deserve the voter’s support.”

The same day, U.S. reconnaissance photos confirmed the existence of the MRBM sites. Analysis on the afternoon of 15 October revealed missile transporters, blast deflectors, cherry pickers, and even nuclear weapon transportation vans. McGeorge Bundy, National Security Advisor, informed the president of this conclusive evidence and a SECRET meeting of high government officials was called immediately. Khrushchev was told on 16 October that the U.S. had discovered the missiles. He told the American ambassador in Moscow that Soviet purposes in Cuba were wholly defensive.

The next week was filled with day and night meetings in the White House, State Department, and Pentagon. The first challenge was an offer by Khrushchev to, “moderate the Soviet Union course in Cuba if the U.S. will ease its stand on West Berlin.” He offered to visit the United Nations and President Kennedy during Thanksgiving week or on 21 December to discuss the suggestion and exchange views on nuclear disarmament (after the Cuban missiles were operational). Kennedy did not want to snub Khrushchev, as President Eisenhower did when the premier visited the UN in 1960, but he insisted that the U.S. could not accept a demilitarized Berlin.
Because of the Bay of Pigs failure, President Kennedy established a special Executive Committee, or "Ex-Com," to advise him during the Cuban missile crisis.\textsuperscript{57} The Ex-Com was organized under the National Security Council and contained 34 members including Vice President Lyndon Johnson, Secretary of State Dean Rusk, Defense Secretary Robert McNamara, Chairman of the JCS General Maxwell Taylor, and Attorney General Robert Kennedy. However, the Ex-Com also included Treasury officials, commercial bankers, speech writers, and representatives of the U.S. Information Agency. The disparate group met daily as the crisis built and provided consensus recommendations concerning actions that should be taken.

On 18 October, the Ex-Com identified and discussed three alternative responses that might be proper to counter the Soviet move: 1) a naval blockade, 2) a direct air strike and invasion, and 3) settlement through the United Nations.\textsuperscript{19} The latter option was considered to be too slow and uncertain to achieve the desired result of having the missiles removed. The consensus was that the U.S. did not want to start a shooting war (which would probably kill a number of Russians); therefore, Option 2 was held in reserve as a last resort.\textsuperscript{57} Furthermore, the USAF and USN could not guarantee that all operational missiles could be destroyed by air strikes and an invasion was the only way to insure that hidden missiles or those being prepared could not be activated and launched.

By 21 October, Kennedy took the position that:

"If at any time the Communist buildup in Cuba were to endanger or interfere with our security in any way, including our base at Guantanamo, our passage through the Panama Canal, our missile and space activities in Cape Canaveral or the lives of American citizens in this country, or if Cuba should ever attempt to export its aggressive purposes by threat or by force against any nation in this hemisphere or become an offensive military base for the Soviet Union, then the U.S. will do whatever must be done to protect its own security and that of its allies."\textsuperscript{18}

The above statement was accompanied by a note that Congress had authorized the President to call up to 150,000 reserve forces personnel to active duty to protect the U.S. and hemisphere security interests. The administration also prepared an Executive Order to divert all Soviet-bloc shipping headed for Cuba. These moves were supported by the Organization of American States.

Following four days of intense Ex-Com evaluation, Kennedy announced on national television on 22 October that the U.S. would impose a "quarantine" on all ships carrying weapons and military materials to Cuba.\textsuperscript{19, 20} The word "quarantine" was selected to avoid the term "blockade," which
under international law is a belligerent action carried out against both enemy and neutral nation’s shipping as an act of war. The U.S. based its action on the 1947 Inter-American Treaty of Rio which called for reciprocal assistance between American nations and permitted a pacific blockade, and intervention short of war. The quarantine instructions included long-range aircraft and indicated that the U.S. would do everything possible to check all Communist-bloc planes in route to Cuba. He stated that, “all offensive weapons already in Cuba must be dismantled and removed, or the U.S. will take whatever action is necessary, beginning with a more rigorous blockade of such things as Cuba’s essential oil supplies.”

The Kennedy announcement indicated the U.S. was prepared to risk war if the Soviet’s retaliated by a counter-blockade of Berlin, and indicated that U.S. strategic forces had been placed on alert all over the world (see Section 7.2). His presentation also explicitly stated, “there is no evidence that there are nuclear warheads in Cuba.” This point deserves further consideration.

- The Administration may have been protecting the U.S. public from fear or panic if they knew nuclear warheads were so close.

- Warheads were an integral part of the reentry nose cones of the operational missiles (embedded forward in the heat shield) and they would have been very difficult to install once the thin skinned missiles were on their launch stands.

- Warhead bunkers, transport vans, and crews were identified in the aerial photographs of the sites. The Soviet operational doctrine for deploying the missiles in Warsaw Pact countries and in Russia included nuclear weapon handling equipment and storage bunkers of the types identified in Cuba. Security procedures at the Cuban sites were consistent with nuclear operations.

- It is unlikely that Khrushchev would bluff when he subsequently threatened to use the weapons if the warheads were not available.

Robert S. McNamara said, “we may never be able to detect the warheads, by the intelligence means open to us, but it is absolutely inconceivable to those of us who have worked on the problem and have been exposed to it that this equipment, in this state of readiness, a high state of operational capability, would have been placed in Cuba without warheads close to the missiles themselves.” The State Department noted that a specially secure port facility existed, surrounded by a double security fence, that may have been intended for off-loading nuclear warheads.21

Soviet diplomats still denied the presence of offensive missiles in Cuba on 23 October when Adlai E. Stevenson, Ambassador to the UN, made a presentation in which he showed enlarged photographs of the missile sites and called the Soviet bluff. The quarantine formally went into
effect at 2:00 pm Greenwich time on the 24th, allowing time for Navy ships to reach their assigned locations. The following day, Khrushchev warned that if the U.S. carried out its “piracy,” the Soviet Union would move to defend its rights. Again, he suggested a summit meeting to avert the threat of a thermonuclear war over the Cuban question. This was done in a letter to Bertrand Russell, a British philosopher and pacifist leader.

U.S. patrol aircraft had spotted 25 Soviet merchant ships on their way to Cuba by 24 October. Within one day, some of the ships altered course to avoid immediate contact with U.S. ships. The Navy broadcast special warnings to all ships in the vicinity of Cuba and the Windward Passage, Yucatan Passage, and Florida Strait. However, 13 ships continued on course and at 8:00 am on 25 October, the oil tanker Bucharest was intercepted. It was not boarded but was allowed to continue when the Navy determined it had only petroleum on board as described in Subsection 7.2.1.

Meanwhile, in a speech on 24 October, Kennedy declared that, “if even a single nuclear bomb falls on United States territory, the U.S. would strike a retaliatory blow.” Moscow radio responded more cautiously, “the Soviet Union would not use nuclear weapons against the United States, unless aggression is committed. But if aggressors touch off a war, the Soviet Union would strike a most powerful retaliatory blow.” That afternoon, the Pentagon released four new pictures of the missile sites, one of which included an arrow pointing to what was described as a “probable nuclear warhead storage bunker.”

Some U.S. military analysts felt that the real clue to Soviet intentions was not whether they would attempt to run the blockade but whether they continued to work on the offensive missile sites. On 26 October, a new intelligence report showed construction of the bases in Cuba proceeding at a rapid pace. President Kennedy protested this construction to Secretary General U Thant of the United Nations. He stated that if work on the sites did not halt within a few days, “the United States must consider further action.” This increased concern was based on realization that missiles in Cuba would give the Soviet Union a “first strike” capability against U.S. missiles and bombers. An example analysis was reported in which 60 MRBMs and 50 IRBMs in Cuba (with 70 percent reliability on target) could knock out 42 Strategic Air Command ICBMs or 77 air bases with less than 17 minutes warning.
7.1.8. The Decision to Remove the Missiles.

A series of high-level letter exchanges and telephone negotiations took place on the night of 26 through 27 October between the Soviet government and the White House. President Kennedy brushed aside a first letter proposal from Premier Khrushchev which offered to remove the Soviet missile bases in Cuba if the U.S. would remove its bases in Turkey. Kennedy promptly ordered U.S. forces to speed up mobilization and prepare for military options. The options that were under consideration included: 1) a full economic blockade of Cuba, 2) knocking out the missiles by sabotage, commando raids, or pinpoint bombing attacks, and 3) invasion. Nuclear options were evaluated but they were not reported for political and classified reasons. However the nuclear weapon deployments are described in Subsection 7.2.2.

Early on 27 October a U.S. U-2 reconnaissance aircraft was shot down by a Soviet SA-2 missile over one of the Cuban sites. President Kennedy immediately warned that all future reconnaissance planes would be protected. He also issued orders to activate 24 Air Force Reserve air transport squadrons including 14,214 personnel and C-119 and C-23 troop and cargo carrying aircraft.

This move caused speculation that an invasion was imminent. That night, in a second letter to Premier Khrushchev, President Kennedy referred to a private communication from the preceding night in which he offered to end the blockade and give Russia assurances against a U.S. invasion of Cuba if Khrushchev agreed to remove the offensive missiles under appropriate U.N. observation, supervision, and safeguards. In his response, the following morning, Khrushchev accepted the offer except that the Russians would not permit U.N. observers on its Cuban bases and the U.S. would have to remove its missiles from Turkey. This addition nearly destroyed the negotiation until Robert Kennedy advised that the U.S. should accept the first message and ignore ever receiving the second message. This ploy worked but further negotiations were needed to resolve Cuban government and U.N. inspection difficulties.

Although details of the Soviet decision to withdraw may never be fully disclosed, there are a few observations that can be made.
In light of the traumatic World War II experiences of the Soviet people, their leaders would not lightly initiate actions which might eventually lead to nuclear attacks on the Soviet Union. Activation and alert of U.S. strategic missiles and bombers (as described in Subsection 7.2.2) probably convinced the Russian leaders that it could happen.

Although Soviet military missions and technicians were established in a number of Asian and African countries, Soviet leaders were notoriously reluctant to commit combat forces beyond the boundaries of the Soviet Union and Warsaw Pact. The prospects of defending against invasion and land combat on Cuba, only 90 miles from the U.S. coast, was not attractive to the military.

A revered Leninist precept counsels, "two steps forward, one step back," or freely translated, "if your neck is out too far, pull it back." This precept influenced Soviet policymakers on previous occasions and may have been important in the Cuban decision. Only a threat to vital national interests would support a decision to employ military force.

If Khrushchev's actions in Cuba were an attempt to gain leverage in Europe on issues involving the U.S. missiles in Turkey or the Berlin crisis, he was undoubtedly surprised by Kennedy's determination "to go to the mat" to have the offensive missiles removed from Cuba.

However, Fidel Castro's government took a belligerent attitude in fear that it was being "sold out" by the Soviet Union. Castro was irked that he was not a party to the decision making and he resented never being permitted to visit the missile sites in his own country. Cuban officials had been ordered away from the bases at bayonet point.5,28

Hoping to secure Castro's support, U Thant with a party of 19 supervisors flew to Havana on 30 October to negotiate an agreement for the on-site inspection teams. Castro shouted his response, "Whoever comes to Cuba must come in battle array!"5 He insisted that he would not negotiate until the United States, 1) returned Guantanamo to Cuba, 2) ended the blockade and all economic pressure on Cuba, 3) stopped the raids by exile commando groups, 4) ended reconnaissance flights over Cuba, and 5) ceased all subversive activities against Cuba. U Thant returned to the U.N. in despair.

Fortunately, the Russians ignored Castro's objections. They permitted a flyover inspection of the first ship carrying SS-5 IRBM's to Cuba before it turned around and headed home. They began to dismantle the missile sites, smashed concrete pads, plowed up the ground, and by 5 November, they moved the weapons back to ships for their return to Russia.5 Russia worked out an agreement with the U.S. that avoided on-site inspections by permitting U.S. Navy ships to draw alongside Soviet freighters leaving Cuba to count the missiles on the decks.5

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A final obstacle remained, Castro refused to permit the removal of the Il-28 bombers, insisting the Soviets had given him the jets for the Cuban Air Force. Soviet First Deputy Premier Mikoyan spent considerable time in Cuba during November convincing Castro that the jets were obsolete. On 20 November it was agreed that the bombers would be removed and on 6 December, Kennedy lifted the blockade when the last Soviet ship full of jets left Cuba.\textsuperscript{5}

7.1.9 Political Aftermath.

Recently, tapes of critical meetings held at the White House during the crisis have disclosed further information concerning the resolution process. First, President Kennedy secretly agreed with Khrushchev to remove the U.S. missiles from Turkey on 26 October, the day before the Soviets agreed to withdraw their missiles.\textsuperscript{54} Members of his advisory committee (Robert McNamara, General Maxwell Taylor, John McCon, Robert Kennedy, and Dean Rusk) knew of this agreement.

Second, Senator Richard Russell of the Armed Services Committee urged Kennedy to invade when it was learned that air strikes could not guarantee success in destroying the missiles. Kennedy turned down an invasion plan that would take months to prepare but the State Department organized a Cuban government in exile to fly to Cuba at a moment’s notice after the invasion.\textsuperscript{55}

Third, when William Colby became Director of the Central Intelligence Agency in the 1970s, he reported that after the Bay of Pigs invasion failure, there was a mind-set in the White House of, “let’s get rid of Castro some other way.” The Cuban missile crisis fueled this determination even though it ended in an apparent American victory. But the obsession was so strong, it remained active in the CIA for more than a dozen years and extended to other areas of the world where Castro supported communist activities (i.e., election of Chilean president Salvador Allende in 1970 and overthrow of the Angolan government in 1974).\textsuperscript{60}

7.2 SPECIFIC U.S. ACTIONS IN RESPONSE TO THE NUCLEAR THREAT.

The United States initiated a number of actions in response to the Cuban missile threat. It is useful to review both the conventional and nuclear force moves that were implemented.

Reconnaissance.

The first U.S. response to the Soviet buildup was intense reconnaissance beginning with U-2 aircraft on 29 August. By 19 September, the U-2s had to perform in-and-out missions to avoid the SAM sites that were becoming operational. U-2 flights continued on a more cautious basis through mid-October and the defenses were notably quiet. It has been speculated that the Soviets and Cubans deliberately avoided a confrontation so long as progress was being made on the missile sites and during diplomatic negotiations. However, five days after the blockade was initiated (27 October), a U-2 was shot down by a SAM as it took pictures of the sites to monitor their status. Fidel Castro personally claimed to have launched the SAM. President Kennedy alerted all forces stationed in Florida and ordered that subsequent flights be escorted. U-2 flights continued through January 1963 to confirm the withdrawal of the missiles and Il-28 bombers.

Low-level photoreconnaissance began on 22 October by the Air Force with RF-101 aircraft and by the Navy with RF-81 Crusader aircraft. Many of these missions involved armed escort aircraft to protect against possible Cuban interceptors.

Interceptors and Strike Aircraft.

The first movement of combat forces was the VF-41 squadron of 12 Navy F-4B fighters from Oceana, VA, to Boca Chica Naval Air Station on Key West. The move, ordered on 6 October, was a means for matching the performance of new MiG-21 jets spotted in Cuba. The Navy began 24-hour a day surveillance of Cuban shipping using both air and sea patrols by 18 October. The Air Force alerted units at Homestead AFB (south of Miami) and MacDill AFB (near Tampa). These bases had F-100 and F-105 fighter squadrons, respectively. A few F-86 and F-4C aircraft were moved to MacDill. On 21 October, the 19th Air Force Composite Air Strike Force of 50 to 75 aircraft arrived at MacDill. This force included B-66 twin-jet bombers, RF-101 (photoreconnaissance) and RB-66 (electromagnetic reconnaissance) aircraft in addition to F-84Fs.

Army Corps of Engineer construction crews arrived at the Key West Airport on 21 October and began to build a new control tower on the roof of the administration building. The tower was
needed to handle the big influx of military and civilian aircraft. By 23 October, the military was in full control of the airport and were coordinating flights with the Boca Chica NAS (4 miles south). Large tanker aircraft, troop transports, and jet bombers landed and took off between flights of fighter aircraft.

All of the North American Defense Command was placed on alert status on 22 October. Distant Early Warning (DEW) Line interceptor squadrons were moved to extend all-weather radar coverage and defense for southeastern states. For example, six F-102s were moved to Grand Island Municipal Airport, LA. Additional F-100s and F-104s were moved to Homestead AFB and F-105s were stationed at Orlando, FL. A squadron of F-106 interceptors was deployed to Patrick AFB south of Cape Canaveral. Even military units in Alaska and Hawaii were placed on increased readiness.

Marines and Ground Forces.

Roughly 1,500 Marines arrived at Boca Chica NAS on 21 October with combat-ready equipment. This force from the 1st Marine Combat Division at Camp Pendleton, CA, grew within a few days to over 5,000 troops. It included the Pacific Fleet amphibious landing group in the event that an invasion of Cuba was directed.

Castro mobilized all Cuban military forces on 23 October, claiming the "blockade" was an act of war. He threatened to attack U.S. bases from which reconnaissance flights were made and invasion forces were being prepared. Raul Castro warned that invasion of Cuba would trigger World War III. The U.S. denied that it was considering an invasion but the Army mobilized five of eight divisions of reserves (100,000 personnel), the Marines moved 12,000 troops into Florida, and 5,000 Naval personnel were assembled into a separate command in the event that it was necessary to invade Cuba. The 1st Armored Division was sent from Texas to Georgia.

* Although the U.S. carefully called its action a quarantine (stopping only ships carrying missiles, aircraft and other military supplies), the Cuban and Soviet governments and media usually referred to it as a blockade.
Anti-Aircraft Defenses.

Army anti-aircraft units arrived in Key West on the night of 25 October with more than 1,000 personnel. They set up anti-aircraft artillery (AAA) around the airport and took over the 185-room Casa Marina Hotel as a coordination center. The next day, anti-aircraft missile units from Fort Meade, MD, began to arrive and were set up on a spit of land three miles east of downtown. Trucks moved on to a 3,000 ft wide city beach and dug 30 ft deep revetted positions for missile launchers. The missiles were Nike Hercules (MIM-14B) which had an aircraft intercept range of 93 miles. They were capable of carrying either high explosive or nuclear warheads as described in Subsection 7.2.2. The unique feature of this deployment was the high level of security observed in setting up the site and the fact that armed guards were posted around the perimeter and at the end of the slender causeway leading to it.

The Army also established radar and AAA units on several islands along the chain between the mainland and Key West. Nike Hercules batteries were also deployed on Plantation Isle and near Tampa to protect Homestead AFB and MacDill AFB, respectively. They were reinforced with batteries of low-altitude Hawk anti-aircraft missiles.

Guantanamo.

About 2,700 dependents of military personnel at Guantanamo Bay Naval Base were hurriedly evacuated starting on 22 October to insure that they would not become hostages to Cuban military actions. Many were air lifted to New York by National Airlines. However, 2,432 were moved in four Military Sea Transportation ships. They arrived in Norfolk on 25 October.

The base was placed on alert with special security restrictions. Few of the 220 Navy ships in the bay were permitted to tie up at piers in the event that they had to leave hurriedly. The Marine and Navy forces were augmented by two Seebee battalions that constructed a main line of defensive barriers on the cactus and scrub-covered hills along the eastern side of the base. Sailors and airmen unloaded 187 military air transport loads of supplies by 25 October. P-2V and S-2F aircraft flew thousands of hours of sea searches while F-8U, A-4D, and air defense aircraft maintained a standing alert.
Naval Forces.

The week before President Kennedy ordered the quarantine, the Navy was preparing a large training exercise and amphibious Marine landing on Vieques Island southeast of Puerto Rico. A force of 40 ships, including the carriers Enterprise and Independence and support carriers Randolph, Okinawa, and Thetis Bay were involved. The force had 20 destroyers, 15 troop transports, 20,000 Navy men, and 6,000 Marines. The exercise was cancelled on the morning of 22 October and combat units plus additional destroyers, submarines and aircraft carriers joined the ships already on station to implement the quarantine as illustrated in Figure 7-9.

Task Force 136, under the command of Admiral Robert L. Dennison, was assembled with 7 aircraft carriers, 8 cruisers, and over 100 destroyers, tenders, mine sweepers, and submarines. Some 19 combat ships formed a giant arc extending 500 miles eastward from the coast of Florida and north of the Bahama Islands. A second arc of ships extended around Cape Maysi at Cuba's eastern tip and a third arc from the Yucatan Channel surrounded the western tip through the Florida Strait past Havana. Most of the ships covered passages between the islands and the carriers were strung along the arcs such that their patrol aircraft could provide overlapping coverage.

Patrol aircraft spotted 25 Soviet merchant ships moving toward Cuba on 23 October. A message was broadcast to all ships in the mid-Atlantic and Cuban waters, warning them of the quarantine. By the next day, 12 of the Soviet ships turned away to avoid interacting with U.S. ships. One of these ships was the Poltava which had formerly carried MRBMs to Cuba. A protocol was established for intercepting ships in which the ship was required to identify itself, declare its cargo, state its ports of call, and "lie to" for a visit and search if not permitted to pass. If a ship refused to stop, force could be used to the extent necessary, including sinking. The first ship intercepted was the oil tanker Bucharest which was passed. The second ship, a Russian-chartered freighter, Marucla, was stopped and inspected before being permitted to proceed. The tanker, Vinnitsa, was permitted to pass and on 26 October, it was acclaimed in Havana for having run the "blockade."

After Khrushchev agreed to withdraw the missiles and dismantle the sites, the U.S. and Russians agreed to a new inspection protocol. Soviet ships leaving Cuba would slow down, permit a U.S. ship to pull along side, remove any coverings of missiles or aircraft on the decks, and permit them
Figure 7-9. Quarantine ship deployments and ranges from Florida.
to be counted. Figure 7-10 shows the Volgoles and a second Soviet ship with missiles exposed on the decks. The following ships were inspected on 9–11 November:50

<table>
<thead>
<tr>
<th>Ships</th>
<th>Missiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Komsomol</td>
<td>8</td>
</tr>
<tr>
<td>Labinsk</td>
<td>2</td>
</tr>
<tr>
<td>Volgoles</td>
<td>7</td>
</tr>
<tr>
<td>Polzonov</td>
<td>5</td>
</tr>
<tr>
<td>Anosov</td>
<td>8</td>
</tr>
<tr>
<td>Bratsk</td>
<td>2</td>
</tr>
<tr>
<td>Kurchatov</td>
<td>6</td>
</tr>
<tr>
<td>Dvinogorsk</td>
<td>4</td>
</tr>
</tbody>
</table>

The quarantine remained in place until 6 December when the last of the Il-28 bombers were removed.5

7.2.2 The Nuclear Force Moves.

To emphasize U.S. determination, a number of nuclear forces were placed on high levels of alert or were moved to strike positions.

Strategic Weapon Systems.

The Strategic Air Command took three specific actions to insure the survivability of its forces while insuring that the Soviet Union understood the serious nature of the situation.

- All ICBM bases were placed on alert status, Minuteman and Titan missiles in their silos could be launched within minutes following warning of an enemy attack.31 On 22 October, the missiles moved from DEFCON 5 (peacetime Defense Condition) to DEFCON 2 (just short of war). They remained in around-the-clock alert until Khrushchev accepted the U.S. conditions on 27 October.

- About half of the B-52 bomber force (i.e., nearly 300 aircraft) was put on airborne alert with each plane carrying two or more nuclear bombs.31 The aircraft flew continuously for 72 hours, some taking off when others landed to refuel and change crews. This highly visible and expensive operation was called off after Khrushchev accepted the U.S. conditions. It is unlikely that any B-52 missions had Cuban targets since they were intended to deter Soviet attacks.
Soviet ship Volgoles leaving Cuba with missiles

Soviet ship with missiles exposed on deck

Figure 7-10. Soviet ships leaving Cuba with missiles.
Nearly 500 B-47 medium-range nuclear bombers were dispersed to secondary airfields throughout the U.S.\textsuperscript{32} MacDill AFB had 50 of the six-engine bombers and they may have been assigned Cuban bombing missions.\textsuperscript{30} Examples of the dispersal included four B-47s that landed at General Mitchell Field in Milwaukee, WI; eight moved to Bradley Field in Windsor, CO; and seven arrived at Tulsa Municipal Airport, OK.\textsuperscript{32} These aircraft carried nuclear bombs and remained on the ground under tight security in a ready status.

**Submarine Launched Missiles.**

Although nine Polaris submarines had been commissioned before the Cuban missile crisis, only seven had their missile systems installed, tested, and brought to an operational status (a process that required six to nine months).\textsuperscript{2,10} Of these seven operational submarines, only three or four were normally deployed at sea during 1962 until sufficient numbers of rotation crews could be trained and support ships deployed.

When the strategic forces went to DEFCON 2 level of alert, two additional Polaris submarines left their base at Holy Loch, Scotland, and moved to launch areas in the North Sea.\textsuperscript{38} This implied that 80-96 missile warheads were on station based on 16 missiles per submarine. The submarine tender at Holy Loch also deployed to sea for safety. These moves should have been very visible to Soviet intelligence analysts. The submarines remained on patrol until after the crisis was over.

**Air Defense Missiles.**

As stated above, Nike Hercules air defense missiles were installed on the beach at Key West. These missiles deserve special consideration since they were nuclear-capable (W-31 Mod 2 warhead with yields of 2 and 20 kt).\textsuperscript{37} Figure 7-11 shows they were designed for both aircraft intercept and surface-to-surface roles. While being able to intercept aircraft at ranges up to 93 miles with a conventional warhead (depending on target speed and altitude), they could fly out ballistically with the nuclear warhead to over 100 miles. This implies that Hercules could hold at risk the ports of Havana and Mariel plus the IRBM sites at Guanajay. More important, Hercules was tested as a defense against tactical ballistic missiles in June 1960. It shot down a Corporal missile at White Sands at a range in excess of 75 miles and altitude of 150,000 ft, killing the target on the downward portion of its trajectory.\textsuperscript{51} Hercules was also under evaluation as a possible coastal defense against submarine-launched ballistic missiles.
**MISSILE CHARACTERISTICS**

- Length: 500 in
- Diameter: 34.6 in
- Fin Span: 105 in
- Launch Weight: 10,712 lb
- Warheads:
  - H.E. Frag. -- 1,123 lb
  - W-31 Mod 2 Nuclear (yields -- 2 and 20 kt)
- Ranges:
  - Aircraft Intercept (87–93 miles depending on target)
  - Surface Bombardment (over 100 miles)
- Guidance:
  - Radio Command
  - Accuracy (~700 ft CEP)

![Figure 7-11. Nike Hercules coverage from Key West.](image)
It appears that a battalion of Nike Hercules were installed at Key West (i.e., 10–12 launchers in batteries of two, sharing HIPAR target acquisition and tracking radars) and manned by 576 personnel (roughly half the Army contingent on the island). According to Douglas Moody, the Hercules batteries were deployed with full Technical Operating Equipment (TOE) including both conventional and nuclear warheads. The units had moved directly from training at Redstone Arsenal, Alabama, and included some Nike Ajax maintenance and support vans to permit 4–6 weeks of field operations. Specially guarded equipment boxes were understood to contain the nuclear warhead elements.

Air-to-Air Weapons.

The F-102 and F-106 interceptor units moved to southern bases were designed to launch Falcon air-to-air missiles including the GAR-11 (AIM-26) as shown in Figure 7-12. This missile carried a W-54 nuclear warhead with a yield of 0.1–1 kt. These missiles were primarily useful to defend against Il-28 bomber attacks. The F-106 aircraft could also launch Genie Guided Air Rockets with W-25 nuclear warheads (yield of 1.5 kt). These rockets could be fired at Il-28 bombers or launched ballistically at airfields or missile launch sites.

The Royal Canadian Air Force, under NORAD control, was placed on the same readiness status as the U.S. defense command. It employed the same F-102 and F-106 interceptors and weapons as the U.S. units; therefore, it was also nuclear-capable. However, nuclear warheads were not deployed with any Canadian or U.S. units operating in Canada.

Missile Test Launches.

To emphasize U.S. capabilities, a previously scheduled series of scientific and training missile launches were accelerated to the period between 22 and 26 October. Specifically, a Sergeant rocket booster was used to launch a nuclear test device over Johnston Island on 22 October to an altitude of 30 miles under the Operation Dominic exoatmospheric test series. A Thor IRBM with a satellite was launched from Vandenberg AFB, CA. Also at Vandenberg, an Atlas training missile and a Titan II developmental missile were flown.

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* Mr. Douglas Moody (East Greenwich, RI) told the author on 10 March 1996 that he was an Army Private First Class assigned to a Nike Hercules battalion at Key West during the Cuban missile crisis. His memory of the events are described above.
MISSILE CHARACTERISTICS

- Length: 81.5 in
- Diameter: 11.4 in
- Fin Span: 24.5 in
- Weight: 254 lb
- Warhead:
  - Nuclear W-54
  - Yield: 0.1 to 1 kt
- Guidance: Semi-active radar homing
- Flight Speed: Mach 3 to 4
- Range: 7 miles

SOURCES

- References 10 and 37

Figure 7-12. Falcon GAR-11 (AIM-26A) nuclear air-to-air missile.
Turkey Missile Sites.

On 23 October, the U.S. with support from the Turkish Army put the Jupiter missiles located on the Black Sea coast on full alert. The following day, the Soviet Union complained at the U.N. about this provocative move but Turkey pledged its support for the U.S. The Turkish Foreign Minister denied discussing with the U.S. the removal of the missiles. The missiles stood-down from the alert on 27 October and it was speculated that a deal had been made between Kennedy and Khrushchev to remove the weapons. The Jupiters were quietly removed from Turkey and Italy in August 1963.

7.2.3 Other Important Activities.

The Berlin Situation.

The shadow of the missile crisis weighed heavily on West Berlin. After the 22 October announcement by President Kennedy, the East German police initiated a slow down of civilian traffic between West Berlin and West Germany. There was deep anxiety when Soviet tanks moved to back up the police. Many people started panic buying of food and supplies; sales in grocery stores were up 50 percent for several days. The U.S. Army put three battalions of troops in the city on maneuvers. However, the Soviet response was judged to be relatively constrained.

U.S. Civilian Actions.

Within the U.S. several important civilian actions took place between 22-26 October. First, the state of Florida placed its National Guard on 24 hour alert. Commercial aircraft traveling in the state were placed under strict Federal Aviation Agency restrictions. The state of Louisiana initiated continuous Air National Guard patrols along the coast.

On 24 October, the Pentagon reported that 112,000 fallout shelters with protection factors greater than 100 had been identified throughout the nation and they could shelter 60 million people. Local Civil Defense organizations were alerted and plans were made to warn the public in the event of a Soviet attack. Figure 7-13 shows the areas of the U.S. that were at risk from the MRBMs, IL-28 bombers, and IRBMs which were not yet operational in Cuba.
Figure 7-13. Soviet weapon coverage of U.S. targets.
For three days (23–26 October), helicopters sat on the White House lawn with their engines running, ready to fly the President, his family, and cabinet members to safety at the first warning of an attack. Staff members would shelter in the tunnels from the White House to the Treasury and old Executive Building.

**Soviet Union Actions.**

Soviet ICBMs could reach the entire U.S. All Soviet ICBMs and long-range bombers were placed on the highest alert status after 22 October and remained in that condition for an entire week. The Red Star armed forces newspaper reported on 25 October that a series of four nuclear tests were being conducted with yields of 30–60 megatons. Defense Minister Rodion Malinovsky stated that the current tests were proving "the high perfection and gigantic destructive force of the new nuclear armaments."

7.3 LESSONS LEARNED FROM THE CUBAN MISSILE CRISIS.

7.3.1 General Observations.

During the five intense days from 22 to 27 October, both the U.S. and Soviet Union seriously considered the use of nuclear weapons. Details of the planning are not available but several observations can be made based on the actions taken. From the Soviet perspective, the government was probably willing to accept some personnel and equipment losses to U.S. conventional weapon attacks against the missile sites. However, seriously high casualties or nuclear strikes against the sites, would have required retaliation. An invasion of Cuba might have triggered a Soviet counterstrike in Europe or elsewhere.

The U.S. activation of ICBMs, Polaris submarines, B-52 bombers, and missiles in Turkey were done to deter Soviet strategic threats, impress Russia with the seriousness of the U.S. position, and to insure their survivability in the event of a miscalculation attack. There is no evidence that the U.S. intended to employ nuclear strikes against the Soviet homeland which would certainly have initiated a strategic nuclear war. However, the nuclear-capable B-47 bombers in Florida and Nike Hercules could have been intended for attack purposes against Cuban targets. But it is probable that Nike Hercules and the air-to-air nuclear weapons were deployed primarily for defensive purposes. An invasion of Cuba to remove the sites was the least attractive military option considered by the U.S.
Three other observation can be drawn from a review of the crisis.

- It is doubtful that Russia would have moved missiles into Cuba if they were not severely threatened by the strategic arms race. U.S. ICBMs, bombers, weapons deployed in NATO countries, and concerns for the reliability of their own weapons contributed to the fear that they were vulnerable to a U.S. counterforce attack. Political factors such as the threat to their Communist ideology in Cuba and no solution to the Berlin crisis contributed to their decision. Although it was a risky gamble, the movement of missiles could help resolve these problems.

- The U.S. initially considered conventional weapon attacks to destroy the missiles and their sites. Today, that option may have been viable with precision guided weapons but the Soviets would have deployed fully mobile missiles to make the attacks more difficult. In 1962, when planners found that conventional means were incapable of assuring success, they turned to consideration of nuclear weapons. Thus, the U.S. must continue development and deployment of highly effective conventional force options to reduce the dependency on nuclear responses.

- The U.S. planners concern for killing Russians in Cuba was driven by the hypothesis that casualties would draw the Soviet Union into a worldwide conflict against the U.S. This point deserves further consideration. Although six, or more, of President Kennedy's advisors preferred U.S. strikes at the missile sites, they assumed a number of Russians would be killed or injured. In reviewing this point with both Russians and Americans in 1987, Graham Allison concluded that a Soviet military response would have been inevitable. However, the response would not necessarily have led to nuclear warfare.

7.3.2 Specific Observations.

Within a few days after the crisis, President Kennedy expressed his views on the outcome. Specifically, he saw the results not as a victory for the U.S. but rather, as an honorable accommodation in a single event of the cold war. He observed that:

- The Soviet Union did not feel ahead of the U.S. in either technology or weapons or they would not have taken such a great risk.
- The U.S. removed any illusion concerning its will to resist and fight for our beliefs...reducing Moscow’s chances of making miscalculations in the future.

It was noted that Premier Khrushchev’s private messages and consultations were far more vituperative than his public remarks but his actions were restrained to cautious with respect to policy issues. On the U.S. side, Dean Rusk of the State Department, John McCone of the CIA, McGeorge Bundy of the NSC, and Robert S. McNamara of the Defense Department emerged from the crisis as a far more composed and competent team than was evident during the Bay of Pigs Crisis one year earlier.
Before the crisis, the U.S. had made missile basing agreements with Britain, Italy and Turkey without due public notice. But the Soviet offer to remove their missiles from Cuba if the U.S. removed its weapons from European countries raised a key question. Can the U.S. enter into important deals with a superpower (or any country) to satisfy national interests without doing injury to its military alliances and its reputation for defending its allies? Kennedy did not have an answer for this question and could not obtain allied agreement to remove missiles in their countries in a timely manner.41

The crisis raised several questions concerning the effectiveness of U.S. intelligence capabilities:

- How could Russia build bases so close to the U.S. in a matter of weeks without earlier detection?
- How could a U.S. senator obtain fully confirmed data on the buildup a week before the Administration?
- The intelligence community was too quick to discount refugee and émigré reports. They gave warning a full month before confirmed data from U.S. resources.45

This problem was still in evidence more than 30 years later when Iraq invaded Kuwait. More than two years before the crisis, open literature showed a buildup of nuclear, chemical, and biological weapons with long-range missile delivery systems in Iraq. The intelligence organizations must not be “caught napping” because current political interests or events are focused on other regions of the world.
SECTION 8.0
NUCLEAR WEAPONS AND THE ASSAULT ON THE LIBERTY
W. C. Yengst

8.1 GENERAL DESCRIPTION OF THE SCENARIO.

Some nuclear weapons went to war by accident, not by design. The Israeli assault on the U.S.S. Liberty during the Six-Day War of June 1967 was officially declared a tragic accident resulting from mistaken identity as explained by the Israeli government. However, it illustrates the potential risks involved in deploying nuclear weapons in a theater of war. It is necessary to present the theater situation before addressing the assault and U.S. response.

8.1.1 Arab-Israeli Six-Day War.

United Nations (UN) troops prevented raids across the Egyptian-Israeli border after the 1956 war but raids continued from Syria and Jordan. At Egypt's demand, the U.S. troops were withdrawn from the Gaza Strip and Sinai Peninsula in May 1967. Egypt again closed the Gulf of Aqaba to Israeli ships. However, the main threat to Israel was Egypt's military, strengthened to an unprecedented level by arms from the Soviet Union. Syria was also well armed while Lebanon and Jordan were supporting Arab states.

Faced by significant military threats on all borders, Israel initiated a preemptive war on 5 June 1967 with air strikes against 16 airfields in Egypt, two in Jordan, and six in Syria. The air strikes took the Arab countries by surprise and completely destroyed their air forces within two days. The Israeli army defeated the Egyptian forces in the Gaza Strip by 8 June and occupied the Sinai Peninsula by 9 June. Israeli Chief of Staff Yitzhak Rabin announced that, "the Egyptians are defeated and the blockade on the Strait of Tiran is broken." On the eastern front, the Israelis had captured Jerusalem and the west bank of the Jordan River and they were preparing to attack Syrian forces on the Golan Heights. When Israel captured the Golan Heights on 10 June, the Arab states accepted a cease-fire and the brief six-day war was over.
8.1.2 The U.S.S. Liberty.

The U.S.S. Liberty was commissioned on 4 May 1945 as a World War II Victory ship. It had a displacement of about 11,000 tons and was reconfigured during the early 1960s, along with its sister ship the U.S.S. Pueblo, as a support ship for "Research in Communications and Electromagnetic Radiation," (Jane's classification). The ship, shown in Figure 8-1, was classified by the Navy as an auxiliary or noncombatant vessel for technical research duty. Roughly $20 million was spent in the reconfiguration of the ship and $10 million was used to add technical research equipment. With a highly qualified crew of 295 (16 officers, 161 petty officers, 111 seamen, plus a few Marines and civilians), the Liberty was recognized as an intelligence gathering ship with a crew of "spooks".²

![Figure 8-1. The U.S.S. Liberty before the assault.](image)

On 2 June, the Liberty was in port at Rota, Spain, when it received orders directly from the Joint Chiefs of Staff to move with haste to the coast of Egypt. Its cover story was to "assure communications between U.S. government posts in the Middle East and to assist in relaying information concerning the evacuation of American dependents and other American citizens."⁴ In fact, the ship was monitoring and recording classified communications, radar frequencies, tactics,
and characteristics of Soviet surface-to-air missiles and aircraft used by the Egyptians during combat conditions. The Liberty arrived at its assigned deployment, 12.5 miles from the coast near El Arish, Sinai-Egypt, at about 8:00am on 8 June. It was within sight of the fighting along the coast when its Captain, William L. McGonagle, radioed his position to Vice Admiral William I. Martin, COMSIXTHFLT.²

Figure 8-2 shows a section of the Gaza Strip and Sinai Peninsula as Israeli ground forces moved to the edge of the Suez Canal on 8-10 June. The U.S.S. Liberty (GTR-5) was under direct orders from the Pentagon (JCS) to operate 12–15 miles off the coast of El Arish in international waters beyond Egypt's 12-mile limit and to clearly display the American flag.²

![Map of Israeli Advances 8-10 June 1967](image)

Figure 8-2. Gaza Strip and Sinai with the U.S.S. Liberty.
8.1.3 American 6th Fleet.

The U.S. 6th Fleet, which normally operates in the Mediterranean Sea, moved toward the Island of Crete in early June as the threat of a Middle East crisis increased. Two days after the Israeli attacks, Soviet naval forces in the Mediterranean began harassing maneuvers against the 6th Fleet. On 7 June, Vice Admiral Martin on the U.S. flagship, cruiser Little Rock, warned a fleet of Soviet destroyers concerning the course of the 6th fleets and its carriers. At 5:00am the following morning, the U.S. destroyer Thomas detected a Soviet submarine at a range of 3.5 miles. The Thomas began tracking the submarine when a Soviet destroyer took a collision course with the U.S. destroyer Lawe. The Little Rock, and two aircraft carriers, the U.S.S. America and the Saratoga, began zigzagging maneuvers as two other destroyers closed on the submarine.³

As the morning wore on, a Soviet patrol craft with twin antiaircraft guns maneuvered into the U.S. fleet, around the aircraft carrier America, and tried to force it off course. American’s captain, Donald D. Engen, sent a sharp message to the Soviet ship to withdraw from the formation. At 11:15am America began to launch aircraft for practice bomb runs against the deserted Greek island of Avgonisi off the north coast of Crete. The Soviet ships moved away without acknowledging Captain Engen’s message.³ Thus, the 6th Fleet was occupied with Soviet harassment during the morning hours of the day on which the Liberty was attacked.⁴

There is reason to believe that the fleet was at a heightened state of alert before noon. Admiral Martin’s immediate concern was the Soviet fleet maneuvers and because the Liberty was not a combat ship and was operating 400 miles away under direct orders from the JCS, he probably did not anticipate the need to provide it with air cover.

8.1.4 The Israeli Attack.

The Liberty was spotted (at 31°27.2’N, 34°00’E) by an Israeli C-119 (Boxcar) transport at 11:00am on 8 June. The Boxcar radioed its sighting and reconnoitered again at 11:30am but apparently, it did not see the U.S. flag or markings.² At this point, the U.S. and Israeli accounts of the action diverged dramatically and remain the subject of unresolved debate.
U.S. Accounts.

- According to Lieutenant James M. Ennes Jr., a cypher officer wounded on the Liberty, “senior crewmen were convinced the Israelis knew the ship was American before they attacked. We were flying the Stars and Stripes and it's absolutely impossible that they shouldn't know who we were.”

  - Israeli aircraft actually overflew the Liberty eight times before 12:45pm
  - The Liberty’s radio intercept operators heard Israeli reconnaissance pilots correctly reporting that the ship was American.

- At a Navy Court of Inquiry, Admiral Isaac Kidd made no attempt to fix blame; although, an unconfirmed CIA report claimed the Israelis planned to sink the ship.

Israeli Accounts.

- The “Israeli Preliminary Inquiry 1/67” (relayed to Washington) claimed only two reconnaissance overflights were made (6:00 and 9:00am Israeli Time).

- Thinking it was an Egyptian warship, Israel launched three patrol torpedo boats from Ashdod (north of Gaza) at 12:00 noon to make high speed runs to the Liberty. The Israeli patrol boats reported sighting the ship at a distance and mistakenly identified it as the Egyptian supply ship El Questir in disguise. Israel contacted the Soviet and U.S. embassies in Tel Aviv to ask if they had any ships operating in the area -- both counties said that they did not. Micha Limor, an Israeli reservist who served on one of the torpedo boats, reported later to the Associated Press, “Israeli sailors noticed three numbers on the ship but they meant nothing to them.”

James Ennes postulated that the Israeli decision to destroy the ship was because its sensitive listening devices would detect plans to invade Syria’s Golan Heights. This conclusion was confirmed 24 years later (6 November 1991) when the American Ambassador to Lebanon, Dwight Porter, revealed that the Beirut Embassy had also intercepted the Israeli reconnaissance report, “It’s an American ship.” He claimed that Israel deliberately attacked the Liberty rather than allow it to monitor a crucial phase of their operations. A CIA report of 27 July 1967 quoted an Israeli informant as saying, Israeli headquarters were worried as to how many people might have access to the information the Liberty was intercepting.

An air strike by three Israeli Mirage jets was authorized by Moshe Dayan to begin at 2:00pm, according to a CIA report. Within minutes, the jets raked the ship with machine guns and rockets. The Liberty promptly radioed for help and at 2:09pm, aircraft carrier Saratoga with the 6th Fleet
acknowledged the message.² The Israeli jets made second passes at the ship and dropped Napalm bombs which caused most of the U.S. casualties. When the aircraft withdrew, the waiting patrol boats closed in for torpedo attacks. The first two patrol boats launched one torpedo each while firing machine guns and receiving return fire from the Liberty’s machine guns. One torpedo was diverted by U.S. gunfire but the second torpedo hit the Liberty amidship and tore a gaping hole. The third patrol boat spotted the U.S. flag and called off the attack, 35 minutes after it started.¹⁶

The Liberty, listing heavily to starboard, suffered 34 dead and 171 injured.¹ Once they realized their mistake, the Israeli patrol boats stopped astern of the Liberty and offered assistance. However, due to efforts to fight fires, seal the torpedo hole, and destroy cryptographic codes, reports, and equipment in the event that the ship might sink, Captain McGonagle refused their help.² Security demanded that no one be permitted on board the stricken ship.

8.1.5 The First U.S. Aircraft Response.

The Liberty’s call for help (at 1209 Z hours) was relayed by the Saratoga to the 6th Fleet flagship (Little Rock) and carrier America within minutes. Both carriers had F-4B fighter bombers (shown in Figure 8-3), located near their catapults in a fueled, armed, and ready to fly condition.

These aircraft were on “ready alert” and were armed with nuclear bombs in the event of a call to attack time-urgent enemy targets.² They had special maintenance crews, were flown by carefully selected pilots, and were kept under guard at all times. Petty Officer Julian Hart, on the America, reported that pilots were given orders over a private intercom system that a U.S. ship was under attack. They were given the ship’s position and told to protect it but under no circumstances were they to approach the beach. Two nuclear-armed F-4Bs took off from America and were joined by two more from the Saratoga. Within nine minutes, all four aircraft, traveling at near sonic speed, headed for the Liberty. COMSIXTHFLT radioed the Liberty that help was on the way by 12:20pm.²

The above information is critical to this study; however, the Department of Defense and Navy have never confirmed nor denied the nuclear response. James Ennes, Jr., in his book (Assault on the Liberty) interviewed several members of the U.S.S. America staff and the U.S.S. Liberty Court of Inquiry on this point. He quoted a Chief Petty Officer on the America who described the departure, “of four ‘ready aircraft’ that were equipped with nuclear weapons.” (See Reference 2,
Characteristics

- Length: 58 ft 3 in
- Wing span: 38 ft 5 in
- Height: 16 ft 3 in
- Weight (empty): 28,000 lb
- Maximum payload: 16,000 lb
  - Four Mark-84 2,000 lb bombs
  - One tactical nuclear bomb
- Maximum weight (loaded): 54,600 lb
- Maximum take-off weight: 46,000 lb

Performance

- Maximum speed: 910 mph
- Ceiling: 60,000 ft
- Range:
  - Internal fuel: 1,750 miles
  - External fuel: 2,300 miles

Armament

- Four AIM-7 Sparrow and four AIM-9 Sidewinder missiles
- 20mm M-61 multibarrel gun

Production

- First carrier trials: February 1961
- Navy units built: 635

Source

- Reference 10

Figure 8-3. U.S. Navy F-4B fighter-bomber.
Appendix D.) Apparently no conventionally armed aircraft were in "ready" status at the time due to the morning Soviet harassment and practice bombing operations.

The above evidence was reinforced within minutes when Secretary of Defense R. S. McNamara and Chief of Naval Operations Admiral David McDonald personally contacted the America though CINCUSNAVEUR (London) on a high-level voice network. They angrily demanded that the fighter-bombers be hastily recalled. A radio operator, who recognized McNamara's voice, heard him order Vice Admiral Martin to, "recall the aircraft and prepare a second response." The Operations Officer on the Little Rock confirmed the message. The four Phantom fighter pilots reluctantly turned back and landed. Then the Little Rock sent a flash message, "have recovered strike aircraft...Liberty status unknown."²

8.1.6 The Second U.S. Aircraft Response.

The Pentagon immediately informed the White House to report the attack and at 6:40am (Washington time), President Lyndon B. Johnson convened an emergency meeting of his advisers in the "situation room." At first he assumed the Soviets must be responsible and began dictating a hot line (installed in August 1963) message to Premier Aleksei N. Kosygin. Before the message was sent; however, a "flash report" arrived from Tel Aviv with an Israeli admission that they may have attacked an American ship in error.¹ The hot line message was hurriedly toned down and revised. President Johnson's Press Secretary, George Christian, informed the Soviets of the attack and that aircraft from the America were speeding toward the damaged ship. Plans for the rendezvous between ships of the 6th Fleet and the Liberty were outlined so that the Soviets would not be alarmed by the actions.⁴ Several days later Kosygin acknowledged Johnson's message; however, he accused the Liberty of jamming Egyptian radars and providing Tel Aviv with Egyptian codes. He indicated that the message was passed immediately to the Egyptians. The American ambassador in Moscow learned that Kosygin was favorably impressed by the President's call since it implicitly recognized a Soviet role in the Middle East.⁶

It took about 40 minutes to bring rockets, bombs, and ammunition up from below decks on the carriers and fuel the aircraft. During this preparation, more messages were received from the Liberty, describing the torpedo attack and resulting damage. Eventually, a message was received from Washington which granted permission to send the conventionally armed aircraft but restricted other missions such as air cover, air-to-ground strikes, anti-submarine warfare, and reconnaissance. At about 1:00pm the U.S.S. America was called to General Quarters and additional aircraft
were launched. The Liberty received a second message at 1:05pm from the Little Rock which confirmed help was coming.²

A force of 14 aircraft from three different squadrons began their flight of 400 miles to the Liberty, as illustrated in Figure 8-4. The force included four F-4Bs armed with Sparrow and Sidewinder missiles and four A-4 Skyhawk strike aircraft with air-to-ground missiles from the America. Four propeller-driven A-1 Skyraider bombers were launched from the Saratoga. One air tanker was sent along to refuel the A-1s and a second tanker was launched to refuel eight of the A-4s and F-4s.²

While the aircraft were in flight, the American embassy in Tel Aviv reported the Israeli apology to everyone concerned, including the COMSIXTHFLT, Department of State and the White House.² An American naval attaché at the embassy, Commander Ernest C. Castle, asked Israel to fly him to the scene of the attack. Israel provided two helicopters and after a fast 90 mile flight they found the Liberty with one of the torpedo boats nearby.⁵ The Liberty was still afloat and under its own power. It refused help or contact with the Israeli helicopters. However, based on the attaché’s report of the situation, Admiral Martin decided to recall all 12 of the armed aircraft only minutes before they reached the Liberty. They turned back, refueled, and returned to the carriers.²

8.1.7 The Rendezvous.

At 5:25pm on 8 July, the COMSIXTHFLT directed the Liberty away from Gaza by turning due north to rendezvous with two 6th Fleet destroyers.² Barely afloat, the Liberty moved north at a speed of 8 knots.⁴ The destroyers U.S.S. Davis and U.S.S. Massey were ordered to sail ahead of the 6th Fleet at maximum speed to rendezvous with the Liberty 100 miles north of the attack location.⁷ Early on the morning of 9 June (16 hours after the attack), the destroyers pulled along side the Liberty. The ship was listing eight degrees while two doctors from the destroyers began treating the injured.² By mid-morning, helicopters lifted nine dead and 50 wounded to the America and Little Rock.⁵ The Liberty, accompanied by the destroyer Davis and the Navy tug Papago, moved on to Valletta Harbor in Malta.⁸ Meanwhile, the Pentagon ordered a board of inquiry to investigate the entire incident.⁵

By 11 June, Israel offered to cover all costs of the attack including claims of $3.3 million by the families of the men killed in the action. The U.S. accepted the apology and indicated that it was
Figure 8.4. Engagement geometry of U.S.S. Liberty and 6th Fleet (8 and 9 June 1967).
satisfied the attack was an accident. The Liberty was patched up at Malta and returned to the U.S. where it was decommissioned on 28 June 1968 at Portsmouth, VA.

8.2 NUCLEAR WEAPON CONSIDERATION.

The Pentagon, and Navy in particular, have released virtually no data concerning the nuclear weapons and operations involved in the U.S.S. Liberty incident. However, it is useful to review the primary equipment and probable events.

8.2.1 The Aircraft Carriers.

The U.S.S. Saratoga and America were both of the Forrestal class design. The America, slightly larger and five years newer than the Saratoga, is seen in Figure 8-5 behind the destroyer U.S.S. Mitscher with the 6th Fleet in Suda Bay; Crete.\textsuperscript{10} The characteristics of the two carriers are presented in Figure 8-6. Both carriers were oil fueled and powered by four steam turbine engines to provide a maximum speed of 34 knots.\textsuperscript{10, 11} But more important, they had two forward and two angled-deck steam catapult aircraft launchers. The nuclear-armed "ready aircraft" were located in a launch condition near the angled deck.

![Figure 8-5. Destroyer U.S.S. Mitscher and carrier U.S.S. America in Suda Bay, Crete.](image)
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>CV-60 U.S.S. Saratoga</th>
<th>CV-66 U.S.S. America</th>
<th>Sources: References 10 and 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Forrestal Class</td>
<td>(Slightly Larger)</td>
<td></td>
</tr>
<tr>
<td>Displacement</td>
<td>60,000 tons</td>
<td>62,000 tons</td>
<td></td>
</tr>
<tr>
<td>- Fully loaded</td>
<td>78,700 tons</td>
<td>79,000 tons</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Length</td>
<td>1,039 ft</td>
<td>1,040 ft</td>
<td></td>
</tr>
<tr>
<td>- Beam</td>
<td>129.5 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Draught</td>
<td>37 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aircraft/Heli.</td>
<td>70/10</td>
<td>75/8</td>
<td></td>
</tr>
<tr>
<td>Crew</td>
<td>4,900</td>
<td>5,000</td>
<td></td>
</tr>
</tbody>
</table>

Figure 8-6. Characteristics of U.S.S. Saratoga and America.
Both carriers had a complement that included about 75 aircraft (i.e., 24 fighters, 24 strike/attack, 4 airborne radar and control, 5 reconnaissance, 4 air-search, a few tankers, and 10 helicopters).\textsuperscript{10} When fully prepared, the carriers could launch up to 32 aircraft in about four minutes.\textsuperscript{11} Apparently, on 8 June 1967, neither carrier was prepared to make conventional-armed launches after an active morning of harassment by Soviet ships and bombing practice.

8.2.2 Nuclear Weapons.

U.S. aircraft carriers in overseas deployments were authorized to carry nuclear weapons after 1954. Typical loadouts for large fleet carriers were estimated at about 200 bombs. This estimate, often used for analysis and planning purposes, can be obtained by the following logic:

- In 1967, the Navy had 13 large fleet carriers in service (4 deployed, 8 in transit to deployments or training plus 1 in two-year long overhaul.)\textsuperscript{14}

- An upper bound on weapons is based on the fact that 4,500 B-28 (Navy Mark 113) and 1,000 B-43 (Navy Mark 112) tactical nuclear bombs had been produced by May 1966. All older tactical bomb designs had been retired from the operational inventory by the end of 1966.\textsuperscript{12} Because the total inventory of 5,500 weapons were about equally divided between Air Force and Navy deployments, the Navy had up to 2,750 bombs or 211 per fleet carrier.

Based on the above logic, it is probable that the America and Saratoga carried Mark 112 or Mark 113 bomb types as shown in Figure 8-7.\textsuperscript{12} One of either of these bomb types were capable of being delivered by F-4B aircraft.\textsuperscript{15} Although the F-4B had five weapon attachment rails and sufficient payload capacity to carry more than one weapon, only the centerline rail was wired for nuclear weapon safety, arming, and fusing functions. As a result, only four nuclear bombs were flown off the two carriers on 8 June 1967 during the first aircraft response to the call for help by the U.S.S. Liberty.

8.3 LESSONS LEARNED FROM THE U.S.S. LIBERTY.

The first and foremost question resulting from the assault on the Liberty is, "why was a non-combatant intelligence ship deployed so close to active combat in which the U.S. was not involved?" The ship was under direct orders of the Joint Chiefs of Staff and they were accountable for its operations. The fact that it was an ill conceived deployment is revealed by the following actions:
B-28 (NAVY MARK 113) CHARACTERISTICS
- Length: 170 in
- Diameter: 21 in
- Fin Span: 35 in
- Weight: 2,027 to 2,540 lb
- Yields: 70 to 1,450 kt
- Delivery Aircraft Options:
  - F-4  - A-7
  - F-100  - F-104
  - B-52
- Production: 4,500 units by May 1966

B-43 (NAVY MARK 112) CHARACTERISTICS
- Length: 164 in
- Diameter: 18.5 in
- Fin Span: 24 in
- Weight: 2,060 to 2,330 lb
- Yields: 1,000 kt
- Delivery Aircraft Options:
  - F-4  - A-4
  - A-6  - A-7
  - B-52  - F-100
  - F-104  - F-111
- Production: 1,000 units by October 1965

Figure 8-7. Characteristics of B-28 and B-43 nuclear bombs.
• Shortly before midnight on 7 June (U.S.S. Liberty time), staff officers of the JCS concluded that the Liberty’s position was no longer necessary or wise. The JCS sent a high-precedence message (late afternoon Washington time) ordering the Liberty to move further out to sea. The order passed through USCINCEUR to CINCUSNAVEUR to the Commander of 6th Fleet (COMSIXTHFLT). With verification required at each step, the message was received by the Liberty 14 hours later.2

• Shortly before 2:00am on 8 June (U.S.S. Liberty time), Admiral John S. McCain in London (CINCUSNEUR) directed that the ship be moved at least 100 miles from the coast. Because the ship could not be moved without a confirming message to revise its operating orders, no action was taken until JCS responded (this took more than an hour) and the Liberty never received the order.2

These actions show that the JCS realized the vulnerable ship was in harms way before the assault occurred. However, an alternative would have been to give it protection. When the U.S.S. Liberty moved into the Mediterranean on 2 June, it officially came under the operational control of the 6th Fleet. Commander U.S. 6th Fleet, Vice Admiral William J. Martin, acknowledged this fact and visited the Liberty by helicopter as it moved east towards the specified deployment. On 6 June, the Liberty asked Admiral Martin to provide an armed escort to the deployment. The admiral replied, “Liberty is a clearly marked U.S. ship in international waters, not a participant in the conflict and not a responsible subject for attack by any nation.” 2

In the unlikely event of an inadvertent attack, the Admiral promised that jet fighters from the 6th Fleet could be overhead within 10 minutes. He also noted that if Commander McGonagle considered the deployment too risky, he could withdraw. Clearly, the 6th Fleet was responsible for providing the Liberty with defensive cover. But, when the need for cover occurred, the fleet was not prepared to launch conventionally armed aircraft.

The U.S.S. Liberty and subsequent U.S.S. Pueblo incidents suggested several important lessons.

• When it is sufficiently important to send high-value assets and personnel into a theater of war (or political stress), it is important to provide detailed planning and protective cover in the event that the plans do not work. The JCS deployment of the Liberty was not well planned.

• The Command/Control/Communications (C3) times were too slow. There were too many intermediate levels of command requiring sign-offs and verifications. Modern technologies have solved most of the data-link response times but only improved organizations can solve the command problems.

• The Navy had responsibility for air cover but it had no aircraft with conventional weapons in a ready alert status. Although carrier platforms were limited or committed
to other deployments, plans should have been made to provide air cover within minutes.

- Allied countries (e.g., Israel) should be notified in advance of deploying important capital assets in a theater of conflict. This becomes difficult when considering intelligence-gathering but it could prevent accidental engagements.

- The use of lightly armed intelligence ships for dangerous missions was criticized. It was suggested that more heavily armed ships (e.g., modified destroyers) should have been deployed. The Navy decommissioned all the Technical Research Ships (AGTR and GER) by the mid-1970s.

The potential for nuclear weapons carried on combat ships to be accidentally involved in conflict situations remains a problem. The British experienced the problem during the Falkland Island conflict in May 1982.
SECTION 9.0

THE CAPTURE OF THE U.S.S. PUEBLO

W. C. Yengst

Seven months after the U.S.S. Liberty incident, history virtually repeated itself off the coast of North Korea when the U.S.S. Pueblo was captured while gathering intelligence information. The capture of the Pueblo by North Korean patrol boats is interesting because it showed that the Joint Chiefs of Staff (JCS) and Navy did not learn very quickly from the Liberty incident and the resulting crisis escalated within days to the brink of armed conflict.

9.1 GENERAL DESCRIPTION OF THE CRISIS.

It is useful to review the military situation in Korea during 1967 and early 1968 in order to understand the North Korean initiative to capture the U.S.S. Pueblo on 23 January 1968. These conditions also help to explain the reasons for limited U.S. and South Korean responses following the capture.

9.1.1 Background Conditions.

South Korean Situation.

General Park Chun Hee and a group of military officers took control of the government in May 1961 and established the Democratic Republican Party which won the national elections in 1963 and again in 1967. Under President Park and his party, which held the majority of the National Assembly, the government focused on building the economy (i.e., developing industries and increasing foreign trade). Park employed near dictatorial powers to suppress opposition and reduced funding for the military to support economic expansion. In late 1967, demonstrators openly criticized corruption in Park’s regime and expressed fear that the military could not guard against North Korean attacks.¹

U.S. Forces in South Korea.

Although the U.S. recognized a commitment to keep 55,000 troops in South Korea, elements of the 2nd and 7th Divisions were understaffed as critical personnel were assigned to South Vietnam. The U.S. military forces in the Pacific Theater were heavily committed to the Vietnam War with
485,000 troops authorized by 1968. Most of the U.S. 7th Fleet, which normally operated near South Korea and Japan, was assigned to the Gulf of Tonkin. All but a few front-line fighter aircraft had been sent from South Korea to bases in South Vietnam in preparation for an anticipated Tet Offensive (see the Battle of Khe Sanh in Section 10).

President Lyndon B. Johnson and Secretary of Defense Robert S. McNamara also pressed President Park to support the Vietnam War effort. Consequently, South Korea sent a “Military Assistance Group” with several thousand transportation and engineer troops to Saigon. Uncomfortable about these troop deployments outside of Korea, Major General Lew Pyong Hyun, Chief of Operations for the South Korean Joint Chiefs of Staff, critically noted that, “the U.S. had been paying too much attention to the war in Vietnam and neglecting its commitments in Korea.”

**North Korean Aggression.**

In the mid-1960s, North Korea’s two primary benefactors (i.e., Soviet Union and Democratic People’s Republic of China) experienced a period of strained relations which led to the Sino-Soviet border conflict described in Section 11. During this period, President Kim Il Sung realized the need for North Korea to be more self-reliant; therefore, he advocated the Chuch’e Sasang ideology to inspire national pride and insure internal solidarity. He believed in the Marxist-Leninist theory that political power can be taken by force and that the country could be strengthened by a vigorous campaign to achieve reunification of Korea (see the Korean War, Section 3.1.1).

Sensing a reduction of South Korean and U.S. forces, in late 1967 North Korea strongly increased its deployments of specially trained agents, commandos, and military personnel along the Demilitarized Zone (DMZ). Small units began to infiltrate into South Korea on a daily basis to conduct terrorist attacks and assess defenses. The U.S. assured South Korea that it viewed this threat with utmost gravity but cautioned Foreign Minister Choe Kyu Ha that South Korea should not take independent retaliatory action. Choe scorned the U.S. proposal that North Korea be invited to the U.N. as, “nonsense that would kill time and waste energy.”

When President Johnson gave his State of the Union address to Congress on 16 January 1968, he painted an encouraging picture of the war effort in South Vietnam but made no mention of the South Korean situation. However, the night before the U.S.S. Pueblo was captured (22 January), 31 members of North Korea’s 124th Army, armed with machine guns and hand grenades, penetrated the DMZ and moved to within 500 meters of President Park’s residence in Seoul in an
attempt to assassinate him. Although 28 of the infiltrators were killed and the attack was stopped, 2 Americans and 37 South Korean troops died in the engagement. Both South Korean and U.S. forces near the DMZ were placed on alert status.

9.1.2 The Operations and Capture of the U.S.S. Pueblo.

The U.S.S. Pueblo (GER 2) was located at the port of Yokosuka, Japan, on 7 January when it received orders to monitor communications along the northeast coast of North Korea. It moved north, through the Tsugaru Strait and east across the Sea of Japan. With a top speed of 12.2 knots, it took until 16 January to transit to the coast of Korea as shown in Figure 9-1. Its captain, Commander Lloyd M. Bucher, had orders to operate at a distance of 13–25 miles from shore, beyond the North Korean 12 mile limit. Its procedure of moving slowly, taking water salinity and temperature samples (needed for acoustic signature analysis), made the ship’s progress easy to track as it followed the coast south from Soviet waters. It had been on station for nearly a week when it approached the entrance to Wonsan harbor on 23 January.

Figure 9-1. Route of the U.S.S. Pueblo to Korea.
9.1.3 Characteristics of the U.S.S. Pueblo.

The U.S.S. Pueblo is shown in Figure 9-2 and it was classified an environmental research ship. Smaller than the U.S.S. Liberty, it was 179 ft long, had a displacement of 906 tons, and carried a crew of 83 (6 officers, 75 servicemen, and 2 civilians). It contained several million dollars worth of secret electronic equipment including a number of transmitting and receiving radios and their antennae (visible on the decks):

- Twin Yagi antennae for VHF transmission near the aft mast.
- Long poles fore and aft to support cables for transmitting to submerged submarines with low frequency radio waves.
- Radar equipment for bouncing signals off the troposphere.
- A dome shaped antenna for communicating with aircraft.

Figure 9-2. U.S.S. Pueblo captured by North Korea.
The hull was modified to carry underwater acoustic/hydrophone sensors. The hold included computers and tape recording equipment to process and store intercepted communications and acoustic signals.¹⁰

The Pueblo carried two 50 calibre machine guns and small arms as its only defenses. Commander Bucher's standing instructions were to move out of the area if harassed rather than use the guns. Operating in support of the National Security Agency, the ship carried explosive charges to destroy its secret equipment if attacked. None of the crew had training or experience with explosives. There were no sea cocks that could have been opened to scuttle the ship.¹¹

9.1.4 The Ship's Mission and Its Capture.

Wonsan had a large air base, missile defense sites with hardened radar installations, and an underground submarine base on Yodo Island in the center of the harbor. The Pueblo's objectives were to record electronic signatures of Soviet-built antiaircraft missile guidance radars and signals to North Korean submarines.¹² It was also trying to pinpoint locations of Korean radar and radio sites.

Just before noon local Korean time on 23 January (i.e., 10:00pm Eastern Standard Time in Washington, D.C., on Monday, 22 January), a North Korean patrol boat approached the Pueblo.¹ Using international signals, it requested the Pueblo's nationality. The Pueblo identified itself with flags at which time, the patrol boat answered, "Heave to or I will open fire." The Pueblo replied, "I am in international waters (39°25'N, 127°54.3'E)." The patrol boat circled slowly at some distance.⁷ About one hour later, three more patrol boats appeared, one or more armed with 40 mm cannons (more than a match for the Pueblo's guns). The Pueblo lay drifting with water/saline collection bottles strung over the side. The four patrol boats took positions on the Pueblo's bow, beam, and quarters. One signaled, "Follow in my wake, I have a pilot aboard." At that point, the Pueblo spotted two MiG-17 fighters circling off the starboard bow. One of the patrol craft began backing toward the Pueblo's bow with fenders rigged and an armed boarding party standing by.⁷

The Pueblo radioed at 11:45pm (EST) that it was being boarded by North Koreans. Commander Bucher called for help and nine minutes elapsed before the Pueblo's radio went out of action.¹³

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¹ The chronology of events presented here is given in Eastern Standard Time (EST) which runs 14 hours behind Korean time due to crossing the International Date Line.
During this period, four of the Pueblo’s crewmen were injured (one so seriously he died the following day) from explosions they set off to destroy the ship’s secret equipment. At 2:10pm local time (12:10am EST, Tuesday), the Pueblo radioed that it had not fired a shot but had been requested to follow the North Korean ships into Wonsan harbor. At 2:32pm the Pueblo radioed that it had come to “all stop” and was “going off the air.”

Two hours later, North Korea broadcast a message confirming the seizure of the Pueblo, saying it took place in territorial waters off Wonsan. It claimed the U.S. imperialists had sent the Pueblo, “to intrude into the waters off Wonsan and perpetrate serious provocations.” The senior North Korean delegate at the Korean Armistice Commission, Major General Pak Chung Kuk, claimed the Pueblo was on an espionage mission and it fired at the North Korean patrol boats. Commander Bucher was subsequently forced into making a confession:

“I am Commander Lloyd Mark Bucher, captain of the U.S.S. Pueblo, belonging to the Pacific Fleet, U.S. Navy, who was captured while carrying out espionage activities after intruding deep into the territorial waters of the Democratic People’s Republic of Korea. My serial number is 58215401. I was born in Pocatello, Idaho, USA. I am 38 years old.”

9.1.5 Immediate U.S. Responses.

After the Pueblo’s radio call for help (11:45pm EST), the only chance for rescue was from other U.S. ships or aircraft. The nearest aircraft carrier, U.S.S. Enterprise, and its escorts (destroyers Truxtun and Halsey), had departed from Saesbo, Japan, early that morning and were headed south to take station in the Gulf of Tonkin. Its aircraft were 600 miles (more than an hour flying time) from the Pueblo.

The U.S. 5th Air Force was headquartered near Tokyo and it customarily rotated fighter squadrons from Japan into and out of South Korean bases. On 22 January 1968, it had a total of 12 F-4 Phantom jet fighters located in South Korea at three bases. Four aircraft were at base K-55 near the village of Osan (30 miles from Seoul) while the remainder were at K-8 near Kunsan and K-2 near Taegu. Osan was only 17 minutes flying time from the Pueblo and jets from the other bases were within a half-hour flight time. U.S. government officials in Washington explained that at the time, six of the F-4s were on “alert” for possible call to use nuclear weapons in any major crisis.
The remainder were on standby (configured for nuclear missions) to substitute for alert aircraft that might develop mechanical difficulties.

The F-4s on alert were each equipped with one nuclear bomb. The bomb racks and other equipment, applicable only to the nuclear mission, would have to be taken off to reload conventional bomb racks, gun pods, and air-to-air missile pylons. The process would take at least two to three hours. U.S. Command Headquarters in Seoul issued a statement the following day, “U.S. air forces did not come to the aid of Pueblo because they were armed for the alternate strike...a nuclear attack.”

The Osan base was linked directly to the powerful Ground Control Intercept (GCI) radar station on Paengnyong-do Island in the Yellow Sea near the 38th parallel. The radar picked up the hostile MiG-17s in the area being patrolled by the Pueblo roughly a half-hour before the call for help, but no fighters were scrambled. When the call for help came, two South Korean F-5 fighters were already in the air to check out possible intruding North Korean aircraft. They turned back at the DMZ but had insufficient fuel to respond to the Pueblo.

Several days after the Pueblo was captured, the theater Air Force commander, General Harrell, commented on the lack of conventional tactical fighter response. He noted that it was, “touch and go” whether South Korean F-5 aircraft under his command at Osan could have reached far enough out to sea to prevent the Pueblo’s capture. This statement suggests that the flight route would follow the DMZ east, then turn north over the Sea of Japan to Wonsan; thereby avoiding the overflight of North Korea. He expressed concern that the F-5s armament might not have been adequate for the opposition they might meet (i.e., MiG-17s) near Wonsan. Finally, he noted that his command had no responsibility for protecting the Pueblo and it received no instructions to come to its rescue.

The only other Air Force alternative was to employ conventional-armed F-4 interceptors from one of two U.S. air bases in Japan (i.e., Misawa AFB on Hokkaido Island 600 miles northeast of the Pueblo and Yokota AFB near Tokyo and 700 miles from the Pueblo). Three squadrons of F-4s were deployed at these bases but none were on alert, prepared for long-range missions. General Harrell explained that he considered it, “improvident and irrational to use aircraft from Japan for what might be a diplomatic problem.” He cited two problems:
• The Pueblo was beyond the F-4 combat radius; consequently, the planes would require in-flight refueling.
• The 1960 U.S.-Japan Joint Security Treaty forbid staging from bases in Japan for combat operations without prior consultation with the Japanese government.

Consequently, there was no response possible until after the Pueblo had entered Wonsan harbor.

9.1.6 Longer-Term U.S. Responses.

Within six hours of leaving Saesbo, the U.S.S. Enterprise and its destroyer escorts were given orders to turn around and head for the east coast of Korea. This decision was made by Secretary of Defense Robert S. McNamara at 12:33 am EST (about the time that the Pueblo's radio went off the air). The Enterprise task force reached its new station roughly 100 miles off Wonsan and the DMZ, as shown in Figure 9-3, on the morning of 24 January. It carried 90 jet aircraft. The destroyers Truxtun and Halsey were armed with Terrier surface-to-air missiles which could also be used to hit shore or harbor targets. Two days later, as political and diplomatic threats began to subside, the Enterprise withdrew and entered the South Korean port of Pohang (about 170 miles southeast of Seoul).

On 25 January, the Joint Chiefs of Staff and Secretary of Defense McNamara recommended activation of the Air National Guard, Air Reserve, and Naval Air Reserve to meet the Korean threat if the U.S.S. Pueblo was not promptly released. By midnight the following day, 14,787 Air Force and Naval Air Reservists were ordered to active duty (i.e., more than those called up during the Cuban Missile Crisis). This call-up included activation of 372 aircraft (200 F-100s, 72 Navy A-4s and F-8s, 46 C-124 transports, 54 RF-101 reconnaissance and 50 miscellaneous). President Johnson ordered 26 B-52s to the Pacific (15 to Kadena AFB, Okinawa) and 11 to Guam. Two squadrons of fighter bombers were moved from Okinawa to Kunsan and Osan, South Korea, by 30 January.
Figure 9-3. Route of the U.S.S. Enterprise Task Force (22-26 January 1968).

The above actions confirmed that the U.S. forces were spread too thin in the Pacific Theater. By ordering a demonstration of naval units and sending reinforcements for the air forces in the Far East, President Johnson reassured South Korea so that it would not recall its ground forces deployed in South Vietnam. The South Korean National Assembly called for independent retaliatory action against North Korea for its attempt to assassinate President Park and the capture of the U.S.S. Pueblo. The U.S. Joint Chiefs of Staff also recommended an air strike if the Pueblo and its crew were not released. However, President Johnson was persuaded to try diplomatic efforts to resolve the crisis before implementing military actions.
9.1.7 Political and Diplomatic Responses.

The U.S. called for an urgent meeting of the U.N. Security Council on 25 January to consider the crisis. President Johnson met with Arthur Goldberg (Ambassador to the U.N.), Secretary of Defense McNamara, and other advisors during the day concerning diplomatic initiatives to recover the ship. Two letters were sent to Moscow overnight in an effort to enlist the Soviets in winning release of the Pueblo. Both resulted in a rebuff to U.S. Ambassador Llewellyn Thompson by Soviet Foreign Minister Vasily Kuznetsov.

Within Congress, political opinion was badly divided over the response that should be taken to the seizure.

- Senators Mike Mansfield and John Stennis urged the President, “to avoid precipitous and rash over reaction.”
- Representative Gerald Ford said that, “if diplomacy fails, the U.S. must take whatever military action is necessary to recover the ship.”
- Representative L. Mendel Rivers said, “the U.S. should declare war if necessary to get Pueblo back.”
- Senator William Fulbright observed that, “the fact we are deeply committed in Vietnam undoubtedly contributes to other countries feeling more free than normal from serious retaliation.”

The South Korean government inspired 36,000 students to rally in Seoul’s Stadium, calling for retaliation. However, there was no general mobilization and the civilian population remained relatively calm. U.S. and South Korean troops along the DMZ were placed on alert but no reinforcements were moved forward since they might provoke the North Koreans.

There was an early report that North Korea had initiated full mobilization of its entire military and 1.2 million militiamen. MiGs were reported to have flown 40 sorties near the DMZ on 25 January. Although North Korean propaganda touted its readiness, Major General Lew Pyong Hyun of the South Korean Joint Chiefs of Staff reported on 30 January, “no mobilization or troop movements north of the DMZ had been seen.” He stated that intelligence found, “no unusual indicators of any intention to carry things on in a big way.” Lee Byong Do, Vice Director of South Korea’s CIA, reported that North Korea was not preparing for war. He added that, “the only way to make Kim Il Sung back down on the Pueblo was to bomb all North Korean cities.”
North Korea released the 82 survivors of the Pueblo crew in December 1968. This was based in part on the fact that Commander Bucher had confessed the incursion. However, North Korea refused to return the U.S.S Pueblo and its advanced equipment.

9.2 NUCLEAR WEAPON CONSIDERATIONS.

9.2.1 Weapons and Delivery Systems.

The nuclear weapons and delivery systems involved in the U.S.S. Pueblo incident were probably the same types as those described in the response to the U.S.S. Liberty attack (Section 8.2). Specifically, F-4B aircraft were on alert at the South Korean airfields and they carried either B-28 or B-43 bombs (as shown in Figure 8-7). The aircraft carrier U.S.S Enterprise probably carried up to 200 nuclear weapons when it arrived off the coast of North Korea several days later. There was no intent to employ tactical nuclear-weapons from either the land bases or the Enterprise and no evidence that target planning had been accomplished to support the air strike recommended by the JCS.

9.2.2 High-Level Decision Making.

President Johnson was not told of the attack and capture of the Pueblo until 2:00am EST on Tuesday, 23 January. By that time, the decision had been made by the Pacific Theater Air Force commander to hold the F-4 aircraft that were on alert status. CINPAC joint command headquarters in Honolulu coordinated on the immediate response decision but there is no evidence that the Pentagon or Joint Chiefs of Staff were involved. The carrier Enterprise and its escort ships were turned around under the orders of the Secretary of Defense at 12:23am; hence, when the President was informed, he was faced with two facts: the Pueblo was already captured and American ships were headed toward North Korea in a show of force.26

Although there were no good military options for immediate response, President Johnson and his advisors did not want to escalate the situation. He held several meetings during the day with U.N. Ambassador Arthur Goldberg, Secretary McNamara, and members of the National Security Council. They all focused on diplomatic responses involving U.N. initiatives. There was an earnest desire to avoid initiating a fighting conflict with North Korea.16
9.3 LESSONS LEARNED FROM THE PUEBLO INCIDENT.

The conclusions outlined in Section 8.3 for the U.S.S. Liberty also apply to the capture of the U.S.S. Pueblo. However, it is clear that the U.S. was overextended in its ability to provide air cover when the Pueblo deployment was made. The potential for North Korea to initiate an incident while the U.S. was focused on Vietnam should have been considered during the deployment decision.

A week after the capture of the U.S.S. Pueblo, a third intelligence gathering ship (U.S.N.S. Sergeant Joseph P. Muller) suffered an engine failure five miles off the coast of Cuba. As it drifted helplessly towards shore, an escort destroyer hurried to put the ship under tow and fighter aircraft scrambled from Florida to provide air cover. The Muller was towed to safety just as it crossed into Cuban territorial waters, narrowly avoiding an incident.27 Following these three events (the Liberty, Pueblo; and Muller), the National Security Council and Navy decided to discontinue the shipborne, clandestine intelligence gathering activity. All the Technical Research Ships (AGTR and GER) were decommissioned and the program was terminated by the mid-1970s.

The seizure of the Pueblo with the subsequent deployment of the aircraft carrier U.S.S. Enterprise from a Japanese port and consideration of launching nuclear-capable aircraft from Japanese air bases, reawakened anxieties in the Japanese government. Demonstrations to protest the presence of U.S. bases and troops on the islands caused Prime Minister Sato to make a pledge at a meeting of the Diet, “Japan will not possess nuclear weapons or allow their introduction into this country.”28

The potential for nuclear weapons carried on combat ships or on alert aircraft to be inadvertently involved in conflict situations remains a problem. The British experienced this problem during the Falkland Island conflict as described in Section 15.
SECTION 10.0
NUCLEAR WEAPONS FOR THE BATTLE OF KHE SANH
W. C. Yengst

United States intervention in the Vietnamese civil war began in May 1961 when President John F. Kennedy sent technical advisers to help the South Vietnamese in their struggle against communist Viet Cong guerrillas and North Vietnamese military forces. Nearly seven years later, the U.S. commitment had grown to over 500,000 troops with extensive infrastructure and bases. The purpose of this paper is to investigate the nuclear weapon considerations that emerged during the North Vietnamese Tet Offensive of January through March 1968 against the U.S. Marine base at Khe Sanh. Although it does not address the reasons for becoming involved in the war or the strategy for defeating the communist forces, it is necessary to review the basing, disposition of forces, intelligence, and political situation leading up to the 77 day siege and U.S. responses.

10.1 DESCRIPTION OF THE SIEGE OF KHE SANH.

10.1.1 A Review of Strategic Alternatives.

On 2 November 1964, President Lyndon B. Johnson asked Assistant Secretary of State William Bundy to review alternatives to bombing of North Vietnam and escalation of the land war to induce the Vietnamese to enter peace negotiations. Two days after Johnson’s reelection, a working group began an exhaustive review of assumptions, premises, and options. In January 1965, the committee made its initial report to the Joint Chiefs of Staff and President that:

“We cannot guarantee to maintain a non-Communist South Vietnam short of committing ourselves to whatever military action would be required to defeat North Vietnam and probably Communist China. Such a commitment would involve high risks of a major conflict in Asia...and possibly even the use of nuclear weapons at some point.”

President Johnson and Secretary of Defense Robert S. McNamara were surprised by the cavalier manner in which the Joint Chiefs accepted the risk of nuclear war. However, Johnson made the fateful decision to initiate massive intervention and bombing of North Vietnam. By July 1965, U.S. ground forces increased to 175,000 troops with plans for another 100,000 in 1966.
President Johnson sought the advise of many experienced people during this period. On 17 February 1966, he met with Secretary of Defense McNamara and ex-President Dwight D. Eisenhower at the White House to discuss the Southeast Asia situation. Eisenhower commented that if the Chinese or Soviets threatened to intervene in the war, "We should pass the word back to them to take care lest dire results (i.e., nuclear attacks) would occur to them." He noted that LBJ’s first duty was to contain Communism in Southeast Asia to prevent a domino-like loss of Laos, Cambodia, Thailand, and other countries. Two days later the bombing of North Vietnam was initiated.

McNamara held the view that nuclear weapons were only useful for deterrence or, in case of disaster, retaliation. But hard-line conservatives of both political parties felt that more aggressive military actions should be taken including use of nuclear weapons if China and/or the Soviet Union entered the conflict. Clearly, these considerations focused on strategic, offensive actions needed to defeat North Vietnam while deterring China and Russia. They did not address the tactical use of nuclear weapons in a defensive mode (as occurred at Khe Sanh) to save the loss of U.S. troops, important territory, and American prestige. In many respects, the siege of Khe Sanh was similar to that of Dien Bien Phu in March 1954, as described in Section 4.

10.1.2 Development of the Khe Sanh Base.

In September 1966, General William C. Westmoreland, Commander of U.S. Military Assistance Command: Vietnam, ordered the Seabees to create an airfield out of a Special Force’s dirt-strip field near the village of Khe Sanh in the northwest corner of South Vietnam. The site is located in the Annamite Mountains, eight miles east of the Laos border and 20 miles along winding Route 9 from a Marine strongpoint known as the “rockpile.” Westmoreland’s objectives were to anchor the western end of Route 9, the only paved road running east to the ocean along the Demilitarized Zone (DMZ) and to provide a base for operations at the corner of North Vietnam and Laos as shown in Figure 10-1.
Originally, he planned to deploy a battalion of Marines at the base which would be used primarily for helicopter operations near the DMZ. But Marine Lt. General Victor H. Krulak prevailed on the planners to provide two battalions, one to defend the site and another to patrol the hills that dominated the small plateau where the airfield was built.⁴ Krulak argued that Westmoreland was using Khe Sanh as bait for the North Vietnamese to attack from across the DMZ. But Westmoreland saw it as a potential jumping off point for a thrust into Laos to cut the Ho Chi Minh trail if President Johnson and McNamara authorized an expansion of the war. Furthermore he was convinced that, unlike Dien Bien Phu, Khe Sanh could be supplied by an extensive U.S. airlift and reinforcements from the ocean using Route 9.⁴ ⁵
The Marines moved into Khe Sanh in October 1966 to replace 300 irregular local Bru Montagnard tribesman. They found a classic Special Forces camp with a rectangular fort, trenches, protecting corner bunkers, and a tin-roofed mess hall and barracks. By January 1967, North Vietnamese artillery fire caused them to build a concrete underground command post and club. Two light observation aircraft were protected in an underground hangar.

In April and May 1967, the North Vietnamese made an expected attack to capture the small garrison. Specifically, on 24 April, a division of NVA attacked hills 861, 881 South, and 881 North, as shown in Figure 10-2. The numbers on hill peaks represent their heights in meters. The NVA captured the hills, providing a dominant position from which to attack Khe Sanh. With the help of fighter-bombers and 175 mm artillery fire, the Marines fought back up the steep slopes to recapture the peaks in some of the fiercest fighting of the war. When the battle was over, the Marines had suffered 155 dead and 425 wounded. The NVA lost several times as many casualties. During May 1967, the Marines secured the three peaks and established outposts to protect Khe Sanh. The isolated outposts would each be manned by a company of troops, supplied by helicopters from Khe Sanh.

The base remained relatively calm during the remainder of 1967; however, it was reinforced to four battalions with elements of the 3rd Marine Division plus the South Vietnamese 37th Ranger Battalion. The macadam airstrip was extended to permit Air Force C-130 transports to land and discharge cargo. The Air Force also requested French generals, who had a part in defending Dien Bien Phu, to meet in Saigon to provide advice on the defenses and tactics for Khe Sanh. Within its perimeter trench, the base looked like a shanty slum with sandbagged bunkers, smashed tin roofs, and a grove of radio and TV aerials.

By January 1968, the base had 6,000 U.S. Marines and South Vietnamese Rangers. Its outer perimeter had revetments for 46 large caliber artillery pieces including 105 mm, 155 mm, 175 mm guns and 4.2 inch mortars. These deployments are shown at the bottom of Figure 10-2. An electronic barrier of 250 seismic and acoustic sensors were deployed around the base to pick up enemy movements and radio them to Air Force aircraft circling over the area. The signals were transmitted to Nakhorn Phanom (Thailand) for intelligence analysis, then data was relayed back to Khe Sanh fire control to aid artillery targeting.
Figure 10-2. Detailed layout of Khe Sanh base.
The NVA buildup in early January included nearly 40,000 troops at key positions along the DMZ and roughly 20,000 in the jungles west of Khe Sanh. During the buildup, 500 Royal Lao Army soldiers and 2,200 dependents moved across the border to seek refuge. They settled around the Marine outpost at Langvei. The NVA forces built approximately 250 small bunkers with logs, topped with 5 ft of soil in the hills below the Marine outposts. Large command post bunkers with four to eight layers of logs separated by 4 ft layers of soil were also constructed. The command posts were connected with forward bunkers by hard-wire telephone links. The bunkers were sturdy enough to withstand close hits by 250 and 500 lb Snake-eye bombs and 155 mm artillery projectiles. They were camouflaged and hidden beneath a top layer of canopy trees, a second layer of pole trees, and underbrush. As a result, they were difficult to locate and target.

The North Vietnamese, under the command of General Vo Nguyen Giap (leader of the attack on Dien Bien Phu), armed the bunkers with 85 mm, 100 mm, 122 mm, and 130 mm guns plus 122 mm Katyusha rockets. Duds from the 9 ft long rockets penetrated 4 ft into the soil when they landed on Khe Sanh. The NVA force consisted of two divisions (325C and 304th), each with a regiment of artillery. They were regular Viet Minh units and carried the emblem of Dien Bien Phu on their battle streamers. General Giap was trying to stage a second Dien Bien Phu.

10.1.3 The Tet Offensive.

The North Vietnamese Army and Viet Cong initiated a major campaign to win the war during their Lunar New Year of 1968. It was named for the Tet holiday (29–31 January) and involved dispersed Communist forces of roughly 80,000 troops. Normally the holiday period was observed as a truce but the Communists began widespread attacks against 36 provisional capitals, 5 major cities, and 23 airfields. Large scale assaults were made on Saigon, Hue, Quang Tri City, Dan Nang, Nha Trang, Qui Nhon, Kontum City, Ban Me Thuot, My Tho, Can Tho, and Ben Tre. The overall objectives of these attacks were to destroy South Vietnamese military capabilities and rally the civilian population to the National Liberation Front.

The offensive was fully expected since U.S. intelligence had monitored enemy buildups and troop movements for nearly three months. The intelligence staff had captured NVA documents in September 1967 that described the plans for the first three months of 1968. They outlined a three-phase campaign as follows:
• First Phase: Capture Loc Ninh and Dak To near the Cambodian border to draw American forces away from the large population centers and rural pacification sites.

• Second Phase: Widespread attacks on population centers and military installations to render U.S. forces impotent and delay reaction times.

• Third Phase: Main attack against the U.S. forces in northern South Vietnam.

These plans were confirmed by documents captured on 3 October 1967 and by attacks on Dak To and Loc Ninh in early January 1968. The attacks against the large population centers began the second week in January.

Without addressing the many difficult and destructive battles, it is important to note the final results. The Communists were driven away from most of their targets within two or three days. They lost roughly 45,000 dead and 7,000 taken prisoner. The offensive caused the deaths of 14,000 civilians and wounded 24,000 more. However, by the end of February, the U.S. had suffered 1,536 dead and 7,764 wounded and the South Vietnamese military lost 2,788 dead and 8,299 wounded. It was this dramatic increase in casualties over a short period of a few weeks that initiated massive anti-war demonstrations throughout the U.S. and raised serious questions concerning further escalation and policies by government officials and Congress.

10.1.4 The Battle for Khe Sanh.

The battle for Khe Sanh began on 21 January with an unsuccessful assault by the NVA 325th division on the Marine outpost across the river from the base. As the action drew to a close, the NVA hit the base with a mortar barrage. The main ammunition dump (see Figure 10-2) was hit and roughly 1,500 tons of munitions blew up, destroying a helicopter, killing 18 Marines, and wounding 40 more. The Marines withdrew within their defenses and began to airlift casualties and civilians to Da Nang. New ammunition was carried by the C-123 transports on their return flights. They delivered 130 tons of ammunition by the evening of 23 January to weather the crisis.

The NVA 304C Division attacked Langvei from across the Laos border on the night of 7 February. They employed nine modern PT-76 Soviet light tanks, tear gas, and flame throwers against the outpost concrete bunkers. The outpost, defended by about 500 Montagnard tribesman and a platoon of U.S. advisers, destroyed five tanks. However, the Americans were taken out by helicopter the following day when it became apparent that the outpost was too small and weak to defend. Consequently, Langvei fell on 8 February.
The Marine outpost on Hill 881N was surprised by an enemy attack on 5 February when the emplaced sensor system failed to cover the approach route. The Marines were removed by helicopters while the enemy turned its attack to Hill 861. The NVA moved into a massive artillery and air strike barrage which stopped their advance. The Marines remained in control of Hill 861 as the two NVA divisions converged from the north and west toward Khe Sanh as shown in Figure 10-2.

Late on 8 February, the NVA launched an attack from the west which carried to the Khe Sanh perimeter. Fighting was done with hand grenades and satchel charges. The attack was stopped by air strikes and M48 Patton tanks. The NVA withdrew leaving 150 dead. They were in for a major surprise. The Marines opened up with heavy artillery, the Air Force began carpet bombing with 44 B-52 sorties per day (i.e., four waves of 11 aircraft with bomb capacities over 25 tons each), and the Navy provided over 300 tactical aircraft sorties per day under operation “Arc Light.” The 15,000 NVA troops were driven to cover in their bunkers and slit trenches. They were unable to mass for attacks and their supplies were destroyed by heavy bombing. They began to lay siege to the base with artillery.

During the critical period 8–15 February, the U.S. command realized bombing was not sufficiently effective. Enemy troops waited out bombing raids in their trenches and bunkers, then moved closer to the perimeter to dig new trenches or tunnels. During the first four weeks of the siege through mid-February, the air attacks delivered 60,000 tons of napalm alone on the hills around Khe Sanh. Most of it was consumed in burning off the tree canopy. This was insufficient to destroy the NVA forces and caused the U.S. command and JCS to consider use of nuclear weapons on the battlefield as described in Subsection 10.2.

Air Force reconnaissance reported spotting three Soviet Il-28 Beagle bombers at Phueyen airfield (17 miles north of Hanoi) on 10 February. These medium-range bombers, shown in Figure 10-3, had sufficient range to reach Khe Sanh with a full bomb load within about half an hour. More important, they represented a potential escalation of the war since they could deliver conventional, chemical, or nuclear weapons. The following morning, the North Vietnam Communist Party newspaper, Nhan Dan, warned the U.S. that, “the fall of Langvei signaled a defeat of Khe Sanh as disastrous as the French loss of Dien Bien Phu.” American pilots raided Phueyen airfield the same day in an attempt to destroy the bomber threat.
When transport aircraft tried to deliver supplies to Khe Sanh, the NVA would open fire on the runway and cargo loading areas. On 11 February, a KC-130 carrying helicopter fuel was hit as it touched down. It burst into flames and swerved off the runway to kill six Marines. A second C-130 was damaged on the ground a few days later. By March, the transports were outfitted with rollers in the cargo compartment floors so that pallets of supplies could be rolled out the open hatches without stopping the aircraft. A C-123 aircraft was hit during take off on 1 March and a second was destroyed in flight on 6 March. The aircraft landings were stopped in favor of parachute drops along the runway as shown in Figure 10-4. Helicopters used cargo nets to drop supplies at outposts rather than risk landing. During the siege, the supply services lost 3 C-123s, 1 KC-130, 17 helicopters, and over 37 aircraft damaged.⁵

The NVA launched its last large-scale attack on the night of 29 February. Alerted by the electronic sensors, the defenders hit back with a barrier of explosives delivered by mortars, artillery, and B-52 carpet bombing. The attack failed before it reached the barbed wire perimeter but the enemy maintained its siege for another month. Figure 10-5 shows a fuel dump fire at Khe Sanh in early March following a severe mortar barrage. B-52s continued to bomb under Operation Niagara. Every three hours around the clock, six B-52 would strike a target box with 162 tons of ordnance.⁴
Figure 10-4. Parachute supply drop at Khe Sanh (February 1968).
Figure 10.5. Fuel dump fire after mortar barrage (March 1968).
The NVA campaign began to falter after the U.S. recaptured the city of Hue. By mid-March, NVA forces began to withdraw from the hills around Khe Sanh. The base was relieved after 1 April when the Army 1st Cavalry initiated Operation Pegasus with helicopter assaults along Route 9. A South Vietnamese airborne battalion broke through to the base on 6 April. The air campaign dropped over 110,000 tons of bombs and napalm on the area around Khe Sanh during the 77-day siege. It became the most heavily bombed target in the history of conventional warfare.5

A total of 205 Marines plus 316 South Vietnamese and Montagnards were killed during the siege. By contrast, the NVA and Viet Cong lost nearly 10,000 killed and seriously wounded. About 5,000 Bru tribesmen were killed and 1,600 were evacuated.12

10.2 NUCLEAR WEAPON CONSIDERATIONS.

General Westmoreland and Admiral Grant Sharp (Commander in Chief, Pacific) met at Da Nang on 23 January 1968 to discuss the serious situation around Khe Sanh. They knew of the impending major attacks and were concerned with what should be done.17 The options they considered included:

- Withdrawal from the base. This was militarily poor since it would expose the city of Hue to a flanking attack along Route 9. It was politically poor since Khe Sanh had become a symbol of the U.S. government’s determination to defend South Vietnam.12

- Hold the base by reinforcements and heavy use of tactical and strategic bombing. This was the option recommended the following day to General Earle G. Wheeler, Chairman of the Joint Chiefs of Staff.

- Invade North Vietnam and Laos to destroy the NVA and Viet Cong bases of operation. This suggestion by General Westmoreland would clearly expand the war and might cause China to intervene as they did in Korea.

- Employ weapons of mass destruction against attacking forces and reserve divisions assembled north of the DMZ. Westmoreland told General Wheeler that chemical or tactical nuclear weapons should be deployed as a precaution in case they were needed. He argued that the region around Khe Sanh was virtually uninhabited and there would be little concern about collateral casualties.12

President Johnson talked personally with Westmoreland about the decision to defend Khe Sanh and after 24 January, he pressed General Wheeler every day for more information. Johnson’s
political consensus for holding the base was fraying badly in light of the Tet Offensive and its high casualties. The CIA was asked to make an independent assessment of the intelligence estimates for Khe Sanh and General Maxwell Taylor was asked to review the Dien Bien Phu siege in contrast with plans for Khe Sanh. By 29 January, the President was virtually living in the Situation Room in the basement of the White House under the Oval Office. He wanted to know minute-by-minute what was going on at Khe Sanh.\textsuperscript{12}

10.2.1 The Nuclear Debate.

Westmoreland reasoned that if Washington officials were so determined on sending a message to Hanoi, “surely, small tactical nuclear weapons could be a way to tell Hanoi something.”\textsuperscript{12} He knew that nuclear weapons would be so shocking to the world that their use would have to be a political rather than military decision. Unknown to most of his staff, a small secret group was set up by 29 January in his Saigon headquarters to study the terrain around Khe Sanh, the wind velocities and directions, weapon radiation yields, blast patterns, delivery system options and base sheltering. The general wanted to be ready if approval was given to strike.\textsuperscript{12}

With the NVA breakthrough at Langvei on 8 February, President Johnson ordered the Joint Chiefs of Staff to review plans to defend Khe Sanh, with instructions not to allow another Dien Bien Phu. Senator Eugene J. McCarthy commented that, “there have been some demands already for the use of nuclear weapons in Vietnam.” He was concerned that more military setbacks would bring demands for the use of tactical nuclear weapons.\textsuperscript{18} The White House Press Secretary, George Christian, responded that the JCS had not yet requested authorization to use nuclear weapons.

Meanwhile, on 8 February, the Senate Foreign Relations Committee, chaired by Senator J. William Fulbright, began an investigation of the Khe Sanh situation. General Wheeler testified that the JCS might recommend the use of nuclear or other weapons (e.g., chemical) to hold Khe Sanh. The committee was studying a report that the U.S. had stockpiled tactical nuclear weapons in South Vietnam for use at Khe Sanh.\textsuperscript{18} The committee testimony also indicated that four renowned nuclear scientists had been flown to Saigon on an urgent mission. The Department of Defense admitted that four scientists, Dr. Richard Garwin (Columbia University), Dr. Henry Kendall (Massachusetts Institute of Technology), Dr. Julius Molnar (Bell Telephone Laboratories), and David Israel (Department of Defense), had been set to Vietnam to, “assist in the appraisal of the effectiveness of new weapons.”\textsuperscript{18}
Richard Garwin and other independent scientists participated in a study of the possible use of small tactical nuclear weapons in Vietnam for the Institute of Defense Analysis in 1967. However, the resulting report recommended against the nuclear option and favored development of new passive sensors linked with anti-personnel mines to be sown in a barrier along the DMZ and Laos border (i.e., an area 80 miles long by 15 miles wide). Even if the four scientists consulted with Westmoreland's secret planning group, their primary objective in Vietnam as confirmed by the Pentagon on 9 February) was to evaluate the electronic minefield concept.18

By 11 February, the nuclear issue had become a political event. Senator Joseph S. Clark spoke on the National Broadcasting Company "Meet the Press" TV program that, "if North Vietnam forces were to gain the upper hand in the battle for Khe Sanh, the U.S. might resort to nuclear weapons." Representative Wayne Hays claimed, "rather than suffer a disastrous defeat and annihilation of a considerable number of our forces, we would be foolish and completely stupid not to think of using nuclear weapons."19 In England, Prime Minister Harold Wilson stated that, "it would be sheer lunacy for the U.S. to use tactical nuclear weapons in Vietnam." He cautioned that frustrations in Vietnam, "can beget dangerous counsels and impatient demands to hit back and escalate in ways which would widen, not end the war." Responding to speculation that possible storage of nuclear weapons was being done in Vietnam, the White House answered that "President Johnson had not received a request from the JCS for such action."20

During testimony on 14 February to the Foreign Relations Committee, General Wheeler expressed confidence that the base at Khe Sanh could be defended without the use of nuclear weapons. Defense Secretary Robert McNamara presented the same position in a closed session of the House Defense Appropriations Subcommittee.21 In a letter to Senator Fulbright, Secretary of State Dean Rusk used brusque terms to categorically deny that the U.S. would employ nuclear weapons. Thus, the President made a decisive political decision and the responsible government agencies clearly stated his position...no nuclear weapons.

The President's decisions during this period (i.e., January through mid-February) resulted in a significant drop in his approval ratings. Specifically, the Gallup Poll asked, "do you approve or

* IDA Report HQ-66-5220, by F. Dyson, S. Courtenay Wright, S. Weinberg, and R. Gomer evaluated tactical nuclear weapons for use in Vietnam.24 It was published in 1967 and recommended development of an electronic barrier which became known as the "McNamara Line." Construction of the eastern portion of the line began near the DMZ late in 1967.5
disapprove of the way President Johnson is handling the situation in Vietnam?" The results showed:

<table>
<thead>
<tr>
<th>Condition</th>
<th>14 February</th>
<th>1 January</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approve</td>
<td>35%</td>
<td>39%</td>
</tr>
<tr>
<td>Disapprove</td>
<td>50%</td>
<td>47%</td>
</tr>
<tr>
<td>No Opinion</td>
<td>15%</td>
<td>14%</td>
</tr>
</tbody>
</table>

At the same time, the percentage of people who called for more aggressive military action (Hawks) increased over (Doves).

<table>
<thead>
<tr>
<th>Condition</th>
<th>14 February</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawks</td>
<td>61%</td>
<td>52%</td>
</tr>
<tr>
<td>Doves</td>
<td>23%</td>
<td>35%</td>
</tr>
<tr>
<td>No Opinion</td>
<td>16%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Some people (15%) felt that halting the bombing would improve the chances for meaningful peace talks but the majority (70%) felt that increased bombing would be more effective in showing that Americans demanded a military victory.²² No polls were taken with respect to use of nuclear weapons.

10.2.2 No Nuclear Weapon Deployments in Vietnam.

It is unlikely that the U.S. stored nuclear weapons on the ground in South Vietnam.¹⁸ This conclusion is based on the following logic:

- None of the U.S. bases in South Vietnam were sufficiently secure from Viet Cong surprise attacks to provide confidence in storage of nuclear weapons without extraordinary protection.

- The Army and Marines had M-109 (155 mm) and M-110 (208 mm) self-propelled artillery which were nuclear-capable. The Marines III Corps fired an average of 1,459 round of 155 mm and 235 rounds of 208 mm artillery per day during the Tet Offensive.¹² However, there is no evidence that either chemical or nuclear projectiles were deployed. Likewise, the Army did not deploy Honest John or other battlefield nuclear missiles.
• The Air Force had B-52 bombers at Guam (which had nuclear weapon storage) and U-Tapao (Thailand). A much better choice would be F-111A fighter-bombers which were capable of low altitude precision attacks. Although F-111As were not deployed in Southeast Asia at the beginning of the siege, the Air Force moved six of the new fighter-bombers to the Takhi Royal Thai Air Base (85 miles north of Bangkok) on 16 March 1968. This move shortcut development testing of the aircraft and may have been inspired by the nuclear delivery debate. Either F-111As or B-52s would have been suitable for delivering tactical nuclear weapons without storing bombs in Vietnam.

• The Navy maintained three or more fleet aircraft carriers offshore at Yankee Station in the Tonkin Gulf. Each carrier was authorized to carry tactical nuclear weapons and their F-4B and A-6A strike aircraft were nuclear-capable.

Consequently, the U.S. had ample tactical nuclear weapon delivery capability in secure deployments without placing weapons in Vietnam. White House Press Secretary Christian made it clear on 9 February 1968 that it was, "irresponsible and speculative to discuss the deployment of nuclear weapons." That same day, General Wheeler called General Westmoreland and told him to stop planning to use nuclear weapons at Khe Sanh.

10.2.3 Hypothetical Nuclear Attack Planning.

Details of General Westmoreland's nuclear weapon attack planning to relieve Khe Sanh are not available; however, it is possible to predict the probable plans. Specifically, up to four low-yield nuclear bombs, such as the B-57 shown in Figure 10-6, would have made a good choice. With a yield of 5–10 kt and the ability to be dropped in a drag-retarded mode at altitudes of 300–600 ft, it could be placed more accurately and closer to U.S. and allied forces than bombs dropped from high altitudes. The B-57 bombs became operational in 1963 and could be delivered by either Air Force F-111A or Navy A-6A or F-4B fighter-bombers.

Although the Air Force and Navy also had B-28 and B-43 nuclear bombs available (see the Assault on the Liberty, Subsection 8.2.2), they did not offer the truly low yield and low drop-altitude features of the B-57. Consider the map of Figure 10-2. The weapon aimpoints were probably on a semi-circular arc along the north sides of Hills 689, 861, 558, 950, and 1015, about 2 miles from the base. The burst altitude would be a few hundred feet above the ground such that the troops at Khe Sanh would be shielded by the hills from the prompt weapon effects (i.e., radiation, blast, and thermal energy).
CHARACTERISTICS
- Length: 118 in
- Diameter: 14.75 in
- Weight: 765 lb

FEATURES
- Yields: Variable (5 to 10 kt)
- Fusing: Air or surface plus underwater pressure
- Delivery: Gravity, over-the-shoulder, low or medium altitude down to 300–600 ft

DEVELOPMENT
- Nuclear depth charge (ASW) and tactical land-warfare
- IOC: 1963
- Production: 1,000 units
- Replaced in 1983 by B-61 gravity bomb

SOURCE
- Reference 27

Figure 10-6. B-57 tactical nuclear bomb characteristics.
The above description is hypothetical but it tends to indicate the nature of planning that was done by Westmoreland's secret group. Considerable uncertainty would exist with respect to the sheltering achieved by enemy forces (e.g., trenches, bunkers, and tunnels), wind directions and velocities, locations of important functions (e.g., command and control, logistics, gun emplacements, and assembly areas). Detailed intelligence was needed to plan an effective strike which would not threaten harm to U.S. and friendly forces. Fortunately, almost all of the civilian population in the area had been driven out or evacuated by the end of January.

10.2.4 The Nuclear Valedictory.

During the Khe Sanh siege, Secretary of Defense McNamara dominated the thinking of many strategists from the Joint Chiefs of Staff to Congress concerning the usefulness of nuclear weapons. On several occasions he made comments on "nuclear reality" in which he observed that, "the concept of defense has lost its traditional meaning. Only deterrence is real." These remarks were focused on the strategic deterrence posture that assured the U.S. was capable of destroying the Soviet Union. His thoughts during the week of 3–10 February 1968 were preoccupied with achieving "nuclear supremacy" and perfecting missile defenses to protect the U.S. homeland against Soviet attacks. His talks and papers ignored tactical warfighting problems associated with Vietnam.

According to his recent book ("In Retrospect"), McNamara decided to tell President Johnson in early February that:

"we could not achieve our objective in Vietnam through any reasonable military means and we therefore should seek a lesser political objective through negotiations."

This assessment was shared by senior CIA and DIA analysts who believed that the war could not be won by bombing North Vietnam. However, influential members of Congress, the Joint Chiefs of Staff, and public opinion swayed the President to continue fighting. President Johnson was not prepared to withdraw and he either fired McNamara or convinced him to leave voluntarily to accept the presidency of the World Bank. Clark M. Clifford was named Secretary-Designate for the Department of Defense and he supported the President's position through the remainder of the siege.

In 1995, Robert McNamara recalled that President Johnson and he had held the lid on unleashing the military since they did not want war with China and the Soviet Union. He claimed that the
Joint Chiefs of Staff recommended actions (i.e., invasion of North Vietnam) that might have caused a military confrontation with the Soviets and Chinese, "in which case we might have to resort to use of nuclear weapons." By contrast, Marine Commandant General David M. Shoupé disagreed with the proposition that a U.S. move across the DMZ might bring China into the war and would necessarily lead to nuclear warfare. These conflicting positions carried over from the considerations discussed by General Westmoreland and Admiral Sharp on 23 January 1968 (see the introduction to Subsection 10.2).

10.3 LESSONS LEARNED FROM KHE SANH.

President Johnson's political position with the public and Congress weakened steadily from the beginning of the Tet Offensive until the end of the siege at Khe Sanh. While there was a short-term fear that a literal repetition of Dien Bien Phu might occur, the base with its 6,000 troops was not in mortal danger of being overrun. The U.S. Marine firepower, overwhelming tactical and strategic bombing, and the Army's ability to break the siege by driving down Route 9 from Dong Ha could prevent a humiliating defeat. Therefore, the decision to withhold use of nuclear weapons was fully justified.

The Diplomatic Activities.

After the bombing campaign began against targets in North Vietnam on 19 February 1966, Secretary of State Dean Rusk mounted diplomatic efforts to initiate peace talks. U.S. initiatives were delivered to Hanoi on several occasions during 1967. On 20 January 1968, Ormond Dier (Canadian member of the International Control Commission for Vietnam) visited Hanoi for three weeks. He, or an envoy from Romania, carried a listing of conditions under which the U.S. would stop bombing and be willing to hold peace talks in Geneva. The North Vietnamese were, "in possession of the conciliatory conditions for negotiations at the very time that they initiated the escalated offensive in the South," according to Representative Hugh L. Carey on 13 February 1968.

Because the North Vietnamese ignored these diplomatic moves, President Johnson concluded that they did not want peace. However, Secretary Rusk continued to work for a meeting and as a result, he took a passive role with respect to the decisions concerning Khe Sanh. On 10 February, he predicted that the "climatic period" of the struggle in Southeast Asia was approaching and a second series of communist attacks on South Vietnamese cities was near. The State Department
generally resisted consideration of nuclear weapons. It shared British Prime Minister Harold Wilson's view that use of nuclear weapons would, "have a disastrous effect on the reputation of the U.S."\textsuperscript{20}

In brief, the State Department gave the military and President very little help in resolving the Khe Sanh crisis. Its primary concern was to prevent the war from escalating (i.e., attacks into North Vietnam or Laos or use of nuclear weapons). The possibility that Russia or China might enter the conflict was of greater strategic importance that the loss of Khe Sanh.

The Strategy for the Ground Campaign.

General Westmoreland and the JCS proposed an active strategy for cutting the NVA and Viet Cong supply lines by attacking across the DMZ into North Vietnam and Laos. These options were politically unacceptable for fear they would escalate the conflict.\textsuperscript{*} Because of these political constraints, the U.S. Army and Marines seemed to have no clear-cut strategy for operations other than holding on to territory. Instead of taking the initiative, American commanders waited for the NVA and VC to attack, then tried to wipe them out. General Westmoreland correctly assessed the Communist strategy to hit in isolated rural areas, abandon them when the battles were over, and lure U.S. forces away from the cities and pacification centers. The U.S. forces were not surprised by this strategy and remained in place to stop subsequent attacks on the defenseless centers.

The U.S. command was criticized for placing Khe Sanh at risk, where the enemy appeared to have definite objectives. It became one of the few well structured battles during the war. Despite widespread attacks and damage caused by the Tet Offensive, the bombing and relief of Khe Sanh were well conducted operations.\textsuperscript{30}

The Strategy for the Bombing Campaign.

There was both political and military disagreement on how to conduct the bombing campaign against North Vietnam. Two issues dominated the debate:

\textsuperscript{*} By contrast, in April 1970, President Nixon authorized a large scale incursion into Cambodia when it was being used by the NVA and VC as a base for logistics support.\textsuperscript{17}
• U.S. political leaders greatly feared that Russia or China would enter the war. Therefore, targets were carefully selected and attacked piecemeal to avoid giving the impression of an all-out effort to defeat North Vietnam.

• The bombing did not concentrate on logistics capabilities that were critical to NVA and VC forces during the Tet Offensive.

Many senior military commanders advocated a massive bombing campaign to destroy the rail network from China into Hanoi and toward the south plus blockading or destroying the port of Haiphong. These were the primary routes by which supplies reached North Vietnam and its forces. Even major airfields at Gia Lam and Phucyen were prohibited targets for fear that Chinese or Soviet aircraft would be hit or that it would appear the U.S. was trying to defeat North Vietnam. Under a concept known as “the creeping approach” targets were selected to increase pressure on North Vietnam over time to induce them to accept peace talks. Constraints were imposed to prohibit areas in which targets would not be attacked to minimize the potential for collateral damage or civilian casualties as shown in Figure 10-7. Most constraints were removed, a few at a time, following the Tet Offensive.

The success of the bombing campaign was measured in terms of sorties per day and tons of munitions delivered. These measures were meaningless since the effectiveness depended on the amount of supplies reaching NVA and VC forces at the front. A strategic doctrine prevailed in which the efficacy and acceptability of bombing was focused on destroying the enemy’s will and resources to fight. However, the bombing constraints precluded the ability to accomplish that doctrine. Tactical bombing proponents advocated destroying the enemy logistics flow across the DMZ and Laos border by destroying railroad bridges and striking vehicle convoys along the Ho Chi Minh Trail. This was also ineffective because the bridges were hard to destroy and it was difficult to find and strike hidden convoys in the jungles.

The dispute over different bombing strategies was never resolved. Furthermore, U.S. leaders applied micromanagement to the conflict on a day-to-day basis from Washington. President Johnson took the extraordinary step of having a model of Khe Sanh built in the White House so he could monitor every event. He also ordered the Joint Chiefs to sign a formal declaration of their confidence that the base could be held. The political leadership should have established objectives and guidelines for the military then turned the problem over to them to implement. Daily changes in planning, goals, and constraints caused inefficient military operations and failed to send a coherent message to the enemy.
TARGET TYPES (REFERENCE 17)

1. Airfields
2. Military facilities: barracks, headquarters, supply depots, and communications centers
3. Transportation: rail bridges, yards, road bridges, and canal locks
4. Industrial: munitions and chemical plants, electric power, and power substations

Figure 10-7. Bombing constrained areas (July 1965 to April 1968).
A Nuclear Use Asymmetry.

The procedure for bringing nuclear considerations from the commanding officers in the theater through the JCS to the President for approval appeared to work well during the siege of Khe Sanh. The political debate that emerged in Congress was interesting but not decisive in making the final decision not to use the weapons.

It appears that the American public holds an asymmetric view concerning the use of nuclear weapons. It is generally accepted that nuclear weapons are needed for strategic deterrence and their actual use would be supported if the U.S. were under attack by a nuclear threat. However, use of nuclear weapons in an offensive mode to destroy enemy targets during a theater conflict would face extensive public resistance unless U.S. or allied forces were already under nuclear attack. This resistance would be significantly greater if the targets could be destroyed by conventional means. An exception to this rule might be highly important military targets that are so hard that they cannot be destroyed by conventional weapon effects (e.g., underground leadership/command centers and storage of weapons of mass destruction).

By contrast, there is considerable support for using nuclear weapons in a defensive mode to protect American and allied forces from the threat of annihilation by an enemy force. The military advocacy for using nuclear weapons to protect Khe Sanh was similar to the proposals to protect the French base at Dien Bien Phu (March 1954) and save the U.S. forces from being overrun by Chinese at the Chosin Reservoir (November 1950). Each of these situations threatened to result in large numbers of casualties in addition to a humiliating military defeat. U.S. political leaders were generally supported by the public in considering the use of nuclear weapons in these cases.

The large majority of U.S. nuclear weapon planning, analysis, and public debate has focused on strategic offensive targeting applications. There is much less experience in planning defensive operations in which U.S. and friendly forces, as well as civilian populations, are at risk in battlefield situations. The analytic tools for selecting weapon yields, heights of burst, sheltering factors, terrain and weather conditions, and intelligence on force postures and civilian population status are not fully developed. More important, the rationale and criteria for using nuclear weapons under these situations have not been fully evaluated by military and political leaders or the public. Few planners want to consider situations in which the U.S. military is placed in a position of being defeated despite its extensive conventional capabilities.
SECTION 11.0
SINO-SOVET BORDER DISPUTE INITIATES A NUCLEAR THREAT
W. C. Yengst

Could a nuclear conflict develop between neighboring countries in a period of two weeks over a minor border dispute? Based on the experience of Russia and China during March 1969 along the Ussuri River of Manchuria, the answer is a qualified, Yes! Of course, the border dispute had festered for nearly 270 years but it was suddenly fanned into a violent crisis by leadership actions, inept diplomatic maneuvers and public demonstrations. The crisis ended only after the Soviet Union responded with heavy armor, artillery, and missile launches. China mobilized dozens of divisions of border troops and warned its population to expect nuclear warfare.

11.1 DESCRIPTION OF THE CONFLICT.

The conflict over Damansky Island (Russian name), or Chen Pao (Chinese name), can best be described in three phases of activity: 1) initial Chinese attacks, 2) political statements and public demonstrations, and 3) Soviet military responses. These phases are described following a presentation of the background and island characteristics.

11.1.1 Background.

The current Russian–Chinese border was delineated in the 1689 Treaty of Nerchinsk following an invasion of Manchuria by Manchus tribes. The Manchus imposed an indefinite border on China that extended from the Argun River in the west, continuing along the Amur River to the south of Kerbechi (current day Shilka), and then along the Kerbechi River to the Stanovoy Mountains.\(^1\) The loosely defined treaty set the stage for several subsequent disputes as summarized in Figure 11-1. Of the disputed areas, a section of the Ussuri River along the eastern border of Manchuria is the subject of this paper. The area is shown in the maps of Figure 11-2.

A number of diplomatic negotiations were held during the mid-1960s to resolve this dispute over ownership of Damansky (Chen Pao) Island and navigation rights along the river. Russia wanted to focus on only the island ownership but China insisted on opening the negotiations to cover all disputed areas plus navigation rights.\(^2\) Thus, sporadic diplomatic efforts broke down in 1968.
Disputed border regions

1. Indefinite boundary set by Treaty of Nerchinsk (1689). Modified by the Treaty of Aigun (1858) to give Russia 598,000 sq. km. Modified again under Treaty of Peking (1860) to give Russia 400,000 sq. km. Further loss of Chinese territory in August 1945.

2. Area cut off by Kazakevicheva Channel and Amur River during building of the Trans-Siberian Railroad.

3. Boundary moved during the Treaty of Peking (1860) to give Russia 440,000 sq. km. Area of 70,000 sq. km. given to Russia by Treaty of Saint Petersburg (1881).


Figure 11-1. History of boundary disputes between China and Russia.
During this period, the Soviet Union began to increase its active military forces along the border from 15 to 21 divisions as shown in Figure 11-3. The first major step was the signing of a new defense treaty with Mongolia in January 1966. By early 1967, one hundred thousand Soviet troops were garrisoned in Mongolia. Still considerably below the 32 Chinese infantry divisions deployed along the border, the Soviet troops were armed with motor-rifle, self-propelled artillery, heavy armor, short-range missiles, and air defense elements that surpassed the best Chinese equipment. Soviet forces were assigned from the Trans-Baikal and Far Eastern Military districts with a primary responsibility to protect the Trans-Siberian Railroad.

![Bar chart showing the number of divisions for the Soviet Union and China from 1967 to 1971.](image)

**Figure 11-3.** Buildup of forces along the Sino-Soviet border.
In addition to ground forces, the Russians deployed about 200 strategic nuclear missiles (150 SS-4 MRBMs and 50 SS-5 IRBMs) plus 50 SS-12 Scaleboard short-range missiles along the Chinese border by 1969. In fact, 14 SS-12 missile launchers were at Novosysoyevka near Manchuria. The Soviet army newspaper Red Star touted the combat readiness of its Rocket Forces that were within easy range of Chinese military and industrial targets. Chinese Premier, Chou En-lai, rebuked these statements, claiming: “the boundary question should be settled peacefully through negotiations free from any threat.”

Because of the Soviet military buildup along its border and the delays in negotiating the disputed areas, China refused to attend the Twenty-third Communist Party Congress in Moscow during March 1966. This effectively broke party relations between the two countries. The Chinese distrust of the Soviet Union was reinforced in August 1968 when Russia and its Warsaw Pact allies invaded Czechoslovakia. Two days after the invasion, Chou En-lai described the event as “social-imperialism.”

The deep concern the Soviets held for the Chinese threat was revealed by General Vladimir F. Tulubko, former Deputy Commander of the Strategic Rocket Forces. He was appointed Commander-In-Chief of the Far Eastern Forces in August 1969 (only five months after this crisis). When he retired in 1972, at age 69, he described the Soviet high command thinking and plans if a Sino-Soviet war occurred. The plans were based on three primary assumptions:

- The war would be initiated by a Chinese incursion across the Manchurian border. Russia would not strike first.
- The conflict would inevitably involve employment of nuclear weapons and China would use its nuclear arsenal.
- The Soviet response would be rapid conventional force strikes similar to Israel’s Six-Day War of 1967.

Specifically, the Soviet plan was structured in four phases. The first phase would employ heavy bombers to destroy China’s nuclear testing and development centers at Lop Nor and Lanchow. Secondary targets included industrial, communication, and arms production centers, military supply bases and airfields. The second phase would use conventional forces in a series of amphibious and airborne assaults. For example, an invasion of Sinkiang would attempt to initiate a war of liberation by Uighur, Kazakh, and other Moslem tribes. The third phase would involve a blitzkrieg thrust toward Beijing to destroy the Chinese government and its power base. In phase
four, the Soviets would encourage Taiwan (Republic of China), Tibet, and India to attack China to secure their former areas. However, Russia would not try to defeat southern China or occupy the country below the 38th parallel.  

This scenario was well emplaced in Soviet military planning; consequently, the Chinese attack against Damansky (Chen Pao) Island probably triggered Soviet Leadership to think in terms of this course of action.

11.1.2 Characteristics of Damansky (Chen Pao) Island.

The Ussuri River border area is perhaps the worst possible place to fight a land battle during most of the year. The Chinese side of the river has heavily forested hills which sweep down to swampy land that runs the length of the river. The Soviet side of the river forms the eastern most segment of the Trans-Siberian Railroad which links Khabarovsky with the port of Vladivostok as shown in Figure 11-2. Japanese construction crews in 1938 built a secondary road beside the railway which is known as “the Stalin Highway.” It is probable that Damansky was a peninsula extending from the Chinese side of the river at the time of the Treaty but the wet terrain washed out to create an island. Known to the Chinese as Chen Pao (treasure), it is barren, about 6,200 yards long, has a low hill along its length, and contains sparse trees and shrubs.  

In early 1969, the Soviet Union occupied the island with a garrison containing a battalion of border troops (i.e., about 500 personnel). They were equipped with a dozen tanks and armored vehicles. They were backed up by a motor-rifle regiment located near Khabarovsky, 37 miles to the north. The island and nearby villages were populated by about 1,000 peasants of Chinese ancestry. These people generally resisted the Soviet occupation.

11.1.3 The Chinese Attack.

Early on the frosty morning of 2 March 1969, over 200 armed Chinese moved out of the forests to the river. They were dressed as civilians; although many wore white military camouflage capes. One unit took positions along a low hill in trees to disperse in ambush formation. A second unit set up mortars, grenade launchers, and machine guns along the Chinese river bank. About 30 crossed the ice and climbed from the river in full view of the Soviets. Russian reports indicate they were shouting anti-Soviet slogans.
At about 11:00am, the Soviet commander for the area, Lieutenant Strelnikov, and seven of his men walked out to meet the Chinese. As a routine response, he intended to protest their intrusion and ask them to leave. This initial approach is shown in the Soviet photograph of Figure 11-4. The Chinese suddenly opened fire, killing Strelnikov and five of his men. At the same time, gunners from across the river opened fire at the Soviet troops covering the meeting. The Soviets rushed reinforcements to the scene, including armored personnel carriers. One of the APCs was hit immediately and a full-scale battle broke out. During the next four hours, the Chinese employed 300–330 personnel and the Russians committed their entire garrison. In mid-afternoon, the Chinese made an orderly withdrawal, taking their casualties with them. The Russians remained in control of the island but they lost 31 dead and 14 wounded.

![Figure 11-4. Moments before the first battle on Damansky Island (Soviet border troops on right approach Chinese troops on left).](image)

The following morning, more than 500 Chinese troops renewed the attack supported by mortar and artillery fire. A two-hour skirmish resulted during which the Russian garrison responded with tanks, armored vehicles, and cannons. Details of this battle are scarce but apparently the Chinese gained control of a significant portion of the island. Soviet reinforcements from Khabarovsk began to arrive later in the day and stabilized the situation.

According to a communist Hong Kong newspaper (Ta Kung Pao), the Chinese held the island by the morning of 4 March. However, the Russians counterattacked with eight armored vehicles,
three trucks loaded with troops, two command cars, and a helicopter. They drove the Chinese back across the icebound river and secured the island. On 5 March, the helicopter landed on the Chinese side of the river while six armored vehicles, two truckloads of troops, and a command car patrolled the river banks.\textsuperscript{13}

11.1.4 Political Actions and Demonstrations.

There is little doubt that China initiated the attack on 2 March; however, the Chinese government promptly blamed the Soviet Union. Premier Tsedenbal of Mongolia claimed that the order to attack was given by Mao Zedong, Chairman of the Chinese Communist Party.\textsuperscript{*} Tsedenbal explained that the Chinese people were infused with the idea that war with Russia was inevitable but only Mao had the authority to initiate a deliberate attack.\textsuperscript{14} The attack was apparently designed to serve three objectives:

- It was a tactical probe of the strength and readiness of the Soviet frontier troops in the area.\textsuperscript{10}
- It helped to prepare the Chinese people to wage conventional or nuclear war against Russia.\textsuperscript{14}
- It was intended to undermine Soviet influence throughout the communist bloc countries and throughout the world.\textsuperscript{14}

On the morning of 3 March, China’s Deputy Foreign Minister, Chi-Peng-Fei, delivered a message to the Russian embassy in Morocco. It may have been prepared before the attack and it accused Moscow’s “renegade revisionist clique” of having ordered the invasion of Chen Pao Island by their border guards.\textsuperscript{12} It also stated that the Chinese people “were not to be bullied and that the violation of China’s sacred territory was absolutely impermissable.” The Beijing People’s Daily newspaper said that, “the Russians advanced onto territory well known to be Chinese and that China only fired back when driven to the end of their forbearance.”\textsuperscript{15}

The following day, the Chinese army paper, Liberation Army Daily, warned that, “if such provocations continue, we will wipe you out resolutely, thoroughly, wholly, and completely.” It claimed that in the past two years alone, Soviet border guards intruded onto Chen Pao 16 times.\textsuperscript{7}

\textsuperscript{*} Mao Zedong (often spelled Mao Tse-tung) was approaching retirement and identified Defense Minister Lin Piao (often spelled Lin Biao) as his successor. However, in 1971 Lin disappeared and was reported killed in an aircraft accident.
It also charged that Soviet intrusions occurred on nearby Chiliching and Kapotzu Islands on many occasions and Soviet aircraft frequently violated Chinese airspace. The New China News Agency warned Moscow that "hundreds of millions of army men and civilians were on the alert."\(^6\)

Later on 4 March, in what was described as a spontaneous demonstration, an estimated million people jammed the streets around the Soviet embassy in Beijing. They continued through the night, shouting anti-Soviet slogans and carrying placards that read, "hang Kosygin and fry Brezhnev."\(^7\) The government released a motion picture documentary entitled, "The Anti-Chinese Crimes of the New Czars," to arouse intense national emotions and hatred for the Soviet government.\(^2\) By the following weekend, China estimated that 150 million people across the country had joined the demonstrations.

Also on the morning of 4 March, the Soviet newspaper Tass reported that workers in Khabarovsk and Blagoveshchensk on the Amur River held meetings to protest the Chinese attacks.\(^9\) On 9 March, in an admirably arranged and controlled demonstration, 100,000 Russian civilians marched past the Chinese embassy in Moscow as illustrated in Figure 11-5. The people were picked up in city buses, delivered to a starting point, and threw ink, paint, and stones at the embassy compound as they passed. Leonid Zamyatin, the Foreign Ministry Press Chief, held a conference in which he accused China of atrocities against the wounded. He produced photographs showing bodies that had been beheaded and mutilated by bayonets. The ministry sent China a letter protesting the attacks and siege of the Soviet embassy in Beijing.\(^16\)

The threats and counter-threats escalated for more than a week. Moscow's "Radio Peace and Progress" station broadcast in the Chinese language, "the main weapons of the Soviet armed forces are its rockets...their destructive range is virtually unlimited...they can hit their target with pinpoint accuracy." Mao Zedong himself convened an emergency party meeting in Beijing and bluntly stated, "if the Russians dare use nuclear missiles, we'll do the same."\(^17\)

The Soviet leadership used the specter of a Chinese menace to further its own political goals. Specifically, it: 1) cast China as an ideological outcast from the communist movement with aggressive designs on the sacred soil of the Soviet motherland, 2) made the world forget Moscow's aggression in the invasion of Czechoslovakia, and 3) whipped up nationalistic fervor within Russia.\(^17\) At a summit meeting of the Warsaw Pact military chiefs in Budapest during the week of 9 March, the Russians focused their presentations on the Ussuri River attacks. They
Figure 11-5. Demonstrations in Beijing and Moscow.
asked the member states to send military experts (not troops) to the Soviet frontier and unabashedly threatened to respond to China with nuclear weapons.\textsuperscript{17, 18}

In Bonn (West Germany), Soviet Ambassador Semyon Tsarapkine painstakingly explained the Russian concerns for the Chinese threat at a press conference. Similar statements were made by Russian diplomats in Paris, Rome, Tokyo, and Ottawa. The intent was to show the world that China was no longer a brotherly socialist nation but instead, a dangerous foe.\textsuperscript{6} In a counter argument, the Communist Party of Australia warned that Russia was preparing for war against China.\textsuperscript{19}

11.1.5 The Soviet Reprisal.

While political actions heated up and emotional passions flared in both countries, the Russians moved its regiment from Khabarovsk to Damansky Island. Heavy armor and missile units were moved into position for a major counterattack. Meanwhile, China reinforced its border troops and defenses opposite the island. At noon on Saturday, 15 March, the two forces clashed in a full-scale battle. The New China news agency declared that dozens of Soviet tanks, armored vehicles, and infantry crossed the Ussuri River in battalion strength and entered China by 4:00pm.\textsuperscript{4} The Soviet news agency Tass reported that Chinese in regimental strength (i.e., about 3,000 troops) attacked its border guard contingent.\textsuperscript{20}

The battle lasted until nightfall (7:00pm) and resulted in several hundred casualties on both sides.\textsuperscript{21} The Russians cleared the island of Chinese but lost its commanding officer, Colonel Demokrat V. Leonov.\textsuperscript{8} During the fighting, both sides employed artillery; however, the Russians launched a sharp but brief barrage of missiles deep into Chinese territory.\textsuperscript{14} The Soviet missiles were probably Frog-7 or Scud-B weapons with conventional warheads. These missiles were assigned to Soviet division-level forces and they were nuclear-capable. After the battle, China published a photograph showing four tanks and quantities of Russian equipment “seized” on its side of the river.\textsuperscript{22}

Although sporadic fighting continued on 16 March and the Soviet leaders openly threatened the use of nuclear weapons at the Budapest conference, there is no evidence that the Strategic Rocket Forces were placed on alert.\textsuperscript{4} China responded to this battle by putting its border guards on full
alert along the entire length of the Sino-Soviet and Mongolian borders. Mao Zedong issued a warning to the Communist Party and the nation to, "hold itself ready in case of war." The New China news agency reported that eight million soldiers and civilians were arming themselves and preparing defenses in Sinkiang Province and its capital, Urumchi.

The war of nerves continued for several months. China broadcast anti-Soviet diatribes daily from Chinese-built transmitters in Albania. Russia, Czechoslovakia, and Bulgaria tried to jam these broadcasts. China also closed its borders at all railroad crossings to prevent Soviet supply shipments from moving to North Vietnam. Russia responded by shipping the supplies from Vladivostok. Soviet diplomats declared that Russia would hit back hard at any infringement of its sovereignty by China.

Almost in accordance with the second phase of the Soviet leadership plan described in Subsection 11.1.1, a clash of Soviet and Chinese forces occurred on 13 August 1969 along the border between Kazakhstan and Sinkiang Province. This engagement at the Dzungarian Gates pass threatened the Chinese nuclear establishment in Sinkiang which contains uranium mines, gaseous diffusion plant, Lop Nor nuclear test sites, and a missile test range.

11.2 NUCLEAR WEAPON CONSIDERATIONS.

Several analysts suggested that the Russians were waiting for an opportunity to destroy China's nuclear weapon and missile development centers. The Chinese were viewed as more adventurous and dangerous than the United States. An example of the Soviet concern is noted in a statement by the American University:

"The Soviet Union reportedly considered a surgical strike to eradicate China's few nuclear facilities after the border clashes of 1969."

Clearly, the battles for Damansky Island and the Dzungarian Gates pass provided an excuse for the Soviet Union to strike. But no attack was made for one or more of the following reasons:

1. Russia was deeply involved in supporting North Vietnam in its civil war against South Vietnam. War with China would virtually prohibit the ability to continue supporting North Vietnam.
2. Russia could not count on its Warsaw Pact and other allies to provide help in a war with China. Specifically, Hungary, Czechoslovakia, and Romania might seize the opportunity to overthrow their Communist governments.

3. War with China, even if constrained to conventional weapons, would result in extensive casualties. This would stress the Communist control over the Russian population.

4. There was uncertainty concerning the status of Chinese nuclear forces and their capabilities. Although Russia had superior nuclear forces, it was not prepared to risk nuclear attacks against even a few major cities.

The first three reasons were political and economic judgment issues; however, the fourth was subject to intelligence analysis. Therefore, a review of China’s nuclear weapon developments in early 1969 is in order.

11.2.1 China’s Nuclear Weapon Development.

During the mid-1950s, Mao Zedong asked Nikita Khrushchev for Soviet assistance in modernization of China’s military capabilities. Specifically, he sought aircraft and missile technologies and manufacturing know how. Following discussions of the dangers of nuclear warfare (e.g., Korea, Dien Bien Phu, and the impending Taiwan crisis of Section 17), Russia secretly signed an agreement with China on 15 October 1957 concerning “new technology for national defense.” The agreement, 11 days after the successful launching of Sputnik-1, called for the Soviet Union to give China “a sample atomic bomb and technical detail for its manufacture.”

Mao and his senior military aids were assured of this assistance in meetings with the Russians in Moscow during November 1957.

The Soviet Union provided nuclear research assistance but apparently it did not deliver a bomb or detailed design information. China built two nuclear reactors: Lanchow (a gaseous diffusion plant) and Paotow (two small research reactors). Because of less than expected help from Russia and the threat of a border conflict, China made all of its nuclear research top secret. Its primary weapon research center was located in a barren area of Sinkiang Province on the western bank of Lake Lo-pu Po in the village of Lop Nor. Only certified Chinese scientists, military, political, and construction personnel were permitted to travel to the center. The nuclear weapon tests were conducted in a remote region of south-central China. Other important nuclear support facilities were located at Subei and Guangyuan (weapon assembly plants), Jiuguan (plutonium production), Lanzhou and Heping (uranium enrichment) and Mianyang (design laboratories).
U.S. intelligence reconnaissance flights were initiated in 1957 to overfly these and Soviet missile development centers using U-2 aircraft flying from a base in northern Pakistan. Even after Francis Gary Powers was shot down over Russia on 8 May 1960, three U-2s continued to monitor the Chinese nuclear sites. In November 1964, the U-2s were replaced by unmanned Q-2C reconnaissance drones. On 17 November, Marshal Lin Piao protested the reconnaissance flights and announced that one of the drones had been shot down by the Chinese Air Force. Ten of the drones were shot down by April 1965 (three are shown on display in Beijing in Figure 11-6) but the flights continued through January 1968. Over 500 flights were made by 1970 but many details of the nuclear development program remained hidden. 27

![Figure 11-6. Three Q-2C (147 B) reconnaissance drones in Beijing (20 April 1965).]

When the U.S., Great Britain and Soviet Union negotiated the first Nuclear Test Limitation Treaty in 1963, China refused to endorse it. On 16 October 1964, China exploded its first nuclear device. This event in south central China surprised most nuclear experts because it occurred much sooner than expected. 28 The first thermonuclear device was tested on 9 May 1967. Thus, China
demonstrated nuclear weapon capability but it had not yet produced an inventory of operational weapons. One report estimated that China produced 200 fission bombs but no thermonuclear weapons by 1970.\textsuperscript{14}

The first air drop weapon test occurred on 14 May 1965 from a Hong 6 bomber and 12 atmospheric tests took place by mid-November 1970.\textsuperscript{26, 27} At the most, 1–2 dozen aircraft delivered atomic bombs were operational at the time of the border crisis. Consider the delivery systems.

- **Aircraft:** China acquired and reengineered the Soviet TU-16 (Badger) medium-range bomber between 1960–1969. The twin-jet, nuclear-capable aircraft had a range of over 1,600 miles. It was produced at Shenyang and 20 were operational by early 1971 according to Secretary of Defense Melvin Laird.\textsuperscript{28, 29}

- **Missiles:** China produced its first battlefield missiles with ranges of 450–650 miles in 1963.\textsuperscript{14} These missiles were operational and could have delivered nuclear warheads at the time of the border crisis. Between March 1971 and early 1972, China deployed approximately 20 medium-range ballistic missiles (MRBMs).\textsuperscript{28} These missiles, with a range up to 1,000 miles, were deployed on mobile transporters in northeastern and northwestern China. These liquid fueled missiles were similar to the Soviet SS-12 Scaleboard missile with a 1 megaton warhead.\textsuperscript{28}

China's missile forces are operated by the Second Artillery Corps (equivalent to the Soviet Strategic Rocket Forces). This organization was set up in 1964 and was heavily staffed with security personnel.\textsuperscript{1} Because some gravity bombs and a small number of battlefield missiles were operational by 1969, the Soviet Union may have been deterred from employing nuclear weapons during the border crisis. In 1970, China deployed an intermediate range ballistic missile (IRBM) with a storable liquid propellant booster suitable for use in underground silos. With a range of 1,500–2,500 miles, it could reach Soviet targets as far east as the Ural Mountains. By early 1972, China was estimated to have about 150 nuclear missiles.\textsuperscript{1} The time-window for the Soviet Union to stop Chinese development by a surgical strike had passed.

11.2.2 Chinese Diplomatic Maneuvers.

A few weeks after the crisis (April 1969) the Chinese Communist Party held its Ninth National party Congress in Beijing. Defense Minister Lin Piao delivered a paper in which he stated the need for the military to take a greater role in maintaining control of the borders.\textsuperscript{4} His paper also contained two significant foreign policy points.\textsuperscript{1}
• China declared its readiness to conduct foreign relations on the basis of peaceful coexistence.

• For the first time, it explicitly referred to the Soviet Union (along with the U.S.) as common enemies.

However, China expressed a willingness to begin new general boundary talks with Moscow. It also declared that, “at no time and under no circumstances will China be the first to use nuclear weapons.”

Chinese isolation ended as it took active positions in the U.N. and Premier Chou En-lai stabilized government operations. Mao Zedong opened links with the U.S. at Sino-American meetings in Warsaw during 1969. Under what he described as “revolutionary diplomacy,” he invited President Richard M. Nixon to China. The U.S. promptly announced the end of a 21-year embargo on trade with China. In February 1972, Nixon visited China for seven days. By March 1972, 14 countries had established diplomatic relations with China. China distrusted Soviet intentions and wanted other nations (the U.S. in particular) to lead a united coalition front against Russia.

11.3 LESSONS LEARNED FROM THE SINO-SOVET CRISIS.

President Richard M. Nixon once observed that, “Moments of great decision often pass unnoticed and are only recognized in retrospect.”

The Sino-Soviet border dispute of March 1969 is probably one of the events that fit this observation. The major news media of the world barely reported the initial days of conflict but within two weeks, the crisis initiated a realignment of communist nations and precipitated the threat of nuclear war. This crisis shows that it is sometimes a simple step from a diplomatic disagreement to military actions and an exchange of shots.

The Chinese military attack against Damansky Island on 2 March reduced the 1950 Mutual Defense Treaty with Russia to a meaningless piece of paper. In the views of Soviet Communist Party President, Leonid I. Brezhnev, the Chinese were:
• Openly preparing their people to wage conventional or nuclear war against Russia.

• Seeking to undermine Soviet influence throughout the Communist bloc countries and the world.

This was the second time (following the Cuban missile crisis) that Russia used the threat of nuclear war to resolve a problem.

Analysis of this crisis shows that both countries used government encouraged public demonstrations to support their positions and inflame the passions of their populations. The leadership of both countries threatened use of nuclear weapons to resolve the conflict. However, neither country was really prepared for or wanted to go to war over the minor dispute.

• China was preoccupied with solving its poor economic and low standard of living domestic problems. Why it chose to initiate the border conflict at that time is unknown.

• Russia was fearful of losing control of its Warsaw Pact allies and the prospects of large casualties (reflective of World War II). Why it ballooned the incident to levels of nuclear threats is unknown.

During a speech at the Warsaw Pact summit meetings in Belgrade, Brezhnev condemned China for its actions and noted the consequences of prolonged tension on the Soviet military budget.\(^30\)

The most surprising fallout of this crisis was that China gave consideration to the policies and opportunities of Western nations and opened relationships with the U.S. in the fall of 1969. The U.S. removed its trade sanctions against China, stopped its reconnaissance overflights, and President Nixon visited China to dramatically reduce world tensions. In 1971, China was admitted to the United Nations and in 1979 normal diplomatic relations were established with the U.S. However, the Sino-Soviet border dispute was never fully resolved.

The primary lesson from this crisis is that minor disputes can escalate within a matter of days and the U.S. leadership and military must be prepared to handle them with conventional forces while avoiding being pulled into a nuclear confrontation.
SECTION 12.0
ISRAELI NUCLEAR WEAPONS AND THE 1973 "OCTOBER WAR"
Mark A. Jensen

Jews and Arabs have been fighting in the Middle East for thousands of years. In the post-WWII era, leading up to 1973, there had already been four major Arab-Israeli military conflicts as summarized in Table 12-1. The preeminent struggle concerned territorial disputes; specifically, dealing with the question of ownership of the ancient lands from the southern Red Sea port of Elat, to the north to Golan and Hafia, and to the east past Jerusalem and to the West Bank of the Jordan River.

Table 12-1. Overview of the Arab Israeli conflict before 1973.

<table>
<thead>
<tr>
<th>Military Conflicts</th>
<th>Territorial Disputes</th>
<th>Other Disputes</th>
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<tbody>
<tr>
<td>Roots go back 4000 years</td>
<td>Legitimacy of Israel</td>
<td>Water</td>
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<tr>
<td>1948-49 War</td>
<td>Sinai</td>
<td>Immigration</td>
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<tr>
<td>1956 Suez War</td>
<td>West Bank</td>
<td>Religious Freedom</td>
</tr>
<tr>
<td>1967 Six Day War</td>
<td>East Jerusalem</td>
<td>Terrorism</td>
</tr>
<tr>
<td>1968-70 War of Attrition</td>
<td>Golan Heights</td>
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<td></td>
<td>Gaza</td>
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By the early 1970s, Israel had developed nuclear weapons as an insurance policy against being overwhelmed by superior Arab forces and being "pushed into the sea." At the same time, still recovering from the devastating and humiliating defeat at the hands of the Israelis in the 1967 "Six Day War", Egypt and Syria had integrated massive quantities of new Soviet-supplied weapons into their force structure and trained their armies for what would be one of the most astounding surprise attacks in modern warfare. This combination of a new Israeli nuclear capability and a massive combined Egyptian and Syrian surprise offensive, set the stage in the early hours of the 1973 Arab-Israeli War for a decision concerning deployment of Israeli nuclear weapons. If it were not for the apparent limited war aims of the Arab States and the success of the Israeli defenses and subsequent counter-offensives after the first 48 hours of the conflict, a decision by Israeli leaders to "go nuclear" might very well have occurred.

12.1.1 Aftermath of the “Six Day War”.

For three weeks in May and June of 1967, Israelis watched and worried as Arab armies massed around their borders and the UN Emergency Force was withdrawn under pressure from Egyptian President Nasser.* Egyptian forces promptly were deployed into the Sinai, while Syria and Jordan concentrated their forces on Israel’s borders. Israel was surrounded by armies that outmaneuvered it by almost 2:1 and had tank and aircraft superiorities of almost 3:1.¹ As the Arab buildup continued, intense fear spread throughout the Israeli populace -- Arab radio and TV stations, which had a wide audience in Israel, portrayed the Arabs as confident of victory while Western media relayed the common estimate that war would result in tens of thousands of Israeli dead. Moreover, the U.S. and other Western nations seemed incapable or unwilling to support Israel.

On June 5, in a bold move to seize the strategic initiative, Israel launched a devastating preemptive strike against Egypt’s Air Force, and all-out offensive in the Sinai. Within 12 hours, most of the Egyptian Air Force lay in ruins and all of their air bases had been shut down by Israeli bombing. With control of the air and superior tank tactics, the Israeli Army proceeded to occupy the Sinai peninsula within four days, having forced the remnants of the Egyptian army into retreat across the Suez into Egypt proper. Additionally, on June 5-7, relying largely on infantry forces, Israel defeated portions of the Jordanian army and succeeded in capturing East Jerusalem and the West Bank. As an added precaution, on June 9-10, Israeli forces responded to earlier Syrian shelling by routing fortified Syrian defenses with air power and armored forces, and capturing the Golan Heights.

The Six Day War had a profound effect on the political and military thinking of both sides. In Israel, a political transformation took place -- the state which had always thought of itself as a victim, was now a military victor on a grand scale. This euphoria led to a misguided and almost single-minded reliance on armored strategy and tactics that were successful in 1967. Any shortcomings of Israel’s strategy, tactics and force structure were given little attention.

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*U.N. Secretary General U Thant agreed to the withdrawal without consulting the Security Council or the General Assembly. The U.N. forces had been present since the 1956 Sinai War, and had acted as a buffer force between Israeli and Egyptian forces from the Straits of Tiran to the Gulf of Akaba.
On the Arab side, the humiliation of not only defeat, but loss of territory to the Israelis, caused a complete reevaluation of Egyptian and Syrian tactics and weapons. This led to a much closer relationship for both countries with the Soviet Union, which would pay dividends in deliveries of massive quantities of state-of-the-art weapons and in the stationing of thousands of on-site military advisors and personnel over the next six years. Egypt and Syria prepared for a day when their militaries could regain both honor and territory. As Egyptian President Anwar Sadat stated:

"From the day I took office on President Nasser’s death, I knew I would have to fight. Nasser had known he would have to fight. It was my inheritance. But captivity by the British teaches you patience."\(^3\)

12.1.2 Arab Preparations and Israeli Mobilization.

Between May and 6 October 1973, a large number of Egyptian and Syrian troops were deployed in formations near the 1967 cease-fire border. This made it easier for them to mask preparations for a full-scale attack. To help further conceal their preparations from Israeli observers, the Egyptians raised the level of the defensive embankment on their side of the Suez Canal. From behind this, they rehearsed the final stages of the crossing operation and stealthily moved up all the necessary equipment. The Egyptians also implemented an elaborate deception plan in which they performed 65 different maneuvers to distract Israel’s attention from their buildup.\(^4\) Until the eve of the attack, only a few Egyptian and Syrian leaders knew of the plans; thus, information leaks which had plagued past Arab military operations were successfully avoided.\(^5\)

Despite the Arab precautions, evidence of preparations for an attack were collected by Israeli intelligence staff during the two weeks preceding the war. However, these reports were either squelched by senior intelligence officials or dismissed by the Israeli General Staff. For example, as D-Day approached, one report forecast that Syria was going to attack with three divisions in an attempt to retake the Golan Heights. This report was summarily dismissed by the General Staff on the grounds that Syria was merely reacting to fears of an Israeli attack. According to Dr. Henry Kissinger, on three separate occasions during the week preceding D-Day, Israeli intelligence officials working with the CIA, had come to the conclusion that “hostilities were unlikely to the point of there being no chance of it happening.”\(^6\) On 3 October, in the only Israeli Cabinet meeting scheduled the week before Yom Kippur, deliberations were almost entirely related to the topic of Soviet Jews emigrating to Israel; the buildup on the Golan Heights and the unusual maneuvering behind the Suez canal were not discussed.\(^8\)
In retrospect, the system-wide failure of the Israeli intelligence community, the military, and the Cabinet to accurately address the emerging threat may have resulted from the conviction prevalent throughout Israel that the Arabs would simply be unwilling to attack in light of their overwhelming defeat in 1967. Even if they did attack, it would be unsuccessful and there would be adequate time for Israel to mobilize and stop them. This view had been reinforced in two instances during the year when the Cabinet authorized costly Israeli reserve force mobilizations to counter anticipated Arab attacks, only to be followed by demobilizations after the threats failed to materialize.

Thus, when the attack actually materialized on October 6, the Israeli government was taken by tactical surprise. It was not until 4:30am that intelligence was provided to the General Staff which persuaded them that a coordinated attack would be launched by Egypt and Syria at 6:00pm.\textsuperscript{9} It was five hours later (9:30am), when the Prime Minister finally approved a general mobilization.* With mobilization orders occurring just hours before the attack, the Israeli army, which relied on active reserves to maintain 75 percent of its wartime personnel, was unprepared. The mobilization of reserves would take between 48 and 72 hours to implement; thereby placing a severe burden on front-line troops.

On the Arab side that morning, sensing that Israel had learned of the impending attack, the Egyptians and Syrians moved up the timeline and began the attack at 2:00pm (4 hours earlier than their original plan). This would cost the Israeli’s an additional burden at the start of the conflict.

The ramifications of the 48–72 hour mobilization period were of much greater import on the northern front where there was no significant geographic buffer such as the Sinai in the south that could be used to protect Israel and “buy time”. This invoked especially grave concerns as Syrian mechanized forces threatened to advance down onto the Golan plateau and into a position from which they could potentially capture the Valley of Jezreel and easily move on the large port city of Haifa. Syria was positioned to effectively occupy all of northern Israel. Table 12-2 illustrates how much the initial order of battle on the northern front was in Syria’s favor.

\*Much of the delay concerned a debate in the General Staff and Cabinet on whether a preemptive air strike should be hastily readied. Prime Minister Golda Meir, with advice from Defense Minister Moshe Dayan, reportedly vetoed a preemptive strike on the grounds that it would prove more difficult to secure the full support of the United States if the Israelis were seen as starting the war.
Table 12-2. Day 1 order of battle on the northern front.

<table>
<thead>
<tr>
<th>Category</th>
<th>Syria</th>
<th>Israel</th>
<th>Force Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Combat Units</td>
<td>3 Infantry Divisions</td>
<td>1 Armored Brigade</td>
<td>5.5 to 1</td>
</tr>
<tr>
<td></td>
<td>2 Armored Divisions</td>
<td>1 Infantry Brigade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Paratrooper Battalion</td>
<td>12 Strong Points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plus 2 Infantry Brigades</td>
<td>Plus Additional Infantry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plus 2-3 Armored Brigades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manpower</td>
<td>60,000</td>
<td>6000</td>
<td>10 to 1</td>
</tr>
<tr>
<td>Tanks</td>
<td>820-930 on line</td>
<td>180</td>
<td>7 to 1</td>
</tr>
<tr>
<td></td>
<td>1260-1600 total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artillery Pieces</td>
<td>1020</td>
<td>20-45</td>
<td>25 to 1</td>
</tr>
<tr>
<td>Anti-Tank Weapons</td>
<td>3650-4250</td>
<td>70</td>
<td>50 to 1</td>
</tr>
<tr>
<td>AA Guns</td>
<td>690</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>SAMs</td>
<td>4 Hawk Batteries</td>
<td>120 SA-7, 84 SA-2, 32 SA-3, 60 Tel</td>
<td>NA</td>
</tr>
</tbody>
</table>

12.1.3 The Surprise Attack.

At 2:00pm on Saturday 6 October, two Syrian mechanized divisions led by more than 800 main battle tanks, advanced under the cover of three infantry divisions with 600 artillery pieces towards the scattered outposts and detached tank groups of two Israeli brigades. Meanwhile, on the southern front, the first wave of Egyptian troops (two armored and two infantry divisions) crossed the Suez Canal in Soviet-supplied amphibious APCs and in hundreds of rubber boats. By crossing the canal in mass, they overwhelmed and seized key elements of the “Bar-Lev” line, a series of widely-spaced defensive Israeli strongholds.* Twelve waves of Egyptian troops with a total of 32,000 personnel would take part in the initial crossing.

Figure 12-1 shows the locations of the two-front attacks by Syrian forces on the north and Egyptian forces on the south. Shortly after the canal crossing, the Egyptians used high pressure hoses to cut gaps in the canal embankment and set up pontoon bridges to provide logistics support to their troops on the east bank. One of the gaps in the canal is shown in Figure 12-2. A more

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*The Bar-Lev Line defense was supposed to have included positioning of tanks at each strongpoint. In one of the major Israeli blunders of the War, these tanks were not in position on 6 October, and thus the defense was stripped of its major firepower.
Figure 12-1. Initial attacks by Syrians (upper right) and Egyptians (lower left) on 6 October 1973.
Figure 12-2. Egyptians cut gaps in Suez Canal embankments with water hoses to assist amphibious assault.
detailed discussion of the Golan Heights follows, since it became the most serious Israeli problem two days later.

The Arab advances on both fronts were protected against air strikes by Soviet-supplied surface-to-air missiles including the self-propelled SA-6 and man-portable SA-7. These systems were used to help neutralize Israeli advances in quality of aircraft and level of pilot proficiency. By the second day of combat, the Arab nations claimed to have shot down over 100 Israeli aircraft. In addition, the Egyptians had prepared their tactics to take advantage of the Israeli over-reliance on unprotected armor. Egyptian infantry soldiers were trained to operate the newly acquired Soviet antitank guided missile (ATGM) dubbed the “Sagger”. The Sagger was a wire-guided missile that could be carried, operated and fired by a single soldier. The effectiveness of this system in the initial days of the war was a significant factor in the initial Egyptian successes.

By the early evening of 6 October, the Syrians captured Mount Hermon a strongpoint located on the highest terrain in Golan, as shown in Figure 12-3. About 1800 Moroccan troops had assisted Syria in occupying Mt. Hermon. By noon on 7 October, the Israeli 188th Armored Brigade was down to 12 tanks but over 200 Syrian tanks littered the battlefield. By the end of the day, despite heavy resistance and arrival of the first wave of Israeli reinforcements, 1000 Syrian tanks were on the Golan. Syrian forces advanced to Kafr Naffakh, a point about three kilometers from the Jordan River. It was also reported that Syrian forces had succeeded in downing 43 Israeli aircraft. Three divisions of Iraqi troops and three fighter squadrons, along with two Jordanian armored brigades and a Saudi Arabian detachment were being prepared for deployment in southern Syria in an attempt to flank an expected Israeli counterattack. By 8 October, as shown in Figure 12-3, the situation for Israel was desperate – a Syrian breakthrough across the Jordan River would carry them into Israel proper.

12.1.4 The Nuclear Decision.

It was on the evening of 8–9 October, when the Arabs threatened to breakthrough into Israel, that the Israeli leadership apparently approved a decision to assemble and deploy its nuclear arsenal of some 13 atomic warheads. The basis for this understanding is a special report which appeared in Time magazine in 1975 based on an unnamed source inside the Israeli government. The report stated as follows:
Figure 12-3. Golan Heights battle summary.
Israel's 13 bombs were hastily assembled at a secret underground tunnel [located in the Negev desert] during a 78-hour period at the start of the 1973 October War. At that time, the Egyptians had repulsed the first Israeli counterattacks along the Suez Canal, causing heavy casualties, and Israeli forces on the Golan Heights were retreating in the face of a massive Syrian tank assault. At 10:00 pm on October 8, the Israeli Commander on the northern front, Major General Yitzhak Hofti, told his superiors: "I am not sure that we can hold out much longer." After midnight, Defense Minister Moshe Dayan solemnly warned Prime Minister Golda Meir: "This is the end of the Third Temple"* Mrs. Meir theretupon gave Dayan permission to activate Israel's doomsday weapons. As each bomb was assembled, it was rushed off to waiting air force units. Before any triggers were set, however, the battle on both fronts turned in Israel's favor. The 13 bombs were sent to desert arsenals where they remain today, still ready for use.16

Investigative journalist Seymour Hersh, presents a confirmation of this decision:

Over the next hours [on 8–9 October], the Israeli leadership -- faced with its greatest crisis -- resolved to implement three critical decisions: it would rally its collapsing forces for a major counterattack; it would arm and target its nuclear arsenal in the event of total collapse and subsequent need for the Samson Option†; and finally, it would inform Washington of its unprecedented nuclear action -- and unprecedented peril -- and demand that the United States begin an emergency airlift of replacement arms and ammunition needed to sustain an extended all-out war effort.17

In ordering the preparation of its nuclear option, Israel showed how dire the situation on the northern front had become. Israel's leaders realized the necessity of planning for a worst case scenario -- a Syrian breakthrough followed by the destruction of the Israeli state. At this point, the conventional military situation on the northern front was at a crossroads, with Israel facing a number of difficult military problems:

- Its ground forces were being depleted in equipment and with heavy casualties. There was concern that not enough reserves and equipment could be moved in time to reverse the situation. The beleaguered tank forces would have to hold out until adequate reinforcements could arrive.

- Its forces and mobilization effort were concentrated on the northern front. A Syrian breakthrough, or even a protracted war of attrition, would pave the way for an Egyptian takeover of the Sinai, followed by an advance into Israel from the south.

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*A symbolic reference to the state of Israel. The first two temples were destroyed by invading Babylonians around 586 BC and by the Romans in 70 AD.

†A symbolic analogy between the Israeli last resort use of nuclear weapons to Samson in the Bible. Samson, who after being captured and tortured by the Philistines and used for public entertainment in Dagan's Temple in Gaza, pushed apart the temple pillars, bringing down the roof and killing himself and his enemies.
• Its Air Force had suffered severe losses from the Syrian and Egyptian air defenses. It would need to suppress enemy air defenses so that air power could be successfully applied in support of the ground forces.

• There was a concern that Syrian success on the battlefield would encourage other Arab countries to increase their military support for the conflict. During the first two days, in addition to active support from Iraq, Morocco and Jordan, pledges of support to Syria had also come from Algeria, Lebanon, Sudan, Tunisia and South Yemen.18

If Israel failed to address these problems, a military disaster would follow. The Israeli nuclear option would become viable as a counter-value threat against Arab cities to prevent the invasion of the Tel Aviv-Jerusalem region and/or as a battlefield weapon against major elements of the invading Syrian and Egyptian armies.

12.1.5 Israeli Counteroffensive.

A major Syrian offensive was repelled at Kafr Naffakh on 9 October just as the Israeli 7th Armored Brigade was preparing to withdraw from its defensive position. This “close call” was the turning point in the battle on the northern front.

The key to this success for the Israelis was in achieving air superiority over the battlefield. It was accomplished by four actions:

• Israeli jets pounded the network of surface-to-air missile sites installed along the former cease fire line.19

• Israeli bombers hit five Syrian airfields from which Syrian fighters had been attacking the ground forces.20

• Israeli bombers destroyed a Lebanese radar station (El Baruk) 18 miles southeast of Beirut that was being used to warn Syrian air defenses.21

• Israeli bombers hit the Syrian Ministry of Defense, Air Force Command Headquarters, and a radio communications center in downtown Damascus.22

The latter attack caused about 100 civilian casualties (30 dead and 70 injured). However, by 10 October, Israel had gained air superiority.

On 10 and 11 October, the Israelis with fully mobilized reserve forces, would finally go on the offensive and force the Syrians into retreat. This success by conventional forces put to rest any considerations regarding the need to use nuclear weapons in the October War.
12.1.6 Limited Arab Objectives.

On the Southern front, the Egyptians, despite having moved two entire armies across the Suez Canal with little resistance, seemed content to simply set up a defensive foothold which would allow them to occupy the Sinai side of the Suez Canal. In fact, the Egyptians seemed to have let a golden opportunity pass, as they provided Israel time required to mobilize its forces. Clearly, Sadat had set out rather limited aims for the war. According to one eyewitness:

By the beginning of the second day, the Egyptian crossing of the Suez Canal had been completed. Egyptian forces had, in fact, established a firm line five miles inside what was previously Israeli-occupied territory. At the beginning of this day, I said to myself, “This is really it! In two or three days we’re going to be in Tel Aviv! Sadat is actually going to achieve what Nasser said was impossible!” For a short time that’s what I was telling myself. Then I began to see that nothing was happening. The Egyptian army was at a standstill. Slowly I walked around the War Room, and one by one I looked into the faces of the Egyptians who were directing the war. I knew them all as former colleagues. Finally I asked the questions which they knew had been passing through my mind. I said, “Why have you stopped? Why are you not continuing the advance when the gate to Tel Aviv is open?” Then I got the answer. “No orders. We are not advancing because we have no orders. There is no plan and there will be no advance.” We all knew. As far as Sadat was concerned the war was over.”

There is no evidence which supports any military intentions on the part of Egypt to threaten Israel proper. In its broadest interpretation, the Egyptian attack was designed to recover all of the land lost in 1967. The plan included three phases: (1) a crossing of the Canal and the establishment of a bridgehead on the East Bank; (2) an advance from there to seize the Sinai passes; and (3) the clearance of the remainder of the Sinai up to the Israeli border.

Examination of the Syrian offensive on 7 October also suggests that it may have been deliberately limited in penetration. Regarding this, Charles Wakebridge raised several interesting points:

The [Syrian] plan called for the bombing of [the main bridge leading to the heights from Israel proper]...to be immediately followed by insertion of commandos by helicopter to deny [this supply and reinforcement line] from the Israelis. General Tlass [the Syrian Chief of Staff, in an interview with Wakebridge] admitted this omission, but would not discuss it, except to say that he considered the Jordan River to be the natural Syrian boundary. An initial seizure of the bridge would have severely hampered Israeli reinforcement tanks, vehicles and guns. One of the main unanswered questions of the war was why the Syrians halted at 1700 on the 7th, when some of their thrusts might well have succeeded in reaching the River. There was little in the way of Israeli defense to stop them...Tlass...admitted.
The limited war aims of both Syria and Egypt beg the question as to whether or not Israel's nuclear arsenal played a role in their decision to limit their advances. There were geopolitical reasons for limiting their objectives and they could not count on Soviet nuclear backup. Therefore, it seems plausible the Israeli nuclear capability entered the minds of Arab leaders as they considered advancing into Israel. Israeli nuclear weapons may have succeeded in deterring Syria and Egypt from continuing to directly attack the Israeli state. This point was made by Shlomo Aharanson of the Hebrew University in 1981:

"Nothing else explains why both Syria and Egypt stopped their advance during the early stages of the 1973 war."\(^{26}\)

12.2 NUCLEAR WEAPONS CONSIDERATIONS.

12.2.1 Israel's Nuclear Weapons Development.

Almost immediately after the Israeli state was founded in 1948, Israeli officials established several institutes and laboratories dedicated to nuclear research, reactor development, heavy water production techniques\(^*\), and uranium mining and milling processes.\(^\dagger\) By 1952, these activities had led to the creation of the Israeli Atomic Energy Commission under the Ministry of Defense. In 1955, the U.S. aided the Israeli commission by agreeing to supply a small research reactor. This 5 MW reactor was built at Nahal Soreq and began operation in 1960.\(^{27}\)

It is likely that after the 1956 Suez War, when the United States cut off its arms supplies to Israel despite continued Soviet military deliveries to Arab countries, the Israeli leadership decided that it should develop a nuclear weapons capability.\(^{28}\) Two key elements were required to support the development of this capability: a plutonium production reactor and a reprocessing facility for extracting the plutonium from the spent nuclear fuel.\(^\ddagger\) Israel had no hope of designing or

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\(^*\) Heavy water is a critical element in many types of nuclear reactors. It is used to moderate the nuclear fission reaction, and can also be used at the same time to cool the reactor.

\(^\dagger\) Israel has modest deposits of uranium phosphate ore in the Negev Desert and was able to develop mills in the 1950s which could extract U-235 (in yellowcake form) from the ore to be used in its nuclear reactors.

\(^\ddagger\) In a standard nuclear reactor, the operation is optimized to produce thermal energy and only small amounts of plutonium are produced in its fuel rods. However, nuclear reactors can also be operated to produce plutonium — this is referred to as a plutonium production reactor. In this operation, the uranium fuel rods are replaced when a specified amount of plutonium has built up in the rods. These highly radioactive rods are then put through a series of chemical refinements in a reprocessing facility, the end result being the separation of plutonium, which can be used in atomic weapons.
producing these elements on its own. The key to their success was extensive assistance from France for much of next the decade.

After 1953, Israel engaged in a form of nuclear cooperation with France. In exchange for Israeli uranium mining, milling processes, and heavy water production, they were allowed to study France’s nuclear program and participate in French nuclear tests in the Algerian Sahara.29 In 1956, negotiations with France led to a secret agreement to supply Israel with a sizable plutonium production reactor to be built in the Negev, at Dimona.30 This was followed in 1957 with an agreement with a French firm to build, along side the Dimona reactor, a reprocessing plant and other facilities related to the production of nuclear weapons.31 During this period, France also supplied Israel with critical nuclear weapons design data.32

Despite the withdrawal of the French government’s cooperation in 1960, the contracts were allowed to be fulfilled and the Dimona reactor came on line in 1964. The “start up” was assisted by the secret importation of twenty tons of heavy water from Norway and several more tons from France. About 20–25 tons of uranium required for the reactor rods came from Israel’s mining operations, France, South Africa, and smaller amounts from several other countries.33

Although the Israelis were still several years away from engineering all of the processes and facilities required for generating production quantities of “weapons-grade” plutonium at the Dimona facilities, they apparently succeeded in illegally importing a quantity of weapons-grade enriched uranium from the United States. According to the CIA, it was likely that in the mid-1960s Israeli agents stole about 100 kg, enough to build about five uranium-based atomic weapons, from a fabrication plant in Apollo, Pennsylvania.34 Possession of this material would have allowed the Israelis to build several weapons ready for use as early as the 1967 Six Day War. In 1968, it became clear that Israel had developed a nuclear capability as Israeli Prime Minister Levi Eshkol warned that Israel “has the knowledge to make atomic bombs.”35

As noted earlier, Israel was reported to have 13 bombs ready for assembly by October 1973. It can be assumed that most of these were plutonium-based weapons derived from the production reactor at Dimona. However, based on the theft of weapons-grade uranium, some of these bombs were probably uranium-based. Using shared nuclear data from the French, it can be assumed that these weapons were small enough (<500 kg) to be delivered by the Jericho 1 missile. But, it is
likely that the early uranium-based weapons were gravity bombs. Most of these weapons were estimated to be of the 10–20 kt class.

Following the 1973 War, Israel increased the pace and scope of its nuclear program. The weapons generation process at Dimona matured from a developmental status to a production status, where at least several weapons can be produced yearly. The focus likely turned to increasing the production rate and improving technological factors such as reducing weapon size, weight, and increasing yield by the process of "fusion boosting".

An estimate of the possible current status of Israel’s nuclear weapons program is presented in Table 12-3. Israel has secretly developed what is likely one of the most robust and advanced nuclear weapon programs. The Negev Nuclear Reset Center is the most important of the facilities. Located in the middle of vast uranium ore reserves, the facility includes the Dimona plutonium production reactor and facilities for mining phosphates and extracting natural uranium. It is likely that this facility is where Israel’s nuclear weapons are assembled.

Table 12-3. Israeli nuclear arsenal estimate.

<table>
<thead>
<tr>
<th>Weapon Type</th>
<th>Inventory 1996</th>
<th>Max Annual Production</th>
<th>Yields (kilotons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plutonium</td>
<td>75 to 270</td>
<td>10</td>
<td>Up to 50+</td>
</tr>
<tr>
<td>Uranium</td>
<td>0 to 15+</td>
<td>1</td>
<td>Up to 50+</td>
</tr>
</tbody>
</table>

NOTES:
(1) This chart was developed using numerous sources
(2) Gross interpolation was used to estimate the 1996 quantities from earlier estimates
(3) Generally, to achieve weapons yields above 40 kt, fusion boosting is required

12.2.3 Delivery Vehicles.

The most likely choice of aircraft available to Israel for nuclear delivery would have been its force of 100 F-4 Phantoms or its force of 160 A-4 Skyhawks, both fleets of which had been recently purchased from the United States. U.S. versions of these aircraft were nuclear capable, so it can be assumed that the Israelis would have the capability to make the necessary modifications which would allow them to carry nuclear weapons.
In the 1960s, the Israelis set out to develop a short-range ballistic missile which would be a platform for its nuclear weapons. Under an arms agreement with the French, they were provided with Marcel Dassault MD660 short-range surface-to-surface missiles, as well as French missile design and production technology. With this assistance and hardware, the Israelis were able to develop and produce an improved version of the MD660 -- the Jericho 1.

The Jericho 1 has been assessed to be a two-stage, mobile, solid-fueled missile. Estimates of its range vary from about 450 to 650 km, depending on the payload weight. Its guidance system is believed to be a spin-stabilized inertial platform with an accuracy of 1 km CEP. It is capable of carrying a nuclear, chemical or conventional high-explosive warhead.

It is likely that up to 50 Jericho 1s have been a part of IDF forces since the early 1970s. Many of the missiles are deployed at a specially designed air base in the Negev, consisting of railway flatcar launchers, underground in tunnels of bedrock, and protected by special blast doors. The remainder of the missiles are reportedly deployed on road-mobile launchers near the Golan Heights. Reports suggest that several of these missiles were equipped with nuclear warheads assembled during the 1973 Arab-Israeli War.

Jericho 1 missiles would be most useful in counter-value roles as weapons targeted at nearby Arab cities such as Damascus or Aman. They could also be used in counterforce roles, especially against elements of an invading Arab army, provided the targets were not too disperse.

While these missiles may have assumed an important role during the 1973 war, it is likely that nuclear capable aircraft would have been the delivery vehicle of choice. Safety, recall, and flexibility advantages of aircraft over missiles, particularly over a relatively untested system such as Jericho, would have been taken into account by the Israeli military.

* CEP is Circular Error Probable. This is the theoretical radius inside which half the missile warheads would land, if a large number of missiles were launched at the same target.
† A counter-value target is a target that the enemy values, such as his population centers, his government, and his economy.
12.3 LESSONS LEARNED FROM THE WAR.

On 8/9 October 1973, success of Arab conventional forces caused the Israeli government to deploy its nuclear forces and to prepare for their use. It appears likely that Syrian and Egyptian leaders were deterred by the Israelis nuclear capability and may have acted to deliberately restrain their advancing armies. These two related considerations lead to an examination of Israel’s national security with respect to nuclear weapons, its nuclear strategy, and how these acted to help resolve the October War.

A fundamental psychological element of Israel’s national security is its historical feeling of insecurity. From the loss of its homeland in ancient times, to the holocaust and other forms of persecution, and to creation of an Israeli state surrounded by enemies, it has recognized the need to prepare for its own defense. It may not be able to rely on the United States or other allies for assistance in a crisis. The Arab threat is real and quantitatively superior to Israeli forces. Consequently, it was prudent for Israel to seek technological and qualitative “force multipliers” including nuclear weapons.

The above considerations manifest themselves in Israel’s national security policy. This policy, which has not changed significantly since the state was founded, promotes deterrence, but emphasizes an offensive military doctrine. Former Israeli Defense Minister Yitzhak Rabin stated this policy clearly in 1984:

*Israel’s basic security policy is, that in today’s circumstances, in the face of an existential threat posed by the Arab armies, our goal is first and foremost to deter from war. If our deterrent capability is insufficient, a decision must be gained in the most convincing manner -- by doing maximum damage to the forces of the state or the states that attack us, while achieving maximum territorial gains -- in order to bring about a cease-fire, at the request of the other side, with maximum speed and under conditions convenient for the state of Israel. What this means in practical terms is that in the event deterrence proves insufficient, we will have to transfer the war to enemy territory. The import is that our security concept is basically defensive -- but is applied by the IDF, whose main thrust is offensive.*

Note Rabin’s use of the word “maximum”: "... doing maximum damage... achieving maximum territorial gains... with maximum speed..." It appears obvious that nuclear weapons and ballistic missiles would be seriously considered to fulfill its wartime goals. For example, Israel planned
and threatened to launch nuclear missiles at Iraq during the 1991 Desert Storm conflict in response to Scud missiles fired at Tel Aviv as described in Section 16.

The concept of deterring against a conventional attack is a main element of Israel’s nuclear strategy. Despite its qualitative edge, Israel faced a threat in the first several days of the October War of 1973 which could theoretically have overwhelmed it. This is where the nuclear deterrent came into play. Syria could not take the chance that its initial successes would cause Israel to use nuclear weapons against its armies, military infrastructure, and perhaps even Damascus. Thus, Syria held back its forces before entering the Israeli homeland.

A second major element of Israeli nuclear strategy that was illustrated in the October War was the willingness to use nuclear weapons "when all is lost." This is based on the belief of the Israeli population that a second holocaust, involving the defeat of Israel by an invading Arab army, cannot be allowed to happen at all costs.47 A "second -- nuclear -- Masada cannot be discounted."48 Israel could very well respond to a military defeat by seeking to change its situation, or by seeking retribution, using its nuclear arsenal. On 8 October when Israeli leaders met to discuss the nuclear option in the face of an Arab invasion, the above two elements of nuclear strategy reinforced each other.

Historical evidence suggests that the Israeli nuclear arsenal may have reduced the risk of massive conventional wars in the Middle East since 1973. Although the correlation of conventional forces has moved in favor of the Arab countries, none have attempted a full-scale war with Israel. Before 1973, all-out Arab-Israeli wars were occurring about twice each decade. After 1973, Israel fought only one major conflict, an offensive carried out in 1978 to drive Palestinian terrorists and Syrian backed rebels from central and southern Lebanon. Terrorist raids and Israeli conventional weapon responses have continued in southern Lebanon through the mid-1990s. The Israeli nuclear capability plus other factors including the Camp David Accords and improved U.S. and European relationships with several Arab countries, have contributed to improved stability in the Middle East.
SECTION 13.0
SOUTH AFRICAN NUCLEAR WEAPONS TO DETER COMMUNIST ANGOLA
W. C. Yengst

As a result of political and military isolation imposed on South Africa beginning in the mid-1960s, it was motivated to develop an independent nuclear weapon capability to deter communist guerrilla and Cuban military threats from Angola, in Nambia and along its northern border. Although its weapons never reached fully operational status, nuclear tests and development activities reinforced diplomatic and political moves to help end the Angolan Civil War. Subsequently, South Africa terminated its nuclear weapon program and destroyed its weapon stockpile.

13.1 SOUTH AFRICA’S POLITICAL AND MILITARY SITUATION.

South African laws and customs, dating from Daniel F. Malan’s National Party program in 1948, were based on the apartheid system in which the people were classified by race (Black, White, Mixed, or Asian) and segregated with respect to housing, education, employment, public accommodation, and transportation. Non-Whites were forbidden to own land and to enter White neighborhoods. The government tried to justify this system by claiming that peaceful coexistence of the races was only possible if they were separated. Most South Africans and many other countries strongly opposed apartheid; consequently, in 1962 the United Nations General Assembly urged its members to break diplomatic ties with South Africa until the system was abolished. The U.S., Great Britain, the African National Congress (ANC), and a number of other nations began economic and military aid boycotts of South Africa that lasted into the 1980s.¹

Under the leadership of Prime Minister John Vorster and a Parliament determined to carry out apartheid, South Africa became progressively more isolated in world affairs. The U.S. Department of State began issuing guidelines for labor practices by American firms doing business in South Africa in 1973.¹ The following year, the Pretoria government applied for membership in NATO as a means for gaining military support against potential communist aggression but the application was voted down by the U.S., Britain, and France. In December 1974, South Africa narrowly avoided being expelled from the U.N. when it refused to give up administrative control over dominantly Black Southwest Africa (now Nambia).² It refused to sign the Nuclear Non-Proliferation Treaty...this refusal lasted until 10 July 1991, after the threat of war with Angola passed.³ The government became convinced that outside military assistance was unlikely in the
event of an attack. This conclusion was reinforced in 1977 when the U.N. placed a mandatory embargo on the export to South Africa of all goods and technologies capable of being used for military purposes.¹

The South African Defense Force (SADF) with barely 20,000 troops in the early 1970s provided administrative control for Nambia and got along well with neighboring Angola. As a measure of their cooperation, the SADF and Portuguese forces in Angola maintained a joint command center near the Angola border. Between October and December 1975 they undertook three joint ground force training exercises in southern Angola and Nambia.¹ By then, Angola was on the brink of civil war.

13.1.1 Portugal Divests Its African Empire.

In April 1974, following a military coup in Portugal, the Lisbon government announced that it was breaking up its 500 year old empire in Africa. Mozambique would be set free on 25 June and Angola would be given independence on 11 November 1975.⁴ This unexpected political move caused Angola to split into three opposing political factions:

- The National Front for the Liberation of Angola (FNLA) with 33,000 troops in northern Angola and along the Zaire border.
- The National Union for Total Independence (UNITA) with 6,000 troops in sparsely populated southern Angola.
- The Marxist-oriented Popular Movement for the Liberation of Angola (MPLA) with 23,000 troops and 10,000 armed civilians in the capital city, Luanda, and across central Angola.

These factions and the areas they occupied are shown in Figure 13-1.

Although the factions held three peace conferences during the summer of 1975, fighting broke out in August at Caxito in the north.⁴ The communist MPLA, which controlled the central government, sought to expel the pro-Western FNLA and take over the Gulf Oil Company which pumped 160,000 barrels of oil per day from wells in the steaming jungle of Cabinda (a small, disputed section of land occupied by independent tribes at the western tip of Zaire). The MPLA also stationed troops in western Angola to nationalize the rich diamond fields.⁵ When the MPLA began to solicit military equipment and aid from the Soviet Union and Cuba, South Africa found itself faced with a growing communist threat to Nambia and its northern border.
Figure 13-1. Southern Africa showing areas of Angola occupied by different political factions.

13.1.2 The Decision to Develop Nuclear Weapons.

By the fall of 1974, the Pretoria government perceived three primary security threats:

- Violent civil disorders arising from apartheid control of its own population.
- Cross-border infiltration by well-armed guerrilla units along the northern borders.
- Soviet-assisted conventional warfare attacks from either Angola or Mozambique.

Several actions were taken to address these impending threats. Specifically, the active military was increased to 86,000 troops, third largest army in sub-Saharan Africa. Paramilitary police forces were expanded to 400,000 personnel (including reserves) to handle internal disturbances and insure military logistics support. The nuclear research program was reoriented to include development of nuclear weapons. In this respect, South Africa had already established its Atomic
Energy Commission (AEC) at Pelindaba Research Center (25 km west of Pretoria) and it had learned to process weapons-grade uranium and produce plutonium. It had the required technical expertise and the country possessed about one-fifth of the world’s known uranium deposits.\textsuperscript{6}

South Africa’s nuclear strategy consisted of three tiers:\textsuperscript{3}

1. During the development period, the program would be held SECRET and it would neither be acknowledged nor denied. The country would rely on uncertainty concerning nuclear development status to deter potential enemies.

2. If the country were threatened militarily, the government would covertly acknowledge existence of its nuclear weapons. This would strengthen their deterrence value and hopefully convince the U.S. or other nuclear powers to back South Africa’s position to avoid a nuclear confrontation.

3. If the above actions failed to deter a military attack, the weapon program would be publicly acknowledged and the capability would be demonstrated by an underground test.

In April 1993, South African Prime Minister Frederik W. de Klerk described the extent of the nuclear program to the African National Congress.\textsuperscript{9} He explained that seven nuclear weapons were produced for delivery from bomber aircraft. However, he emphasized that the bombs were never integrated into the country’s military doctrine or deployed for military operations. In fact, the weapons were used to implement political strategy and insure the credibility of the country’s deterrence posture.\textsuperscript{7} When questioned what the government would do if the three tiers of the strategy failed against a severe threat, South African diplomats agreed the weapons might have been used, “on a neighbor or on a Black area within South Africa.”\textsuperscript{3}

13.1.3 Civil War in Angola.

Anticipating a fight for control of Cabinda and its Gulf Oil fields, the MPLA requested help from Cuba. On 7 November 1975, Cuba airlifted a few hundred combat troops into Sao Salvador to supplement advisors that arrived in Luanda by sea with military supplies.\textsuperscript{8} Three days later, 1,500 Zaire troops massed on the border of Cabinda, threatening to take over the region. Fighting broke out between MPLA/Cuban units and FNLA/Zaire forces on the eve of Angola’s independence. The U.S. Department of State promptly protested the attacks by the MPLA/Cubans, refused to recognize the MPLA government of Angola, and considered sending military aid to the FNLA.
Meanwhile, the Gulf Oil Company concluded a private deal with the MPLA to continue producing oil but at a reduced rate.⁵

The Portuguese flag was lowered for the last time at Fort Sao Miguel (Luanda Harbor) by Admiral Leonel Cardoso on 11 November 1975.⁹ The Portuguese military loaded 2,000 troops, all tanks, personnel carriers, and 28,000 of Angola’s 30,000 trucks on frigates and cargo ships for return to Lisbon.¹⁰ This withdrawal left the MPLA forces, the government, and the food distribution system at a standstill for lack of transportation. Within days, food shortages became so severe that Portugal began to airlift emergency relief (six jets per day) and France joined in evacuating foreign civilians from Angola.⁴

While the three factions (MPLA, FNLA, and UNITA) struggled for control of Angola on 11 November, South Africa initiated a covert operation in which a motorized column of troops moved toward Luanda from Nambia.¹¹ The South African Parliament was not notified of this incursion and censorship was so tight that the public received no press coverage.¹ Operation Foxbat, as it was labeled, was composed of one armored car squadron, two artillery batteries, an SADF infantry company, and three UNITA Angolan infantry companies. Although the objectives of the expedition were not disclosed, military analysts speculated that it was part of a combined land and amphibious assault on Luanda. Prime Minister Vorster purposely limited the force because it was likely to evoke a resounding international reaction. The column had no heavy armor or air cover. By mid-December, it had crossed the Cuanza River about 350 km east of Luanda where it met stiff MPLA and Cuban resistance. Despite strong opposition, the SADF column made an orderly withdrawal to Nambia by year end.¹

In mid-January 1977, the MPLA under leadership of Agostinho Neto (with Soviet and Cuban backing) achieved uncontested control of the Angolan government. Using an army of 20,000 Angolan troops plus 8,000 Cubans, MPLA fought in the north to secure Cabinda against FLNA and Zaire forces. However, the South African penetration into Angola caused President Neto to move a significant force including 5,000 Cuban troops to southern Angola. They used flame throwers and bulldozers to raze native villages in a 1.6 mile wide swath along the 800 mile border with Nambia.¹² This zone became known as the Castro Corridor as shown in Figure 13-2. Its objective was to prevent SAFF and UNITA guerrilla raids into southern Angola.
13.1.4 The U.S. Involvement.

The threat to Gulf Oil Company interests and the communist (Soviet/Cuban) intervention in Angola caused President Gerald R. Ford to consider sending U.S. military aid to the FNLA and UNITA by the end of December. Secretary of State Henry A. Kissinger argued that the Soviets and Cubans should pull out, that the U.S. had already invested $1.2 billion in aid to South Africa, and that Angola was of paramount importance to insure the investment. He raised the specter of a South African domino-effect collapse to communism similar to arguments used in Southeast Asia. At Kissinger’s request, President Ford wrote letters to most African leaders and the Organization of African Unity (OAU) urging them to stay neutral and not support the MPLA government. These actions caused suspicion in the U.S. Congress that the President and Secretary of State intended to send troops or transship arms by the backdoor through Zaire.

The Pentagon requested $28 million to aid “our friends in Angola” which Congress voted down (323 to 99) in the House of Representatives during the week of 21 January 1976. Despite
Kissinger's repeated protests, Congress was sensitive to the unilateral actions taken by Presidents Lyndon B. Johnson and Richard M. Nixon during the Vietnam war. Furthermore, South African troops were reported to be withdrawing from central Angola. However, some military analysts suspected that South Africa was making a deceptive move to screen its reentry into Angola to support the UNITA forces. In fact, about 1,000 mercenary recruits from the U.S., Britain, France, and Portugal landed in Zaire and moved to Silva Porto to reinforce UNITA during the following week.

After Congress cut off President Ford's support for the Angolan resistance, the Cuban presence in the country continued to build up. By the end of January 1976, Soviet An-22 cargo planes and transport ships began to deliver military supplies in large quantities. The supplies included 300 Czechoslovak-made armored troop carriers, 70 T-34 tanks, 50 PT-76 amphibious tanks, hundreds of SA-7 missiles, 122 mm multiple rocket launchers, antitank guns, 3 inch mortars, and thousands of small arms. Soviet warships including a guided missile cruiser, destroyer, amphibious tank-landing ship, and three support ships anchored near Luanda. President Ford pressed Russia to withdraw and threatened to cut off American grain shipments to the USSR. The Soviet ships moved away and the grain shipments continued.

13.1.5 The Civil War Erupts Again.

The MPLA with Cuban troops and Soviet equipment, routed the FNLA and mercenary troops in the north by early February 1976. Then, it launched a three-pronged assault to destroy UNITA and South African forces in southern Angola. The SADF was camped in the jungle around the Cunene River hydroelectric plant about 20 miles north of the Nambian border. President Ford attempted to convince South Africa that it should withdraw from the area but hard-line Pretoria government personnel, encouraged by the Africaans News Agency, were prepared to risk anything to keep the communist MPLA regime out of Angola.

A war of attrition started along the border similar to the war in Vietnam. Angolan MiG fighter-bombers dropped napalm on villages, 5,000 refugees fled into northern Nambia, and ground forces attacked pro-UNITA tribesmen. Jonas Savimbi, leader of the UNITA, declared that the real enemy was, "Cuban colonialism." In fact, nearly 20,000 Cuban civilian workers moved into Luanda during late 1976 and early 1977 to assist in the management of President Neto's socialist
republic. The Angolan government took the position that, “the Cubans will leave...but only when South Africa stops raiding the country’s bases along the Nambia border.”

Fearing that South Africa might dramatically alter the military situation, the Soviet Union notified the U.S. in early August 1977 that it had discovered a nuclear test site in the Kalahari Desert. Soviet satellites had photographed the site which was unknown to the U.S. American satellites immediately confirmed the site and verified that its construction was designed for nuclear tests. During the remainder of August, the U.S., USSR, Britain, France, and West Germany collaborated closely to prevent South Africa from performing a nuclear test. South Africa did not conduct a test and for the moment, the world seemed spared from having a seventh nuclear power. But the covert development of South Africa’s nuclear capability continued as described in Subsection 13.2.

Angola made its first offensive move to expand the war on 14 May 1978. About 4,000 Cuban-backed Katangan rebels crossed the eastern border into the Shaba Province of Zaire to attack the copper town of Kolwezi. The U.S. State Department reported that Cuban troops and advisors from the Soviet Union, Algeria, and Libya took part in the operation. The attackers were driven back through the village of Mutshasha by Ziarian troops in a two and a half hour battle. The following day, President Mobutu of Zaire contacted President Jimmy Carter to request emergency American military aid, citing the Cuban involvement. France was also asked to send aid since it had airlifted Moroccan troops into Zaire during 1977 to stabilize the area. President Carter severely castigated Cuba for its role in attacking Zaire but no military aid was sent.

Thus, with each escalation of the Angolan civil war, South Africa found no military support for itself or its allies. During the Angolan attack into Zaire, South Africa airlifted troops as “hot pursuit” into Nambia to assist UNITA in fighting the Cubans. Its response to the guerrilla incursions along the border was to develop small, rapid movement, counterinsurgency units that could penetrate the jungle, attack, and withdraw in a matter of hours or a few days. One unit, the 32 Battalion, was composed of white ex-Rhodesian officers and black troops from the FNLA. Known as the “terrible ones”, it operated in strict secrecy to conduct covert raids. An elite team of Reconnaissance Commandos composed of white officers and men probed the jungle for intelligence concerning operations of the communist South West African People’s Organization (SWAPO). Finally, a Pathfinder company of the SADF 44 Parachute Brigade assisted in larger, long-range attacks.
Between May 1978 and January 1984, these South African units made at least nine attacks into southern Angola to destroy SWAPO camps, logistics, and headquarters. Figure 13-3 provides a summary of these operations. Their main objective was to prevent SWAPO from developing the infrastructure and capability to mount raids into Namibia and control its population.

During early 1984, several South African industries including gold and diamond mining with properties located in northwestern and central regions pressed the government to use nuclear weapons to prevent the capture or destruction of their facilities. For example, DeBeers Consolidated Mines with its famous mines at Kimberley publicly argued that communist control or destruction, when considered along with Soviet diamond mining, would upset the world market that had existed since 1888.* The military noted that there were no good nuclear targets in jungle areas and consequently, the government reinforced its commitment to commando operations to find and destroy emerging threats.

13.1.6 The Crisis Subsides.

Following serious civil disturbances in Soweto, South Africa, during late 1978 in which about 600 Black civilians were killed, Prime Minister Balthazar Vorster resigned. He was succeeded by Pieter W. Botha who vowed to repeal the apartheid laws. The repeal process was accomplished in steps (i.e., interracial marriages were permitted, blacks could move into cities, public schools and neighborhoods were integrated) over a period extending through 1986.²¹

Meanwhile, in Angola, the MPLA government nationalized many businesses, took over the school system, and encouraged the Soviet Union, Cuba, and other communist countries to invest in development of the country.²¹ Cuba kept nearly 50,000 personnel (20,000 troops, 20,000 administrators, and 10,000 teachers and technicians) in the country to aid the government.³

In late 1988, Angola, South Africa, and Cuba signed a joint peace agreement. A cease-fire was arranged between UNITA and the Angolan government by early 1989. Although violence continued through May 1991 in the northern Cabinda region, where guerrillas demanded independence, South Africa stopped sending troops and aid to UNITA and all Cuban troops were withdrawn from Angola by mid-1991.

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* The news media discussions of industrial pressure to use nuclear weapons was described to the author by Mr. Philip Warne of Johannesburg, South Africa, on 14 September 1996.
<table>
<thead>
<tr>
<th>NUMBER</th>
<th>OPERATION</th>
<th>DATE</th>
<th>DESCRIPTION*</th>
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<tbody>
<tr>
<td>1.</td>
<td>Reindeer</td>
<td>May 1978</td>
<td>Airborne attack versus SWAPO camp near Cassinga</td>
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<td>2.</td>
<td>Saffron</td>
<td>August 1979</td>
<td>Reprisal raid for rocket attack on Katima Mulilo</td>
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<td>3.</td>
<td>Septic</td>
<td>June 1980</td>
<td>Attack on smokeshell area killed over 300 insurgents</td>
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<td>4.</td>
<td>Klipkop</td>
<td>August 1980</td>
<td>Helicopter raid to destroy SWAPO base at Chitado</td>
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<td>5.</td>
<td>Protea</td>
<td>August 1981</td>
<td>Mechanized force attack on SWAPO headquarters at Humbe</td>
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<td>6.</td>
<td>Daisy</td>
<td>November 1981</td>
<td>Destroy SWAPO base at Bambi and hold for 3 weeks</td>
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<tr>
<td>7.</td>
<td>Super</td>
<td>March 1982</td>
<td>Helicopter raid on SWAPO camp at Cambeno</td>
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<td>8.</td>
<td>Mebos</td>
<td>July and August 1992</td>
<td>Destroy SWAPO eastern headquarters at Mupa</td>
</tr>
<tr>
<td>9.</td>
<td>Askari</td>
<td>December 1983 to January 1984</td>
<td>Preemptive attack to cut SWAPO logistics buildup</td>
</tr>
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* SWAPO (South West Africa People's Organization) included Popular Armed Forces for the Liberation of Angola (FAPLA)

As a result of de-escalation of the internal and external threats, the government cut back on South Africa's nuclear program in September 1985. President Frederik de Klerk stopped the program in 1989 and all six existing weapons were dismantled. South Africa joined in signing the U.N. Nuclear Non-Proliferation Treaty in 1991.

13.2 SOUTH AFRICA'S NUCLEAR WEAPON DEVELOPMENT.

In 1965, the U.S. built the Safari-I research reactor for South Africa at the Pelindaba Nuclear Research Center and it supplied 100 kg of weapon-grade uranium fuel. But in 1975, under the U.N. sanctions against South Africa, the U.S. suspended fuel shipments. With the decision to develop nuclear weapons, South Africa began to import machine tools, furnaces, and other equipment to support its program. The program initially focused on refinement of natural uranium at a new Y-Plant in Valindaba (next to the Pelindaba Research Center). South Africa also initiated a long secret collaboration with Israel to accomplish the development.

13.2.1 The Weapon Design.

The nuclear bomb design was apparently started in 1977 by the Armaments Development and Production Corporation (ARMSCOR) at the Kentron Circle Facility about 10 miles east of Pelindaba. It was based on a gun technology (i.e., two subcritical masses of enriched uranium are explosively fired together to create a fission reaction). The fission bomb design was calculated to have a yield of 10–18 kt; however, South Africa also studied boosted (tritium and deuterium) thermonuclear designs to achieve larger yields. The initial gun-type devices with high explosives were tested at an environmental range of the facility by May 1981.

The resulting bomb design weighed 2,200 lb, was 71 inches long, and 25.5 inches in diameter. The core consisted of 55 kg of highly enriched uranium inside a tungsten reflector/containment shell. It was configured for delivery by South African Defense Force (SADF) Buccaneer tactical strike aircraft as shown in Figure 13-4. The Buccaneer was an all-weather aircraft developed by the British Royal Navy for low-level strikes. By 1980, the SADF Strike Command had three fighter-bomber and reconnaissance squadrons outfitted with these aircraft. They were deployed for forward ground attack missions at Waterkloof AFB (near Pretoria), Hoedspruit AFB (near the Mozambique border), and Mpacha AFB (Nambia), only a few minutes from the Angolan and Zambian borders.
British Royal Navy version of the Buccaneer
low-level strike aircraft (1980)

South African version of the
Buccaneer (mid-1980s)

Figure 13-4. Probable delivery aircraft for South Africa’s nuclear weapons.
13.2.2 Development Testing.

The original plan was to test the nuclear device underground in the Kalahari Desert west of Johannesburg. Therefore, two test shafts (200 meters deep by 1 meter in diameter) were dug at Vastrop north of Upington in mid-1977. While the shafts were being completed, the Soviet Union, U.S., and other countries strongly pressured the Pretoria government to withhold nuclear testing. To avoid further foreign relations problems, the shafts were sealed. Consequently, South Africa turned to collaboration with Israel to test its bomb design. In 1987, one Kalahari shaft was reopened to determine the maintenance required to restore a test capability if needed.\footnote{22}

On the overcast night of 22 September 1979, a flash of light that dimmed, grew bright again, then died out, illuminated a 4,500 square mile ocean area between the edge of Antarctica and the tip of South Africa. It lasted for less than a second but the flash was detected by the U.S. Vela satellite thousands of miles above the South Atlántic. Four hours later, technicians at Patrick AFB, Florida, verified that the recorded signals indicated a small atmospheric nuclear explosion. The yield was subsequently estimated at 2 kt, too small to be detected by the few seismic and acoustic monitoring stations in the Southern Hemisphere (e.g., Pine Gap, Australia).\footnote{23, 24} Because the burst of light was not followed by any detectable radiation, many scientists were uncertain concerning the cause of the event.

Top level South African officials scornfully denied any role in causing the flash of light. But the U.N. General Assembly demanded an investigation. The U.S. intelligence agencies crisscrossed the area with C-135 transports and U-2s equipped with radiation sensors. The records of ships in the area were traced in search of eyewitness accounts.\footnote{23} In 1980, the U.S. Central Intelligence Agency reported to a congressional committee that the test device was most likely an Israeli design.\footnote{1} On 20 February 1995, Commodore Dieter Gerhardt (a convicted Soviet spy) who was the commander of the Simonstown naval base near Cape Town in 1979, made a public statement upon release from a South African prison. He claimed that Israel wanted to test a low-yield fission primary for a thermonuclear weapon. Although no South African ships were involved, the test was a joint Israeli-South African effort known as Operation Phenix. It was designed to be clean and was not supposed to be detected.\footnote{3}
13.2.3 Production and Storage.

The Kentron Circle facility east of Pelindaba was renamed Advena in 1980 and it became the center for development and production. The site is shown in Figure 13-5. The program involved 40–100 people directly working on the weapon system between 1980 and 1989. Nearly 200 administrative and security personnel supported the program. The cores for seven devices were produced but only six bombs were built. Production was probably complete by 1983, after which the budget for the Armscor operation of the Advena facility was reduced.

The weapons were stored in Advena until July 1990 when President F. W. de Klerk ordered them to be dismantled. They were melted down and the nuclear materials were returned to the South African Atomic Energy Commission by 6 September 1991. The highly enriched uranium was reported to the U.N. when South Africa signed the Nuclear Non-Proliferation Treaty on 10 July 1991.3

13.3 LESSONS LEARNED FROM SOUTH AFRICA’S NUCLEAR PROGRAM.

The South African development of nuclear weapons is probably representative of programs for similar weapons in other third world countries such as North Korea, Pakistan, Iran, India, and Argentina. It was motivated by both political and military threat considerations arising from the communist takeover of neighboring Angola. However, the need for a nuclear capability was fueled by political isolation and economic sanctions (stemming from its domestic apartheid policies) and the lack of military support when the Angolan threat consolidated along its border.

The South African attacks into southern Angola were viewed as small-scale, preemptive conventional strikes to prevent the buildup of communist guerrilla and Cuban forces before they could mount major operations against Namibia and South Africa. The South African leaders probably would not have developed nuclear weapons if the U.S., Britain, or NATO had offered strong conventional military support in the event of enemy attacks.

Despite the continuing military threat from 1974 through 1983, South Africa used its developing nuclear capability as a political rather than a military tool. The uncertain status of its nuclear weapon capability was used to deter communist aggression. In fact, there were very few legitimate targets in Angola (except for the ports at Luanda and Benguela and a few military airfields) that were worthy of nuclear strikes. The widely dispersed guerrilla camps in the jungles along the border
Advena nuclear weapon development center

Building where nuclear devices were manufactured and stored

Figure 13-5. South Africa's Advena nuclear facilities.
were not of sufficient value to warrant tactical nuclear strikes. Consequently, the South African nuclear bombs were never deployed operationally.

South Africa produced its nuclear weapons following very little system testing. Trigger and gun-explosive tests plus one atmospheric burst of a similar Israeli device were the only confirmation of the design before it was committed to production. The timely political value of the weapons was considered more important than its reaction efficiency or operational reliability.

South Africa's unilateral termination of its nuclear weapon program and destruction of its stockpile are unique in nuclear history. Clearly, political and diplomatic gains were made at the U.N. by these actions and most international sanctions were lifted. However, these moves also support the argument that nuclear weapons are an expensive proposition to own. They require long-term maintenance, security, and a military infrastructure to insure credible delivery and operational support. There is continuing technical pressure to add missile or other delivery options and improve safety. Third world countries must be fully convinced of the need for nuclear weapons to commit the costly development and support programs.
SECTION 14.0
SOVIET NUCLEAR WEAPON DEPLOYMENTS IN AFGHANISTAN
W. C. Yengst

Twice during the invasion and occupation of Afghanistan, the Soviet Union involved nuclear weapon considerations in their planning and force deployments. The first occurred, probably by oversight, during the surprise and deceptive invasion conducted over the Christmas holidays of 1979. This operation is described in Subsection 14.2. The second deployment of nuclear weapons was a deliberate and covert move two years later (1982) to threaten Pakistan or cover Chinese targets as presented in Subsection 14.3. Before describing these situations, it is useful to review the conflict background and Soviet objectives.

14.1 BACKGROUND AND SOVIET OBJECTIVES.

One thing the Soviet Union learned from its post-World War II military crisis situations (e.g., Berlin, Cuban Missiles, Suez Canal, Lebanon, and Angola) was that the decision to invade Afghanistan could not be made without careful calculation and meticulous planning. Apparently, the Kremlin leaders analyzed the potential gains and risks involved; then determined that the price was acceptable.

Soviet Paranoia.

After World War II, the Soviet government felt surrounded by countries that were intent on destroying its communist ideology or acquiring its territory. As a result, long-term efforts were initiated in 1945 to gain political or military control of bordering nations.1 Russia consolidated domination over Poland, the Democratic Republic of Germany, Bulgaria, Romania, and the Democratic People's Republic of Korea. It invaded Iranian Azerbaijan in 1945 but the operation failed when the Iranian government was overthrown in December 1946 by pro-Western Shah Mohammad Reza Pahlavi. In 1956, Russia crushed an anti-Communist rebellion in Hungary and in August 1968 it invaded Czechoslovakia. Russia secured support of Mongolia in the 1960s but its borders were contested by the Democratic People's Republic of China. Japan still claims the Kurile Islands occupied by Russia at the end of World War II. However, the goal of establishing a belt of pro-Soviet nations around Russia remained a primary objective long after Leonid I. Brezhnev became General Secretary of the Soviet Union in October 1964.2
Objectives.

On 14 September 1979, the pro-Soviet President of Afghanistan, Nur Mohammed Taraki, was assassinated in the National Palace by anti-Marxist followers of Hafizullah Amin. When newly proclaimed President Amin began to replace and imprison communist government ministers, the Soviet leaders decided that it was time to take action. The near-term Soviet objectives of the invasion were based on two primary considerations:

- The Russians feared that the Marxist government in Kabul was collapsing due to pressure from anti-Communist factions and “mujaheddin” rebel groups that resisted the corrupt administration. This threatened Soviet prestige and a foothold in a strategic border country.¹

- If President Amin remained in power, his distrust of Soviet influence would prevent Afghanistan from being used as a base for subsequent Russian moves against Pakistan. Control of Afghanistan and Pakistan would satisfy the strategic objective of surrounding itself with a belt of friendly (or dominated) buffer states.²

Pakistan held three far-term objectives for the Soviet Union. Following the civil war between East and West Pakistan in 1971, a large section of Kashmir Province remained in dispute with India. If Russia could gain control of Pakistan, it could settle the dispute and strengthen an alliance with India. More important, Pakistan would provide Russia with a naval base and commercial port on the Indian Ocean; thereby, insuring considerable leverage in handling Middle East (i.e., Persian Gulf) and Southeast Asia relationships.³ Finally, Pakistan had initiated a nuclear weapon development program; consequently, Soviet control would remove a future nuclear threat from its border and enhance its relationship with India.

Assessment of the Risks.

The U.S. and other western nations had no mutual defense treaties with Afghanistan in 1979. Furthermore, Pakistan had withdrawn from the Southeast Asian Treaty Organization (SEATO) in 1972 and the collective defense alliance was dissolved by 1977. Therefore, the Soviet leaders judged that the Western nations would not go to war for Afghanistan. In this respect, they were right. However, they anticipated condemnation by the United Nations and there were other risks:³

- The U.S. might stop ratification of the Strategic Arms Limitation Talks (SALT-II). Senate support for the treaty was already in jeopardy because of concerns for long-range bomber and missile force levels. After the invasion, the Senate refused to ratify the agreement.
• During December, the U.S. and NATO were deliberating deployment of new missile systems (i.e., Pershing II and Ground Launched Cruise Missiles) for Europe. The invasion could encourage the decision to deploy the weapon systems.

• The West might impose trade embargoes and other economic sanctions. In fact, the U.S. promptly cancelled the sale of 17 million tons of grain badly needed by the Soviet Union to make up for a poor harvest in 1979. The U.S. also put a ban on the sales of advanced technologies to the Soviet Union.

• Disruption of diplomatic activities and cultural events could be expected. At President Jimmy Carter's urging the U.S. and several other nations refused to participate in the 1980 Olympic Games in Moscow.

The Soviet government wanted more than a change in President Amin's regime but they did not anticipate becoming involved in a war that would last more than eight years and cost Russia almost 40,800 dead.\(^4\) The decision to invade was strongly influenced by overconfidence in attack planning and a faulty evaluation of the Afghan military situation.

Invasion Planning.

In 1979, Brezhnev was terminally ill when his Defense Minister, Dmitri F. Ustinof, convinced him to have the General Staff study military alternatives for resolving the Afghan problems. Ustinof was overly impressed with intelligence reports from advisers in Kabul and General Ivan G. Pavlovsky, deputy defense minister and commander of Soviet ground forces. Pavlovsky had been sent to Afghanistan in August to obtain up-to-date intelligence about the country and its military.

Detailed planning to invade during the Christmas holidays began on 17 September (after Taraki's death) and this permitted only three months for mobilization, deployment of forces, and diplomatic activities needed to overthrow Amin. Meanwhile, covert efforts were being made including three KGB-inspired attempts to assassinate Amin: once in September by poison, a second in November by having palace guards shoot him, and a third in early December when his nephew, Assadullah Amin (Chief of the Afghan secret police) was wounded in a shootout.\(^1\) These unsuccessful attempts to remove Amin probably sealed the Soviet decision to invade.

The Soviet General Staff focused on a surprise attack with combined airborne and ground forces. After early November, the government forbid tourists and foreign diplomats from traveling to Furnze, Tashkent, Fergana, and Smarkland where secret assembly areas were being prepared for the ground forces. To ensure that preparations for the airborne assault would not be detected,
active units located in European Russia were selected for the mission. Specifically, airfields at Vitebsk, Smolensk, Pochinok, and Seshcha were put under intense security constraints.\textsuperscript{4}

The airborne assault would be focused on capturing Kabul and two large airfields (Bagram AFB and Kabul International Airport). The ground forces would capture the only two road networks into the country: one from Termez south through the Salang Pass to Kabul and the other from Kushka in the northwest and circling the southern cities of Farah and Kandahar. These routes are illustrated in Figure 14-1.

![Soviet invasion routes, 25–27 December 1979](image)

**Figure 14-1.** Soviet invasion routes, 25–27 December 1979

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The General Staff selected Marshal Sergi L. Sokolov, its foremost land-warfare expert, to command the invasion from the 40th Army field headquarters near Termez. Satellite communication links were set up between Termez and Moscow to insure continuous operational control.\(^4\)

Three major uncertainties faced the Soviet planners in mid-November.

- The Afghan army of nearly 90,000 personnel (13 divisions...3 armored and 10 infantry) could easily hold the mountain roads and passes if they chose to fight the Russians.
- Up to 10,000 independent mujaheddin rebels would certainly resist the invasion but they were poorly armed, trained, and had little leadership.
- Primitive transportation capabilities under mid-winter conditions...few paved roads and no railroads.

Because of these uncertainties, the planning staff decided that a minimum force of 100,000 to 120,000 troops would be needed. All troops would be mobilized and moved at night to prevent detection and they would deploy into Afghanistan by air transport and overland during a period of a few weeks. The plan was reinforced with extensive use of deception.\(^4\)

Pre-Invasion Actions.

On 2 December, Lt. General Victor Paputin arrived at the Soviet embassy in Kabul for the stated purpose of providing aid to the Afghan military. In fact, he was instrumental in implementing deceptive operations as follows:

- The Soviets offered to upgrade the Afghan Army’s aging armor by supplying 100 T-62 and 400 T-55 tanks to replace old T-34s currently in use. Also, 500 new long-range artillery were provided. This equipment was delivered overland on giant transporters from Tashkent starting on 12 December as shown in Figure 14-2. It was protected by lightly armed units of the 21st motorized-rifle division. The move was detected by U.S. satellites but it was considered part of an aid program.\(^5\) Unfortunately, the equipment lacked batteries, ignition components, and gun sights to be delivered later.
- On 8–9 December, Soviet An-22 military transports landed a battalion (about 400 troops) at Bagram AFB to act as military police. They controlled airfield operations and protected against raids by Afghan rebels.\(^6\)
- Two squadrons of MiG-23 fighters and Su-22 ground attack aircraft plus 100 new Mi-8 and Mi-24 attack helicopters were flown and airlifted into Bagram AFB.
• From 29 November to 6 December, a number of Il-76 tactical transports, some with commercial Aeroflot markings, flew into Bagram and Kabul International Airport as illustrated in Figure 14-3. They delivered a regiment of the 105th Airborne Guards from Ferghana to Bagram and about 1,000 advisers, dressed in civilian clothes to Kabul International.6,7

These moves were designed to get heavy military equipment into the country before the invasion and to secure the airfields for the airborne assault. They also provided time for Soviet advisors to assess which Afghan military units would support or fight the invasion.

On 23 December, an Il-76 transport landed at Kabul International with a company of GRU (Soviet military security police) dressed as civilians. They stayed at the Soviet embassy the following day. On Christmas Eve, under the leadership of Lt. General Paputin, this company of spetsnaz commandoes secretly attacked the Tap Tajbek Palace and assassinated President Amin, his family, and several senior cabinet ministers.8 General Paputin was shot and killed by palace guards along with two dozen of the spetsnaz who carried out the mission.9 This event was confirmed in 1989 by Yuri Kankovsky, chief researcher for the Soviet Institute of Oriental Studies.4
Figure 14-3. Aeroflot Tu-154 delivered KGB and civilians before Christmas.
New Afghan Leadership.

Babruk Karmal, a pro-Soviet Deputy Prime Minister under President Taraki, was living in Czechoslovakia in November 1979. Early in December, he moved to Moscow for undefined medical treatment but in fact, he helped the Russians formulate a new Afghan government. Two days after the invasion (27 December), Karmal made a broadcast from the Soviet radio station in Tashkent. He announced, "the day of freedom and rebirth of all the brother peoples of Afghanistan has finally come after terrible suffering and torment...The torture machine of Amin and his lieutenants has been smashed."\(^1\)\(^,\)\(^10\)

Karmal stayed in Tashkent under protection for four days after the invasion but on 28 December, he moved to Kabul and pronounced that he was the new president. He remained as president, under Soviet domination, until the Russians engineered his replacement by Mohammad Najibullah on 4 May 1986.\(^4\)\(^,\)\(^10\)

14.2 THE SOVIET INVASION.

The Assaul.ts.

Kabul was awakened before dawn on 24 December by the drone of Soviet An-12, An-22, and Il-76 air transports flying into the International Airport 12 miles north of the city. The first wave of transports delivered main elements of the 105th Soviet airborne division. It had been ferried from bases west of the Ural Mountains, with stops in Ashkhabad or Dushanbe for refueling. A total of 280 aircraft sorties arrived at Kabul on 10 minute intervals for two days.\(^11\) By 10:00am on the 24th, 50 aircraft had landed and unloaded mountains of equipment and supplies. They refueled and took off to return to Russia for another load as additional flights landed. Likewise, elements of the 103rd and 104th airborne divisions landed at Bagram AFB. They were carried by 100 additional transport sorties which began to arrive before noon.\(^12\)\(^,\)\(^13\) Troops arriving at Kabul found "welcome" signs displayed at the airport by pro-Communist government sympathizers.

The Soviet forces that landed at Kabul International and Bagram stayed on the two large airfields during the first day, securing the perimeter against rebel attacks, organizing units and equipment, and waiting for later transports to arrive. Figure 14-4 shows the troop deployments at Kabul International Airport. During this period, rebel ground fire shot down one An-12 which crashed on final approach at the end of the Kabul runway.\(^13\) It was noted that air defense units including
Figure 14-4. Soviet air transports at Kabul International Airport (23–26 December 1979).
ZSU-23-4 mobile antiaircraft guns, SA-7 and SA-9 surface-to-air missiles, plus short-range rocket launchers were set up at each of the airfields. This was the first hint that the planning included some oversights. These weapon systems were only needed if the Afghan Air Force and Army resisted the invasion since the rebels had no aircraft or artillery. Delivery of these systems by air cost the Soviets dearly since the number of transport aircraft and supplies were limited and time was important.

On the same morning, the Soviet 357th and 66th motor-rifle divisions crossed the northwest border at Kushka and headed south for Herat. The 360th and 201st motor-rifle divisions moved across the border at Termez and headed for Mazar-i-Sharif. These four divisions each contained 12,000 to 13,000 troops plus support units (somewhat larger than comparable U.S. divisions for reasons stated in Subsection 14.2.1). Both of these forces encountered resistance from Afghan Army units loyal to President Amin. However, the Afghan Air Force flew only training and reconnaissance missions and did not engage in combat. Thus, by 25 December, the Russians had 35,000 troops inside Afghanistan. The force grew to over 50,000 troops by the first week in January when the ground forces linked up with the airborne divisions in Kabul.

The Afghan Army 8th Division continued sporadic resistance in the northeastern mountains until 5 January 1980. But as formal resistance ended, Marshal Sokolov moved the Soviet 40th Army Command from Termez to Kabul. He and a number of generals moved into the Tap Tajbek Palace (where Amin had been murdered) until a new headquarters and communications center could be built. The collapse of the Afghan Army resulted in large-scale defections of troops to the various mujaheddin rebel groups. The Afghan Army withered to roughly 35,000 troops by April while rebel forces increased to between 40,000 and 80,000 personnel.

The motor-rifle divisions sent into Afghanistan were equipped with the full complement of weaponry needed to engage NATO forces on the terrain of central Europe. For example, they included air defense units. Heavy tanks and armor were of little use in mountains against rebel guerrillas. Battlefield missiles such as Frogs were of no use and within a few days they were parked at the major airfields where they were protected by battalions of infantry. Although no hard evidence has been found, it can be assumed that the units had access to nuclear warheads. They had chemical warheads available and crop defoliants. Chemical decontamination equipment was photographed with both motor-rifle and airborne units. Within two weeks, nerve gas use was
reported in fighting near Jalalabad and Feyzabad.\textsuperscript{15} The use of chemical weapons continued through 1982.

Additional Soviet forces were brought into the country during the spring of 1980, raising the level to over 100,000 personnel by April. However, it became apparent that some capabilities generic to their army organizations were not needed. Air defense units, heavy armor and battlefield missiles were not only useless but they consumed manpower and supplies.\textsuperscript{6} Therefore, on the eve of the Moscow Olympics, the Soviets announced that they were withdrawing 10,000 troops. In fact, the number withdrawn was only 5,000 to 6,000 and included no combat forces.\textsuperscript{1} Russia claimed that the Afghan government had been stabilized and rebel forces were suppressed.

### 14.2.1 The Case for Weapons of Mass Destruction.

During the late 1950s, the Soviet Union adopted a different doctrine concerning use of nuclear weapons for tactical warfare than developed by Western military planners. The U.S. doctrine was to deploy nuclear weapons primarily to deter (but if necessary to defeat) enemy attacks. It placed emphasis on conventional arms and warfare, with somewhat lower manpower and casualty assumptions than used by the Soviets. For example, U.S. motor-rifle divisions typically had about 10,000 personnel and were expected to remain viable fighting units with up to 40 percent casualties. By contrast, Soviet doctrine anticipated that conflicts would become nuclear. Soviet generals publicly stated that limited nuclear wars were impossible; therefore, they favored nuclear-armed ground forces and included excess manpower to compensate for higher casualties. A Soviet motor-rifle division contained nearly 13,000 troops and was expected to remain a viable fighting unit with up to 60 percent casualties.\textsuperscript{16}

Soviet doctrine evolved after the 1960s to include air-defense and chemical/biological/radiological warfare units in Army divisions. The doctrine required that the decision to use weapons of mass destruction be made at the highest level of government but the delivery was controlled at the Front-level and weapon systems were organic to the Division-level. Typically, warheads were stored at separate sites, heavily guarded by KGB troops. However, the warheads were moved to the divisions by guarded convoys of special vans or by escorted helicopters once the decision was made.\textsuperscript{17}
Motor-rifle divisions in 1980 contained two nuclear-capable weapon systems that are of interest (Frog missiles and heavy artillery), as presented below.

**Free Rocket Over Ground (Frog).**

Each division had a battalion (18 officers and 138 troops) with four motorized Frog-7 missile launchers. These units were organized into two firing sections (2 launchers each) with up to seven missile rounds per launcher. They were supported by survey and meteorological sections. The missiles could deliver conventional high explosive, nuclear, or chemical warheads as indicated in Figure 14-5. Frog missiles were identified with the divisions deployed during the invasion.\(^{17,18}\)

**Heavy Artillery.**

Each division had a heavy bombardment battalion with 18 (152 mm) towed or self-propelled guns. Figure 14-6 shows a battery of the towed guns in operation. After 1978, the 152 mm guns were considered to be nuclear-capable.\(^{17,18}\) Although these guns were used extensively in Afghanistan after the invasion, there is no evidence that nuclear warheads were available. However, chemical weapons and decontamination units were identified during the invasion. In March 1980, U.S. satellites photographed TMS-65 decontamination vehicles and AGV-3 detox chambers in forward combat areas. The U.S. Department of State received 47 claims of chemical attacks by mid-1981.\(^1\)

**Scud Missiles.**

In addition to the above battlefield weapons, Soviet Army-level forces had independent Scud-B (SS-1C) missile brigades with three battalions of six transporter-erector-launchers (TELs). These missiles are shown in Figure 14-7.\(^{17}\) It is unlikely that the 40th Army deployed its Scud missiles during the invasion. However, Scud missiles were deployed in 1982 and they were given to the Afghan Army before 1991. Specifically, on 20 April 1991, three Scuds were fired by Afghan units at the rebel held town of Asabad.\(^{14}\) On 12 October 1991, Afghan units fired three more Scuds at rebel positions in Jalalabad.\(^{20}\)
CHARACTERISTICS

- Length: 30 ft
- Diameter: 21.7 in
- Launch Weight: 5,072 lb
- Payload Weight: 1,213 lb
  - High explosive
  - Chemical
  - Nuclear (yield: 25–40 kt)
- Single stage solid propellant booster

PERFORMANCE

- Max. Range: 44 miles
- Min. Range: 6.8 miles
- Accuracy:
  - 1,640 to 2,300 ft
  - Unguided CEP
- Launch Vehicle:
  - ZIL-135 TEL
  - Crew -- 4

SOURCES:

- References 17 and 18

Figure 14-5. Frog-7 missiles in Afghanistan.
MODEL M-1976 (2S3)

CHARACTERISTICS
- Caliber: 47.0
- Weight: 19,800 lb
- Length: 31 ft
- Ammunition:
  - H.E. -- 88 lb
  - Chemical
  - H.E. Rocket Assisted (RAP)
  - Nuclear

PERFORMANCE
- Max. Range: 16.8 miles
- Range with H.E./RAP: 23 miles
- Rate of Fire: 2 rpm
- Crew: 6
- Towed by KrAZ-260 vehicle
- Operational after 1976

SOURCE:
- Reference 17

Figure 14-6. Soviet 152 mm towed artillery.
CHARACTERISTICS
- Length: 37.4 ft
- Diameter: 33 in
- Weight: 14,000 lb
- Warhead Options:
  - H.E. - 1,000 lb
  - Nuclear (yield: 40–100 kt)
  - Chemical
- Single stage liquid fuel propellant

PERFORMANCE
- Max. Range: 174 miles
- Min. Range: unknown
- CEP: 0.6 mile
- Preparation: 1–1.5 hours
- Launch Crew: 4–6
- Launch Vehicle: MAZ-543

SOURCES:
- References 17 and 19

Figure 14-7. Scud-B (SS-1C/R-17) ballistic missile.
14.2.2 Withdrawal of Unneeded Units.

As indicated earlier, Soviet military command in Afghanistan announced on 22 June 1980 that, "some Army units whose stay...is not necessary at present are being withdrawn to the Soviet Union." This statement specifically identified 108 T-72 heavy tanks, SAM antiaircraft batteries (SA-4 and SA-6 missiles), antiaircraft artillery, and Frog missile batteries. The New Delhi Newsheet (7 June 1982) identified antiaircraft, anti-tank, and missile warfare elements were removed. Thus, there is strong evidence that nuclear-capable missiles (and perhaps their warheads) were removed six months after the invasion.

14.3 THE WAKHAN CORRIDOR DEPLOYMENT.

The Soviet and Afghan military forces found themselves in a classic war of attrition with the mujaheddin rebels by the summer of 1980. It was characterized by many small battles between well-trained army personnel and hit-and-run guerrilla bands operating from rugged mountainous terrain. News reporting and other media focused on the stubborn resistance mounted by seven different guerrilla factions that held most of the rural and mountain areas. However, it barely noted or reported on a more sinister and covert Soviet deployment of nuclear-capable missiles into the Wakhan Corridor.

14.3.1 History and Background of the Wakhan Corridor.

The Wakhan Corridor is a 350 km long finger of rugged terrain in the northeastern corner of Afghanistan between the Soviet Union and Pakistan. As shown in Figure 14-8, its eastern tip borders on China and its mountainous southern border forms a natural barrier with Pakistan and its disputed Jammu and Kashmir Provinces. Its strategic location was important to far-term Russian plans. The corridor was established on 11 March 1895 by a simple agreement between Great Britain and Russia to provide a buffer zone between Turkestan and British India. The northern edge of the corridor is dominated by the Wakhan Mountains with peaks rising to over 20,000 ft. The southern edge parallels the Vakhan River with several mountain passes into northern Pakistan. In 1980, the area was sparsely populated with no significant villages or roads.

Immediately after the spring thaw in May 1980, Soviet troops invaded the region, routed its entire population across the border into Pakistan, and sealed the borders. In June 1981, Russia and President Babrak Karmal of Afghanistan signed a treaty giving the Soviets virtual annexation rights.
Figure 14-8. Wakhan Corridor with locations of known landmarks and villages (1988 data).
to the corridor. During 1982 and the spring of 1983, Russia brought settlers in from Tajikistan to occupy the villages, build new roads, prepare airfields, and construct military bases. A wide all-weather road was built from Ali Chur to Bozi Gumbad. It joined a road from Langar through Sarhadd to the Barowghil Pass. Two helicopter pads were built in 1983 at Bozi Gumbad and Chehel Kand. These pads were later expanded to handle transport aircraft including An-12s and Il-76s. Year-round air service was achieved by the winter of 1983 with the introduction of An-74 transports designed for arctic operations.  

During the spring of 1983, Lt. General Ghulan Siddique Mirki, Deputy Chief of Afghan Secret Police (KHAD) defected to the West. Upon reaching the U.S., he reported that a secret missile base with underground bunkers had been built in the eastern sector of the corridor. No Afghans of any rank or government position were permitted into the region. The Russians set up regimental headquarters at Bozi Gumbad, Chehel Kand, and Gaz Khun. Underground bunkers were built at Bozi Gumbad and Chehel Kand. A computerized command and control center was constructed at the later site. Battalion-level units of motor-rifle troops, mountain troops, and KGB guards were made at Wakhir, Barowghil, and Rorung to seal the mountain passes. Mi-24 Hind helicopters and armored vehicles from Rorung patrolled the Kun Khun Pass into Pakistan. By 1986, an entire motor-rifle regiment (2,500 troops) and a total force of 4,000 personnel occupied the corridor. The precise locations of some deployments are unknown since there are no up-to-date maps of the region.

14.3.2 Soviet Objectives.

The Soviet leadership was probably driven to consider the Wakhan Corridor for two reasons:

- It provided a base from which missiles and aircraft could strike mujaheddin support bases in Pakistan to cut off supplies for rebel forces in Afghanistan.

- It provided a base for longer range missiles to hold Pakistani and Chinese nuclear weapon developments at risk. The Pakistani nuclear weapon program was initiated by 1983 in Kahuta, about 40 km southeast of Islamabad. On 22 July 1981, Beijing denounced the Soviet and Afghan treaty at the United Nations, claiming it was simply a cover to deploy missiles along the Chinese border.

* This restriction is identical to the Soviet exclusion of Cuban military and officials from its missile bases during the Cuban Missile Crisis (Subsection 7.1.6).
The Pakistani Border.

The need to seal the Pakistani border became apparent to Soviet leaders in March 1980. Nearly 600,000 refugees from Afghanistan’s Kunar and Nangarhar provinces had already fled through the mountains to areas around Peshawar, Mingora, and Chitral. The Soviets tried to create a 25 km buffer zone along the border by using helicopter gunships and chemical weapons to attack bands of refugees. However, they could not send in ground forces without suffering heavy casualties to mujaheddin attacks. Fearful of Soviet incursions across the border or a full-scale invasion, Pakistan limited its support to feeding and housing the refugees. It rejected a $400 million U.S. aid package to arm and train the refugees. However, the following year, as Russian attacks began across the border, President Mohammed Zia ul-Haq accepted U.S. aid and staunchly supported the rebels. The refugee population swelled to over 2.5 million people by 1984 and rebel support bases sprang up in dozens of western Pakistani villages. Figure 14-9 shows a Soviet intelligence map of the support bases that existed by the end of the war. Thus, the problem of support bases grew with each year of U.S. funding and Pakistani government protection. From the Soviet perspective, the problem was identical to that experienced by the U.S. when Vietnamese forces used Cambodian or Laos sanctuaries as logistics centers in 1969-1970.

The Soviets responded to this problem with conventional bombing and artillery barrages of border passes. By March 1985, they used MiG-25, MiG-27, and Su-22 fighter-bombers to strike targets inside Pakistan. The aircraft were engaged by Pakistani piloted F-16s as the war threatened to escalate along the border. On 22 April 1986, an Afghan division led by a Soviet regiment captured a mile-long underground bunker and repair complex used by the mujaheddin at Paktia near the Pakistan border. During this period, the Soviets deployed Scud-B missiles in the Wakhan Corridor to cover the support bases.

"10 November 1986: Reports surfaced that the USSR has deployed missiles into the Wakhan Corridor to cover a 180 mile stretch of the border with Pakistan under the still secret agreement with the Afghan government. Scud-B and Frog-3 (actually Frog-7) deployments in the area are now committed at five Soviet strong-points."26

The dashed lines on Figure 14-9 show the areas of Pakistan that could be covered by the Scud missiles characterized in Figure 14-7.
Scud-B coverage shown by dashed curves could be extended by moving launch sites closer to the border into mujaheddin held territory.

Figure 14-9. Soviet intelligence map of insurgent support bases in Pakistan (Reference 28).
The Chinese Threat.

The current Russian-Chinese border was delineated by the 1689 Treaty of Nerchinsk as described in Section 11. Disputes erupted at several points along the border during the mid-1960s as the two countries built up ground forces and missile deployments. By 1980, both countries had about 45 active divisions along their common borders.30

The Chinese incursion into Vietnam in 1979 was a sobering reminder to Russia of the threat. China broke off bilateral border talks when Russia invaded Afghanistan. It strongly supported the mujahedden cause and supplied the rebels with small arms, land mines, ammunition, and 120 mm rockets. In the spring of 1980, China conducted two successful ICBM tests into the Tarim Basin. This was followed by speculation that Russia might make a “surgical strike” to destroy Chinese nuclear installations (similar to the Israeli raid on the Osiraq reactor in Iraq on 7 June 1981).

The Soviet concern for China’s nuclear developments was shown in 1972 when it began deploying new Scaleboard (SS-12) ballistic missiles along the Chinese border. By 1980, 52 launchers were assigned to the Southern (Tashkent) and Far Eastern Headquarters (Vladivostok). According to the U.S. and Soviet Intermediate-Range Nuclear Forces (INF) Treaty, 15 of the launchers were located at Saryozek (44.5°N, 77.8°E) by the northeastern Afghan border.31 Figure 14-10 shows the characteristics of the nuclear Scaleboard missile system. It carried a 1 megaton warhead and had no conventional warhead options.17 It is highly probable that one or two batteries (5 launchers each) from Saryozek were deployed and operated in the Wakhan Corridor before 1987, when the Soviet troops began to withdraw from Afghanistan. From the corridor, the SS-12s with a range of 800 km could reach all targets in western China including the nuclear development facilities at Lop Nor. They could also reach the northern half of Pakistan including the nuclear development center at Kahuta.32

There was at least one missile base with underground warhead storage in the Wakhan Corridor by early 1983.25 In 1988, China claimed:

"the Soviet Union has built some basic facilities for a medium-range guided nuclear missile base in the area and it is to specifically deal with China and Pakistan."24
CHARACTERISTICS

- Length: 36.9 ft
- Diameter: 41.3 in
- Weight: 19,400 lb
- Warhead:
  - Nuclear
  - Yield: 1 megaton
- Guidance: Inertial
- Propulsion:
  - Two stages
  - Liquid fueled
- Launch Vehicle: MAZ-543
- Launch Crew: 6

PERFORMANCE

- Maximum Range: 800 km (500 miles)
- Accuracy: 0.6 km (CEP)
- Time to Prepare: 2–4 hours

Sources

- References 17, 18, and 33

Figure 14-10. Soviet SS-12 Scaleboard missile system.
Five Soviet strong points were noted, each heavily defended with barbed-wire fences and armored vehicles. These bases included Scud-B and Frog-7 missiles and probably SS-12 Scaleboard missiles.\textsuperscript{26}

In addition to the shorter-range missiles, the Soviet Strategic Rocket Forces maintained 70 SS-4 (MRBM) and 50 SS-5 (IRBM) ballistic missiles along the Sino-Soviet border through 1983. They were replaced with 175 new SS-20 mobile IRBMs for three reasons: 1) the SS-20s were far more accurate and mobile, 2) the 23 year old SS-5s were retired and 3) the SS-4s were moved to European Russia to offset the U.S. deployment of Pershing II and Ground Launched Cruise Missiles (GLCM) in NATO.\textsuperscript{34} These longer-range missiles were deployed to hold targets at risk in southern and eastern sectors of China but all were removed and destroyed in accordance with the U.S. and Soviet INF Treaty after 1987.\textsuperscript{31} The Soviet Union could still cover Chinese targets with submarine launched SLBMs and Backfire bombers.

The Indian Connection.

Border disputes between India and Chinese trained Nagas and Mizos tribes erupted into armed conflict along the northern frontier in 1959 and 1962. India was shocked by the invasion since it had counted on a neutral policy to avoid conflicts. China pulled back and agreed to a cease-fire negotiated by the U.S., Britain, and Canada. However, the seeds of distrust against China had taken root in India. In 1971, civil war broke out between East and West Pakistan. India assisted East Pakistan (now Bangladesh) in its flight and when the war ended, the Himalayan state of Kashmir was left as a disputed area between the countries. This area is shown south of the Wakhan Corridor in Figure 14-8.

Knowing the background for these disputes, Russia approached India for assistance against Pakistan. Specifically, in mid-March 1982, a prestigious delegation headed by Defense Minister Demitri F. Ustinov and 30 senior generals traveled to New Delhi to visit Prime Minister Indira Gandhi. They offered India $600 million in annual orders for military equipment, promised new MiG-27 aircraft, and a nuclear-powered submarine. The Russians hoped to dissuade India from purchasing arms (e.g., F-16s and Mirage 2000s) from Western nations.\textsuperscript{35}

However, the Russians had further objectives. They encouraged India to keep pressure on China in the northeastern Aksai Chin area against the Nagas and Mizos tribes.\textsuperscript{25} In direct coordination
with the Soviet build-up in the Wakhan Corridor, Indian brigades captured positions at the north end of the Siachen glacier in 1982. This move blocked Pakistani counterattacks in June 1984 which would have threatened the Wakhan Corridor. Thus, Soviet and Indian forces cut the land routes between China and Pakistan. It further secured the Wakhan Corridor under Soviet control.

14.4 LESSONS LEARNED IN AFGHANISTAN.

The Soviet invasion of Afghanistan was ill conceived from both a political and military perspective. In several respects, it was similar to the U.S. involvement in Vietnam. The Soviet government allowed itself to believe optimistic intelligence information on the situation and intervened in a conflict that was primarily a civil war between Afghan communist and Muslim factions. Before the war ended, the Russian population generally resisted supporting the conflict. News media covered up battle losses and censored casualty reports to suppress public reactions. When Mikhail S. Gorbachev became Prime Minister in March 1985, his first order of business was to bring the war to an acceptable conclusion. On 29 July 1986, he made a speech calling for normalization of relations and directing the unilateral withdrawal of six regiments from Afghanistan. The war was strongly responsible for destroying the Soviet economy by the late 1980s.

The Soviet military made a grave error in thinking that its highly trained army, designed to fight with heavy armor on the central plains of Europe, could readily overcome mujaheddin rebels in mountainous terrain. During the first year of the war, the Russians repeatedly employed artillery barrages, tank maneuvers and infantry tactics straight out of their training manuals.

Although the General Staff planning for the invasion was innovative in several respects, it overlooked problems associated with carrying unnecessary weapons (including chemical and possibly, nuclear warheads) with the invasion forces. The reasons for this oversight are clear. In the interest of surprise and deception, the Soviets moved active divisions with a minimum of preparation and following established doctrine. Therefore, they did not take time to strip out unneeded functions. The oversight was similar to the British mistake in taking nuclear depth charges to the Falklands Islands in April 1982.

By contrast, the deployment of nuclear missiles into the Wakhan Corridor in 1984–1987 was a carefully thought out and deliberate action. It was motivated by strategic considerations (i.e., control of Pakistani support to the mujaheddin and coverage of Chinese nuclear threats). The unique geography, sparse population, and ability to secure the corridor made it an ideal location for deploying nuclear forces. However, the covert deployment raises a question...why was it done in
secret? An open deployment might have had a greater deterrent effect on Pakistan’s support of the rebels and on China’s nuclear developments. Some possible answers are as follows:

- The U.N. and U.S. would probably have strongly disapproved of this proliferation of nuclear forces. It would have disrupted Strategic Arms Limitation Talks (SALT) and might have encouraged armed intervention. For example, Pakistan or the U.S. could have responded with military strikes to destroy the forces.

- The Soviets may have planned to invade Pakistan, using the new infrastructure in the corridor (roads, airfields, and bases) to provide a foothold and logistics supply route. The invasion could have been made in coordination with an Indian attack in Kashmir to bypass the mountains in eastern Afghanistan. An attack by this route could have been in Peshawar and Islamabad within several days. It would have satisfied four goals:
  - The logistics support for mujaheddin rebels would have been cut off.
  - The Pakistani nuclear threat would be removed.
  - The Soviet move to obtain an all-weather port on the Indian Ocean would be realized.
  - India would resolve its border dispute in Kashmir.

- The Soviets may have feared that disclosure of the buildup in Wakhan would fuel widespread unrest and demonstrations by its population, China, and other nations. The minor border incursion into China in March 1969 had caused massive demonstrations in Moscow, Beijing, North Vietnam, France, and Italy (all with strong communist parties). The Afghan population would harden its resistance to Soviet intervention if the Wakhan Corridor became know as a Russian base.

While U.S. satellite sensors detected the buildup in the Wakhan Corridor, there was insufficient evidence of the deployment of nuclear weapons to cause major concern. Mobile missiles are very difficult to detect and monitor, as noted by the lack of success in finding Scud launchers in Iraq during February 1991. It is also possible that U.S. intelligence knew of the Wakhan deployment and chose to ignore the situation to avoid escalating the conflict following its Vietnam experience. The U.S. had no desire to be pulled into a war with Russia in Pakistan.
SECTION 15.0
NUCLEAR WEAPONS AT THE FALKLAND ISLANDS
W. C. Yengst

15.1 GENERAL DESCRIPTION OF THE CONFLICT.

The Falkland Island conflict developed rapidly, giving the United Kingdom little time to plan or prepare for the surprise invasion by Argentina on 2 April 1982. Britain responded to the loss of its colony, located 8,000 miles to the south, within days to prevent Argentina from building strong defenses and reinforcing the islands. In its haste to set up a naval blockade, the Royal Navy inadvertently carried nuclear anti-submarine weapons to the conflict. There is no evidence that Britain anticipated the need to employ nuclear weapons in recapturing the islands or that Argentina posed a nuclear threat. However, the weapons were ultimately involved in combat situations and some may have been damaged or lost on sunken ships.

To understand the conditions under which this unplanned deployment and combat resulted, it is necessary to review the mobilization and timing of Britain’s Task Force, Operation Corporate. Although most facts concerning this operation are well documented, the British Ministry of Defense has not released information concerning the possible loss of nuclear weapons.

15.1.1 Background and Planning.

The Falkland Islands have been a British dependency since 1833 and its population of 1,800 English settlers have relied on London for administration and support. However, Argentina claims sovereignty over the islands under their Spanish name, Islas Malvinas. The islands lie 310 miles east of the Straits of Magellan as shown in Figure 15-1. After many years of unproductive diplomatic negotiations to resolve their claims, the Argentine ruling junta led by Army General Leopoldo Galtieri decided to take the islands by force in early 1982.

On 26 March, British military observers watched an undisguised Argentine invasion exercise during which the ship Bahia Paraiso unloaded troops at Leith, South Georgia Island. The following day the ship sailed, leaving its troops ashore to control the island. While the deceptive capture of South Georgia by Argentina was a great humiliation to Britain, the following five days were worse.
Figure 15-1. Map of the Falkland Islands and Exclusion Zone.
British intelligence sources in Buenos Aires reported Argentine naval operations on 27 March which strongly suggested an invasion attempt.² An American intelligence message was passed from Washington to London explaining that satellites had identified the Argentine aircraft carrier, 25 De Mayo, moving towards the Falklands. Argentine troop ships and corvettes moved towards the islands on 29 March and the invasion of Port Stanley took place at 4:30am on 2 April. The islands were secured in three hours after minimal resistance.

The sole British patrol ship in the Falkland Islands was the converted icebreaker, H.M.S. Endurance. It was little deterrence for the Argentine invasion fleet that approached the islands. Endurance, with a company of marines and two Wasp helicopters, was visiting South Georgia Island on 22 March. The day before the deceptive takeover of South Georgia, it sailed for the Falklands, 430 miles to the west. Endurance was ordered to return and observe Argentine operations near Grytviken. On 26 March, it spotted the Bahia Paraiso a few miles from the coast but there was no engagement since Britain was trying to resolve the situation by diplomatic means.¹ Endurance was withdrawn to Ascension Island in the mid-Atlantic.

The British House of Commons met in an emergency session on Saturday, 3 April. Prime Minister Margaret Thatcher announced that the islands would be restored to British control and that a strong naval fleet would sail for the South Atlantic the following Monday, 5 April.³ Defense Secretary John Nott and First Sea Lord, Admiral Sir Henry Leach, spent most of the weekend at Whitehall in preparing plans and issuing orders. Most of the senior personnel at Whitehall and members of the Chiefs of Staff were inexperienced in handling such crises. It had been 26 years since the Suez Canal conflict, which was remembered as both a political and military planning disaster (see Section 5). Although the time schedule was set unrealistically short, Margaret Thatcher was determined to send a task force to sea while the public support and political will was strong to do it.⁴

15.1.2 The British Task Force.

Because the Falkland Islands were so remote from British bases, the military strategy for their recapture was established as a two step operation: 1) isolate the islands from Argentine resupply by naval and air blockades and 2) perform amphibious landings to destroy the Argentine forces. The naval blockade was considered time-urgent; therefore, nuclear attack submarines were sent immediately, to be followed by frigate and destroyer surface ships.
The Submarines.

Four Swiftsure class nuclear attack submarines based at Devonport were ordered to the Falkland Islands. H.M.S. Superb was first to leave on about 29 March as shown in Figure 15-2. After an 8,000 mile journey, it arrived near the Falklands on 6 April. H.M.S. Spartan sailed on 31 March and H.M.S. Splendid and Sceptre on 1 April. They arrived in Falkland waters on 11 and 12 April, respectively.⁵ ⁶ A fifth nuclear attack submarine, H.M.S. Conqueror, hurriedly left its base at Faslane, Scotland, on 4 April and raced south.¹ Submarines H.M.S. Courageous, Valiant, and Onyx joined the Falkland Island conflict at a later date.⁷

![Figure 15-2. H.M.S. Superb nuclear attack submarine leaving Devonport for the Falklands.](image)

The first five submarines were sent early to accomplish three missions: 1) stop the movement of Argentine military supply ships to the islands, 2) destroy Argentine military ships that might pose a threat to the Operation Corporate Task Force, and 3) to patrol a 200 mile radius Exclusion Zone around the islands. The Exclusion Zone (see Figure 15-1) was announced worldwide on 7 April and became effective at 5:00am on 12 April.⁸ Specifically, British intelligence indicated that 7,000 to 8,000 Argentine troops would be on the islands by 28 April.² The British wanted to interdict this force buildup and prevent supplies from reaching troops already on the islands. They also
wanted to standoff Argentine aircraft carriers, surface ships, and submarines that might attack the task force. Finally, they wanted to keep ships of other countries from moving into the conflict area.

The submarines that left for the Falklands took provisions for three months, normal for operational deployments. With only a few days to prepare and full of provisions, it is doubtful that they had orders or time to off-load nuclear depth charges that were part of their NATO weapon complement. This possibility was suggested when the H.M.S. Conqueror sank the Argentine cruiser, General Belgrano, on 2 May. In fact, Conqueror had Mark 24 Tigerfish conventional torpedoes on board but chose to use less expensive Mark 8 World War II vintage torpedoes. However, the possibility remains that some attack submarines, including Conqueror, may have carried nuclear weapons.

Task Force Planning.

The Royal Navy fleet command was located in a large office complex at Northwood, England. It was responsible for planning and operations of the fleets. The First Flotilla, with its modern frigates and destroyers under command of Rear Admiral John (Sandy) Woodward, was instructed to spearhead Operation Corporate. With less than two days for planning (30–31 March) and four days for provisioning (1–5 April), the task force ships had to depart for the South Atlantic and their first rendezvous at Ascension Island.

The short preparation period was extraordinary in several respects:

- The Directorate of Naval Operations and Trade, responsible for deciding which ships were suitable for the task force, was newly organized under Commander Brian Goodwin. Three additional commanders were added to its staff overnight. They had to requisition or charter 54 civilian ships to provide logistics support for the operation.

- Following budget cuts, proposed by John Nott in 1981, the Royal Navy was critically limited in numbers and types of available combat ships.

  - It had only two aircraft carriers (H.M.S. Hermes and Invincible) needed to provide air cover for the fleet. Hermes was small and carried only 20 Sea Harrier jets. Invincible was old and also carried 20 Sea Harriers.

  - It had only two amphibious assault ships (H.M.S. Fearless and Intrepid), both of which were threatened with sale to foreign countries. Fearless was rapidly outfitted to serve as the task force command ship. Intrepid was out of commission.
Most of the active destroyers and frigates were currently on NATO and Atlantic Fleet operations. They had to be recalled, fueled, and provisioned for South Atlantic operations. The preparation of several of these ships are described below.

The civilian cruise ship Canberra was commandeered by the Royal Navy on Saturday morning, 3 April. It moved to Southampton harbor to serve as a troop transport. Similarly, the North Sea ferry, Norlond, was acquired to carry troops and military vehicles.1 Foreseeing the need for many helicopters in the Falklands, the commercial container ship, Atlantic Convoyor, was leased. Its fore- and aft-decks were modified at Wittering, England, during the first few days of April to add helicopter landing pads. It was loaded at Southampton with Army 4 ton trucks, 3 Chinook transport helicopters, 5 Wessex helicopters and 600 cluster bombs for Harrier jet aircraft.3,10 Several fuel tankers and other support ships were acquired and Southampton harbor became the central location for logistics/supply ships.

As the ships were loaded, the personnel were mindful of the Suez conflict when appalling confusion in the order and location of shipped equipment compounded the military difficulties. Some ships earmarked for use by the Army were designed for cross-channel operations and were unfit for Falkland Island environments. The task force that sailed for Ascension Island on 5 and 6 April contained 49 ships. By mid-May, the fleet that sailed from Ascension for the Falkland Island invasion contained nearly 100 ships (half of them combatants), 26,000 troops, and 171 aircraft and helicopters.6 After the conflict was over, Queen Elizabeth and Margaret Thatcher both honored the key personnel who were involved in this remarkable mobilization. However, the hurried preparation contained the seeds of nuclear weapon problems that became apparent one month later.

The Portsmouth Ships.

The largest Royal Navy combat ships embarked from Portsmouth harbor on 6 April. This flotilla of 23 ships included 2 aircraft carriers, 2 armed assault transports, 5 destroyers, 13 frigates and a sea-going tug.11 The assault ship H.M.S. Fearless (Rear Admiral Woodward’s flagship) and the carriers H.M.S. Hermes and Invincible had just completed NATO exercises off Scotland and Norway when they were recalled to Portsmouth to receive supplies for three months of operations.12 The sea-going tug, Salvageman, was a late addition to the flotilla.5
The Gibraltar Ships.

Several warships of primary interest to this study were operating from Gibraltar in support of the annual NATO “Exercise Springtrain.” They included destroyers H.M.S. Sheffield, Coventry, and Glasgow plus frigates H.M.S. Arrow, Brilliant, Plymouth, Antrim, and light cruiser H.M.S. Glamorgan. Two combat ships, H.M.S. Yarmouth and Broadsword, were scheduled to sail on 5 April to join carrier operations at Naples. They would return to Gibraltar on 7 April and sail for Ascension the following day. Two other ships from Gibraltar (destroyer H.M.S. Cardiff and frigate H.M.S. Amazon) were on Gulf Patrol to the Middle East and the frigate Ambuscade had returned to Plymouth, England, for maintenance.

Since the status of some of these ships was uncertain and three carried the most modern air defense capabilities (i.e., Coventry, Sheffield, and Glasgow had Sea Dart close-in missile systems), Admiral Woodward flew to Gibraltar to assist in planning. The Royal Air Force flew additional supplies for these ships to Gibraltar in seven C-130 transport planes on the evening of 1 April. On the morning of 2 April, Admiral Woodward split the ships which were coming off Exercise Springtrain into two groups: one would sail with him to Ascension and the other would return to England for repairs and provisions. H.M.S. Battleaxe was suffering shaft problems and H.M.S. Aurora carried sick and compassionate leave personnel.

During the single day before departing from Gibraltar on 2 April, the Ascension bound ships (i.e., Sheffield, Coventry, Glasgow, Arrow, Brilliant, Antrim, Plymouth, and Glamorgan) pulled alongside the ships headed for England and began a complex and exhausting “crossdecking” procedure that lasted 12 hours. The England bound ships handed over every pound of surplus food, ammunition, and spare parts that they could provide to the Ascension bound ships. Even crew members were exchanged since some of the ships (notably Sheffield) had been away for several months. It was noted that the southbound ships off-loaded drill/training ammunition but no evidence was found that nuclear weapons were off-loaded.

The Plymouth Ships.

Plymouth was the homeport for several First Flotilla ships as well as the ships that returned from Gibraltar by 5 April. These ships were hurriedly refueled, repaired, and provisioned so that they could sail again on 6 April for Ascension Island. Specifically, the crews for H.M.S. Battleaxe,
Euryalus, Aurora, Dido, Active, and Aridne were given no "shore leave" and they had less than one day to prepare. Again there is no evidence that they off-loaded standard NATO weapons.\textsuperscript{4,5} Because the Royal Navy was heavily oriented toward anti-submarine warfare in 1982, there is a high probability that several of the combat ships departing from Gibraltar or Plymouth carried nuclear depth charges when they headed for the South Atlantic.

**Ascension Island.**

Ascension was British, although its naval base was leased to the United States, and it served as a refueling point and planning center to organize the Task Force and initiate subsequent attack phases of the conflict. The flotillas from England and Gibraltar met near the Equator on about 7 April as shown in Figure 15-3.

![Map of Task Force Movement from England and Gibraltar to the Falklands](image)

**Figure 15-3. Movement of Task Force from England and Gibraltar to the Falklands.**

On Sunday, 11 April, Admiral Woodward held a luncheon meeting with officers of the fleet while in route to Ascension on the H.M.S. Glamorgan. They reviewed the Argentine threats that might be encountered at the Falklands. The captain of Glasgow felt there may be an armed demonstration
but no engagement and the captain of Coventry felt the air threat was most serious. Intelligence from London indicated that Argentina had only one Super Etendard aircraft with five Exocet AM39 missiles. It also had six frigates with Exocet launchers and a few land-based launchers. Admiral Woodward felt the most serious threat was Argentina’s two modern German Type 209 submarines (plus the World War II diesel submarine, Santa Fe). This insight suggests that the Admiral was concerned with the possibility of anti-submarine warfare and hence, he probably retained all the depth charges and torpedoes normally carried by the ships.

The ships that sailed directly from Gibraltar arrived at Ascension on 11 April. Most of the 29 ships that sailed from England arrived by 15 April. The cruise ship Canberra, which left Southampton on 9 April, and the logistics landing ships Sir Galahad and Sir Geraint with Royal Marines arrived on 17 April. During the wait for the slower and later departing ships, a number of invasion planning meetings were held. Wideawake Airport at Ascension became the world’s busiest airfield as high-level personnel, troops, special supplies, and military aircraft converged on the island between 11 and 20 April.

It is useful to review what the Gibraltar ships were doing during this period. After arriving on 11 April, H.M.S. Sheffield spent three days (12–14 April) practicing Naval Gunfire Support (NGS) spotting, helicopter Anti-Submarine Warfare (ASW), and Helicopter Delivery Support (HDS) operations. The H.M.S. Glasgow practiced NGS spotting, night flying techniques, and electronic support measures (ESM) until 14 April when it sailed to rendezvous with H.M.S. Fort Austin to obtain a new Sea Stuka helicopter. H.M.S. Arrow practiced ESM and NGS for two days. Late on 17 April, a small invasion party including destroyer Antrim, icebreaker Endurance, and tanker Tidespring departed Ascension to initiate Operation Paraquat, the recapture of South Georgia Island. This mission was accomplished between 21–24 April. H.M.S. Sheffield and Brilliant departed Ascension on 22 April to join Operation Paraquat. Consequently, there was ample time and opportunity during this period at Ascension to off-load nuclear weapons if that precaution was intended.

In parallel with the South Georgia Island action, the Task Force (43 selected combat ships) left Ascension and moved to an area 60 miles north of South Georgia. The Task Force remained over 400 miles from Argentine land-based aircraft at Stanley airfield in the Falklands on 30 April.
15.1.3 Summary of Naval Engagements.

During the recapture of South Georgia Island, the Argentine diesel submarine Santa Fe was spotted and sunk by conventional depth charges dropped from H.M.S. Antrim’s helicopters. On 1 May, three Royal Navy ships (light cruiser H.M.S. Glamorgan and frigates Arrow and Alacrity) ran-in close to Port Stanley to bombard the airfield and harbor preparatory to the reinvasion. As they approached within view of the island, the Argentines launched 40 sorties including Canberra bombers of Group 2, Skyhawks of Groups 4 and 5, plus Dagger and Mirage fighters of Groups 6 and 8, respectively. The aircraft attacked the ships at 4:40pm and all three ships suffered minor damage (e.g., hits by 30 mm cannon fire from Dagger fighters).

None of these ships were sufficiently damaged to pull them off combat duties. However, since they came from Gibraltar, it is probable that Glamorgan, and perhaps Arrow and Alacrity, carried nuclear depth charges during the engagement. The Navy responded to this action by moving destroyers H.M.S. Sheffield, Broadsword, and Brilliant into forward positions where they could protect the task force with improved radars and Sea Wolf self-defense missile systems.

The Sinking of Belgrano.

The British nuclear submarines arrived in the Falkland Islands about 14 April (following a two week journey) and they took up positions around the 200 mile Exclusion Zone (see Figure 15-1). The day after the above aircraft/ship engagement (2 May), H.M.S. Conqueror detected three Argentine warships (destroyers Piedra Buena and Hipolito Bouchard plus heavy cruiser General Belgrano) at a position roughly 35 miles southwest of the Exclusion Zone. The ships were sailing on a heading of 270 degrees, toward the Argentine mainland, and they had orders not to enter the Exclusion Zone. The sighting was confirmed by the U.S. Big Bird satellite and intelligence data was promptly transmitted to London.

Knowing that the Argentine ships carried 15.6 inch guns, Exocet anti-ship missiles, and Sea Cat antiaircraft missiles with ranges of 13–20 miles, Conqueror stood off at 4:00pm and signaled the Task Force and London for orders. Orders came back from London, “sink the Belgrano.” This was one of the most controversial decisions of the war. At the time, diplomatic progress was being made toward resolving the conflict by U.S. Secretary of State Alexander Haig. The attack destroyed his efforts. Belgrano was clearly outside the Exclusion Zone and not traveling in a
threatening direction. Many news analysts labeled the action a “political” decision to impress Argentina with Britain’s serious intent; it was not a military objective.

Conqueror closed with the Belgrano and fired two Mark 8 torpedoes. Commander Wredford-Brown chose to use Mark 8s because the shots were from the beam, the older weapons were highly reliable and they ran straight. The new Mark 24 Tigerfish homing torpedoes on board were expensive (costing $875,000 each) and had been know to turn up to 180°. The first torpedo hit Belgrano on the port bow, killing 8–10 men. The second hit the stern, killing and trapping 250 men in the ship’s sleeping quarters and canteen.1 The ship took on so much water within 10 minutes that it took on a 15 degree list to port. Twenty minutes after the attack, it rolled and sank at 6:30pm, trapping several life rafts as seen in Figure 15-4. The ship took 321 crew members to their deaths.3

Conqueror fled the scene of the sinking, pursued by the two destroyers. However, following its report on the engagement, the Ministry of Defense and Royal Navy became aware that some of its submarines and ships might be carrying nuclear weapons. The Guardian newspaper, London, reported that orders were issued immediately to remove all nuclear weapons from the Argentine theater. “The nuclear charges were collected by a navy ship and removed from the war zone.”16 H.M.S. Conqueror was ordered back to its base in Faslane and did not go to sea again during the conflict. Following a hearing on the action, Commander Wredford-Brown observed that, “sinking the Belgrano had saved lives...thereafter, Argentine warships did not venture to sea and no naval engagements occurred during the conflict.”1

The Sinking of H.M.S. Sheffield.

 Barely 41 hours after the sinking of General Belgrano, H.M.S. Sheffield was in a position 100 miles south of Stanley and 20 miles west of the main task force approaching to bomb the islands. It was performing radar picket duty and providing defense for the fleet in the event of an Argentine air strike. Just before 11:00am, Sheffield picked up radar contact on a low-flying Argentine Super Etendard to the west. Within two minutes, the aircraft launched two Exocet anti-ship missiles at a range of 20–25 miles. One missile failed to guide but the second homed on Sheffield and flew to an impact at mid-ship as shown in Figure 15-5.1, 17
Figure 15-4. Sinking of Argentine cruiser General Belgrano.
Figure 15.5. H.M.S. Sheffield burns out of control after hit by Exocet missile.
The Exocet penetrated 30 ft into the ship’s hull where it initiated extensive fires. Some crewmen claimed the warhead did not explode but the missile contained about 150 lb of unburned solid sustainer rocket fuel, which burned fiercely. Twenty sailors died in the attack and fire fighting efforts were severely hampered because the ship’s main water line was fractured. The Sheffield captain, Sam Salt, sent three men overboard in a Gemini inflatable raft, attempting to play water into the split hull. Minutes later, frigate Arrow pulled alongside and offered help but the situation appeared hopeless. Captain Salt feared for their safety when H.M.S. Yarmouth suddenly fired its anti-submarine mortars close by and announced the sighting of torpedo tracks. Arrow launched one of its Mark 46 torpedoes but the sighting proved to be false. Fire fighting continued the remainder of the afternoon (4 hours) while the evacuation of wounded was accomplished by helicopters to Arrow and Yarmouth. As evening approached, Captain Salt ordered the 250 surviving crewmen to be evacuated, leaving only a few to secure the burning hulk. By the following morning, Sheffield was burned out but it was kept afloat.

According to the Guardian newspaper account, Sheffield was kept afloat for three days while efforts were made to salvage its nuclear depth charges. There had been no time or opportunity to off-load the depth charges after the Belgrano sinking. According to news reports, Sheffield was taken in tow by Yarmouth. Captain Salt reboarded the hulk on the morning of 9 May while it was being towed toward South Georgia. However, at the edge of the 200 mile Total Exclusion Zone in a rising sea, early on the morning of 10 May, the ship began to list sharply and then turned over and sank.

Defense Ministry officials in London were “totally stunned” by the loss of Sheffield. The Admiralty immediately began investigating how Argentine pilots were able to hit one of Britain’s most advanced destroyers. Mrs. Thatcher in a speech at the House of Commons that day said she was “devastated” by the loss. No mention of nuclear weapons was made at the time...this problem was identified five months later by Whitehall officials. They explained that heroic efforts were made to keep the hulk afloat so that nuclear depth charges on board could be salvaged.

Prime Minister Thatcher and Defense Minister John Nott were scheduled to answer questions about the nuclear weapons at the Falklands in a closed session of the House of Commons on 5 November 1982. No reports were made on the subsequent hearing, “neither to confirm nor deny existence or location of nuclear weapons.”
Damage to H.M.S. Glasgow,

After the loss of Sheffield, the British fleet moved away, well to the east of the islands, for several days. Bad weather set in and there was little air activity except for reconnaissance. A few destroyer sorties were made to the vicinity of Stanley by H.M.S. Coventry, Broadsword, Glasgow, and frigate Brilliant to bombard the airfield and hunt for the Argentine trawler, Narwal. On 12 May, four Argentine Skyhawk fighter-bombers found and engaged the destroyer Glasgow and frigate Brilliant. Two Skyhawks were shot down by Brilliant's Sea Wolf missiles but the remaining aircraft dropped 1,000 lb armor-piercing bombs on the two ships. One bomb bounced over Brilliant and fell into the sea. The other bomb hit Glasgow amidship, smashed clear through the hull, and emerged on the far side to explode in the water. The ship had escaped certain sinking but had to repair a 3 ft diameter hole close to the waterline.

Glasgow took on a lot of water and had to withdraw from the area for repairs. Since it had been nine days after the decision to remove the nuclear depth charges from the combat ships, it is possible that neither Glasgow or Brilliant had the weapons on board. This was probably the last engagement in which nuclear weapons might have been at risk. Admiral Woodward decided that after the close calls by Glasgow and Brilliant, there would be no further naval bombardments of Port Stanley airfield during daylight hours. Once again, poor weather set in until 17 May.

Other Royal Navy Losses.

On 18–20 May the Task Force maneuvered north of the islands and entered Falkland Sound with assault ships to initiate the reinvansion. The following morning before sun-up, the sound was full of ships and the Argentine Air Force began a series of attacks. While the British made amphibious landings at Port Carlos and Goose Green during the next two weeks, the Task Force employed ship-defense missiles and Harrier aircraft to defend the concentration of ships. The majority of Royal Navy ships damaged or sunk occurred during this campaign. Table 15-1 provides a summary of these losses to illustrate that a number of primary combat ships that might have carried nuclear weapons were actually engaged. However, by 21 May (nearly three weeks after the order to remove all nuclear weapons), it is unlikely that any of the combat ships carried atomic depth charges.

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Table 15-1. Royal navy ships damaged or sunk.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name of Ship</th>
<th>Type of Ship</th>
<th>Damage Level*</th>
</tr>
</thead>
<tbody>
<tr>
<td>**1 May</td>
<td>Alcacity</td>
<td>Frigate</td>
<td>Minor (cannon fire)</td>
</tr>
<tr>
<td>**1 May</td>
<td>Arrow</td>
<td>Frigate</td>
<td>Minor (cannon fire)</td>
</tr>
<tr>
<td>**1 May</td>
<td>Glamorgan</td>
<td>Cruiser</td>
<td>Minor (cannon fire)</td>
</tr>
<tr>
<td>**4 May</td>
<td>Sheffield</td>
<td>Destroyer</td>
<td>Sunk (Exocet missile and fire)</td>
</tr>
<tr>
<td>**12 May</td>
<td>Glasgow</td>
<td>Destroyer</td>
<td>Holed (1,000 lb bomb)</td>
</tr>
<tr>
<td>21 May</td>
<td>Argonaut</td>
<td>Frigate</td>
<td>Major (2 x 1,000 lb bombs)</td>
</tr>
<tr>
<td>21 May</td>
<td>Antrim</td>
<td>Destroyer</td>
<td>Major (1,000 lb bomb)</td>
</tr>
<tr>
<td>21 May</td>
<td>Broadsword</td>
<td>Destroyer</td>
<td>Minor (cannon fire)</td>
</tr>
<tr>
<td>21 May</td>
<td>Ardent</td>
<td>Frigate</td>
<td>Sunk (1,000 lb bomb)</td>
</tr>
<tr>
<td>21 May</td>
<td>Brilliant</td>
<td>Frigate</td>
<td>Minor (cannon fire)</td>
</tr>
<tr>
<td>23 May</td>
<td>Antelope</td>
<td>Frigate</td>
<td>Sunk (two bombs/one exploded)</td>
</tr>
<tr>
<td>24 May</td>
<td>Sir Galahad</td>
<td>Auxiliary</td>
<td>Moderate (1,000 lb bomb)</td>
</tr>
<tr>
<td>24 May</td>
<td>Sir Lancelot</td>
<td>Auxiliary</td>
<td>Moderate (1,000 lb bomb)</td>
</tr>
<tr>
<td>24 May</td>
<td>Sir Bedivere</td>
<td>Auxiliary</td>
<td>Minor (bomb failed to explode)</td>
</tr>
<tr>
<td>25 May</td>
<td>Broadsword</td>
<td>Destroyer</td>
<td>Moderate (1,000 lb bomb)</td>
</tr>
<tr>
<td>25 May</td>
<td>Coventry</td>
<td>Destroyer</td>
<td>Capsized (3 x 1,000 lb bombs)</td>
</tr>
<tr>
<td>25 May</td>
<td>Atlantic Conveyor</td>
<td>Container</td>
<td>Sunk (Exocet and fire)</td>
</tr>
<tr>
<td>8 June</td>
<td>Plymouth</td>
<td>Frigate</td>
<td>Major (4 x 1,000 lb bombs)</td>
</tr>
<tr>
<td>8 June</td>
<td>Sir Galahad</td>
<td>Auxiliary</td>
<td>Scuttled (multiple bombs)</td>
</tr>
<tr>
<td>8 June</td>
<td>Sir Tristram</td>
<td>Auxiliary</td>
<td>Moderate (multiple bombs)</td>
</tr>
<tr>
<td>10 June</td>
<td>Glamorgan</td>
<td>Cruiser</td>
<td>Major (Exocet missile)</td>
</tr>
</tbody>
</table>

* Based on data from Reference 3 (Appendix 10).

** Ships that probably carried nuclear depth charges at the time of their engagement.
After a desperate battle for Goose Green in early June, the British Army moved overland, past Kent Mountain, to attack Port Stanley on 12–14 June. During this battle, H.M.S. Glamorgan was severely holed by a land-launched Exocet missile as the cruiser tried to suppress Argentine shore batteries. This was the last naval engagement. At 9:00pm on 14 June, Argentine Major General Menendez surrendered all forces on East and West Falkland Islands.\footnote{In the context of the Falklands War, the surrender on 14 June 1982 was a significant event.} Figure 15-6 shows the locations at which Royal Navy ships were sunk.

![Diagram showing locations of ships sunk at the Falkland Islands.]

Figure 5-6. Locations of ships sunk at the Falkland Islands.

In summary, a number of combat ships could have carried nuclear weapons to the Falkland Islands. However, as noted in Section 15.2, it is unlikely that the submarines had nuclear weapons. It is more probable that surface ships carried nuclear depth charges and specific ships that were primary candidates included: H.M.S. Sheffield, Glasgow, Glamorgan, Alacari, and Arrow.

\section*{15.2 ANTI-SUBMARINE WEAPON SYSTEMS EMPLOYED BY THE ROYAL NAVY.}

Although several advanced air defense missile systems were employed by the Royal Navy during the Falkland Islands War, this study is primarily concerned with the nuclear anti-submarine
weapons that may have been carried by submarines and combat surface ships. These weapons are presented in the following subsections.

15.2.1 Submarines.

Five modern nuclear attack submarines (H.M.S. Superb, Sceptre, Spartan, Splendid, and Conqueror) were deployed to Falkland waters during the early days of the conflict. Figure 15-2 shows Superb leaving port on 29 March for its 8,000 mile journey. These were the first nuclear attack submarines to be used in warfighting and they had the following characteristics:

- Displacement: 4,000 tons
- Length: 272 ft
- Speed: 30 knots
- Complement: 97

They were armed with five 21-inch torpedo launch tubes and at most two dozen torpedoes. Weapon loadouts often varied from one submarine to another but a typical NATO operation included a mix consisting of a dozen wire-guided Mark 24 Tigerfish and 6–12 Mark 8 torpedoes with high explosive warheads.

The British had a nuclear torpedo research and developmental program but no operational weapons were produced before 1990. The U.S. developed a wire-guided, 21-inch Mark 45 torpedo with a nuclear warhead in the 1960s. Known as Astor, it was long range to insure safe separation between the submarine and its target at detonation. Few were deployed operationally since the U.S. elected to develop the Subroc (UUM-44A) between March 1954 and early 1965. Subroc is shown in Figure 15-7 and it had a standoff range of 4–35 miles. About 400 of these weapons with W-55 nuclear warheads were deployed on 63 U.S. nuclear attack submarines by 1978 (4–6 missiles per SSN). The U.S. had an arrangement with Britain after July 1950 to provide nuclear weapons on a continual basis. However, there is no evidence that Mark 45 or Subroc weapons were included in the arrangement; hence, it is unlikely that British submarines carried nuclear torpedoes or missiles.

15.2.2 Surface Ships.

All of the primary Royal Navy combat surface ships carried anti-submarine torpedoes. For example, H.M.S. Sheffield, Broadsword, Glasgow, Arrow, and Alacrity were armed with two
CHARACTERISTICS
- Length: 245 in
- Diameter: 21 in
- Launch Weight: 4,086 lb
- Depth Charge (Nuclear):
  - Hydrostatic fuse
  - Warhead (W-55)
  - Yield: 1 to 5 kt
  - Weight: Less than 675 lb

PERFORMANCE
- Speed: Mach 1
- Range: 4 miles minimum to 35 miles maximum
- Guidance: Inertial

SOURCES
- References 19, 21, and 22

Figure 15-7. U.S. Subroc nuclear depth charge (UUM-44A).
sets of triplet launch tubes (6 tubes total) mounted on their aft- or side-decks. Figure 15-8 shows these tubes which were designed by the U.S. and licensed for production in Britain. They could launch Mark 44 or Mark 46 short-range torpedoes. Characteristics of these torpedoes are presented in Figure 15-9.

![Image of British destroyer with triple launcher on aft-deck for Mark 44 or Mark 46 torpedoes.]

Both the Mark 44 and Mark 46 torpedoes had small high explosive warheads and used electric propulsion. However, the U.S. developed a version of the Mark 46 with the W-55 tactical nuclear warhead. This configuration was used in the Asroc missile as a standoff depth charge. Although there is no evidence that the Falkland Island ships had Asroc launchers or missiles, one source noted some ships had Anti-Submarine Missiles (ASMs). Nuclear Mark 46s could have been launched from their torpedo tubes and may have been the weapons referred to in British reports as depth charges.
FEATURES
- Solid fuel rocket -- flight range 6.2 miles
- Parachute water entry and acoustic target homing
- Conventional or nuclear warhead options with Mark 46 torpedo (W-55 with yield of 1–5 kt)

SOURCES
- References 20 and 21

ASROC CHARACTERISTICS
- Carries Mark 44 or Mark 46 torpedo
- Length: 202 in
- Fin Span: 24 in
- Gross Weight: 1010 lb

TORPEDO CHARACTERISTICS

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Mark 44</th>
<th>Mark 46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (in)</td>
<td>100</td>
<td>101</td>
</tr>
<tr>
<td>Diameter (in)</td>
<td>12.75</td>
<td>12.75</td>
</tr>
<tr>
<td>Weight (lb)</td>
<td>422</td>
<td>568</td>
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<tr>
<td>Warhead Wt. (lb)</td>
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<td>90</td>
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<tr>
<td>Range (yards)</td>
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<td>12,000</td>
</tr>
<tr>
<td>Speed (knots)</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

Figure 15-9. ASROC (RUR-5A) standoff torpedo weapon system.
The 1960s vintage British warships generally carried Limbo mortars on their fore-decks to fire conventional mines and depth charges. The mortars could launch Mark 11 mines weighing about 440 lb (explosive charge of 200 lb) to a range of 3,000 ft. A battery of three mortars could lay down a pattern of shallow water charges forward of the ship at speeds up to 18 knots. Typically, frigates carried about three dozen conventional depth charges and destroyers often carried up to 70 weapons.

The 1970s vintage destroyers and frigates relied on their torpedoes for shallow water targets and they carried Stonefish Mines of the type shown in Figure 15-10 for deep water targets (i.e., down to 650 ft). It had a sensor package attached to the warhead that could detect acoustic, magnetic, and pressure signatures of submarines. The large explosive charge could also be detonated by an acoustic command system.

In order to destroy very deep targets, the British developed nuclear depth charges with WE-177 warheads. The WE-177 program was initiated in the 1970s to support a family of anti-submarine weapons. A total of 175 WE-177/A and B warheads were produced for the Royal Air Force for use in mining and anti-submarine operations. An additional 25 WE-177/C warheads were produced specifically for the Royal Navy to extend the Stonefish capabilities. This warhead, with a yield of 5–10 kt, was in limited supply during the Falkland Islands War; consequently, only a small number of depth charge/mines were available (e.g., perhaps one or two per ship or submarine). The RAF transferred 100 of the WE-177/A and B bombs to the Navy before June 1992 and the weapon was retired in 1993. The nuclear version of the Stonefish mine was the most probable depth charge referred to in the British reports.

15.3 LESSONS LEARNED.

British Field Marshall Lord Carver observed that, "it is the wars which have actually been fought that have determined the course of events and have shaped many of the contours of the world in which we live." He added, "quick reaction with sufficient forces can save a load of trouble later." Most of the British media noted that in the Falklands conflict, leaders had prepared for
CHARACTERISTICS
- Length: 98 in
- Diameter: 21 in
- All-up Weight: 2,183 lb
- Warhead Weight: Up to 1,323 lb

PROBABLE NUCLEAR OPTION
- Based on WE-177/C warhead
- Yield: 5–10 kt

PERFORMANCE
- Operating Depths:
  - 16–300 ft versus surface targets
  - Up to 650 ft versus submarines
- Microprocessor Options:
  - Preset depths and fusing parameters
  - Command by acoustic signal

Figure 15-10. British Stonefish mines and depth charges.
and acted purposefully. For example, the Post-Falklands debriefing given to the U.S. Congress and Pentagon in early August 1982 stated:27

"The main lesson learned from the war was that if military force is given strong political support, as from Prime Minister Margaret Thatcher and the Cabinet, it can do the job even 8,000 miles away."

15.3.1 Primary Observations.

The British debriefing continued to note four primary lessons:

1. Because of the war, there had been an upsurge in Britain's fighting spirit.
2. British forces had been uniquely blooded in a new era of naval warfare involving guided missiles.
3. The Falklands crisis was unexpected in politico-military affairs and was not covered by government planning. There will be a continuing need for forces capable of responding to a spectrum of wars.
4. Whitehall's military decision makers were taking a serious look at the span of military commitments from NATO to small peacekeeping missions around the world. New weapon systems, force deployments, and political positions would be recommended by Christmas 1982.

Specific recommendations that were made in mid-December are described briefly in the following subsection.28 However, the nuclear weapon problem identified in early November was addressed in a closed (SECRET) session of the House of Commons, attended by Prime Minister Thatcher and Defense Minister John Nott on 5 November. It was reported that, "until the weapons were armed, they were safe, and that arming and fusing mechanisms were stored in separate parts of the ships."18 It is likely that additional planning and preparation procedures were outlined to reduce the possibility that such weapons could be carried on less than the most critical operations.

Finally, Admiral Robert Falls (Canadian) noted in mid-May that withdrawal of the British ships from NATO command for operations off the Falklands had not affected military deterrence in Europe.29 This observation was based on NATO's procedures covering a reduction in force by any ally. The U.S., France, Canada, and others rescheduled their operations to cover the temporary loss of British ships. The Thatcher government revised its budget planning and recommended building new ships to replace those lost in the Falklands.
15.3.2 Specific Recommendations.

Some of the important recommendations made by the Thatcher government in December 1982 are outlined below. Specifically, it was found necessary to revitalize conventional naval warfighting capabilities.

1. Revised plans for warships
   - The sale of the aircraft carrier Invincible to Australia was canceled.
   - The retirement of the amphibious assault ships H.M.S. Fearless and Intrepid, that served the command role at the Falklands, was canceled.
   - Two Type 42 destroyers (Sheffield class), two Type 21 frigates (Amazon/Alacrity class) and a new Type 23 frigate would be built (three ships per year) to replace those lost at the Falklands.

2. The development of the Sea Eagle air- and surface-launched anti-ship sea-skimming missile was accelerated. It would replace Exocet with British forces.\(^{27}\)

3. The lack of tactical reconnaissance was identified as a major shortcoming of British forces. The British were dependent on U.S. satellite information and Nimrod aircraft had to fly 4,000 miles from Ascension Island to cover operations.\(^{30}\)

4. The need for airborne tankers was critical. The RAF began modifying 10 additional aircraft to meet near-term requirements and a long-term plan was initiated.\(^{30}\)
   - In-flight refueling capability was added to surveillance, early warning, and tanker aircraft.
   - New tanker aircraft designs were initiated by Avro Vulcan and Handley Page Victor.

5. The construction codes for warships were revised to reduce fire hazards upon receiving a hit. Several ships sunk at the Falklands were destroyed by fire rather than direct weapon effects.\(^{31}\)

6. Emphasis would be placed on acquiring all-weather weapon systems. In the Falklands, weather conditions ranged from terrible to abominable.

The above decision to revitalize conventional naval forces had a significant impact on Britain’s strategic nuclear force modernization program (i.e., Trident II). The Trident system, like Polaris, was viewed by the Royal Navy as a political lever or deterrent force, not a warfighting weapon system. Therefore, when the decision was made in the 1981 Defense Review to take Trident I funding entirely out of the Navy’s budget, Secretary of Defense John Nott planned draconian cuts...
in naval forces to be initiated in 1982. The revitalization plan outlined above caused the Trident II budgeting requirement to be deferred until 1992.

15.3.3 Moral Acceptability of Nuclear Weapons.

During the review of nuclear weapons that were taken to the Falkland Islands (4 November 1982), Dr. Graham Leonard, Bishop of the Church of England, put forward a strong defense for the moral acceptability of nuclear weapons. He expressed a belief in maintaining a “balance of power” and charged it was the government’s duty to ensure the survival of the state and the moral basis for a free society. While recognizing the utterly appalling prospects of nuclear warfare, he stated:

"Their possession and use can be morally acceptable, as a way of exercising our moral responsibility in a threatening world."

His position in support of the government actions with respect to nuclear weapons initiated a debate which continued for several weeks in the British media.
Saddam Hussein's decision to invade Kuwait in 1990 represented the convergence of several factors. Following the Iran-Iraq War, the Shatt Al-Arab waterway was littered with debris and unusable for shipping oil, the primary source of revenue for rebuilding Iraq. Development was started on a second waterway (Khawr Abdulla) to the Persian Gulf southwest of Basra. The new construction was frustrated by a long-standing dispute with Kuwait over control of the Bubiyan and Faylakah Islands. The dispute extended inland along Kuwait's northern border to include the Rumaila oil fields which Hussein considered to be Iraqi territory.\footnote{Figure 16-1 shows these disputed areas.}

Figure 16-1. Areas of Iraq and Kuwait under dispute.

Iraq's economic problems were aggravated in mid-1990 when Kuwait and the United Arab Emirates increased their oil production, forcing down international oil prices. As a member of the Organization of Petroleum Exporting Countries (OPEC), Iraq protested and ultimately stopped
paying its war debts when oil production was not reduced. Meanwhile, the United States, Great Britain, and six Arab nations of the Gulf Cooperation Council complained at the United Nations about Iraq’s nuclear weapon and missile developments. Hussein labeled this a conspiracy and provoked a sense of humiliation among Arabs who thought themselves exploited by the Western nations. He threatened to use “weapons of mass destruction (WMD)” if Iraq were attacked. Hussein decided that he could solve these problems within a few days by capturing Kuwait.

The invasion of Kuwait on the morning of 2 August moved quickly into Kuwait City and the disputed islands. Within four days, the entire country had been overrun and the Iraqi Army was poised to continue down the coast into Saudi Arabia and the United Arab Emirates. After the war it was learned that Saddam Hussein fully intended to invade the Persian Gulf nations.* Quick actions by Saudi Arabia, the U.S., and a Coalition including Britain, France, Qatar, Egypt, Kuwaiti forces in exile, and the United Arab Emirates prevented the Iraqi invasion from progressing. The Coalition established an objective to liberate Kuwait under Operation Desert Storm which was initiated on 17 January 1991. The conflict extended 44 days through 28 February. It had additional goals to destroy Iraq’s capability to develop and deploy WMD and defeat the Iraqi ground forces that threatened the Persian Gulf nations.

This paper addresses two nuclear weapon related issues that received high-level political and military attention during the conflict: 1) destruction of Iraq’s emerging nuclear, chemical, and biological weapon capabilities, and 2) the U.S./U.K. threat to use nuclear weapons against Iraq if it employed WMD against Israel. These issues are treated as separate subjects in Subsection 16.1 and 16.2 respectively. Emphasis is placed on nuclear considerations; however, the Iraqi chemical and biological weapon threats are identified since they also motivated key policies and actions.

16.1 DESTRUCTION OF THE IRAQI NUCLEAR THREAT.

The Coalition efforts to destroy Iraq’s nuclear weapon development capabilities are important because they represent an attempt to control proliferation of nuclear forces by military actions. They show that it is difficult to fully suppress the nuclear weapon ambitions of a determined and innovative third world country.

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* Hussein sent a message in early August to President Hashemi Rafsanjani of Iran, “describing his intentions of living in peace along our 840 km seacoast.”

* According to Saad al-Bazzaz (former editor of the Iraqi newspaper Al Joumhouriya) Saddam decided to invade Saudi Arabia after King Fahd took sides with the Coalition against Iraq.
16.1.1 The Osirak Reactor Raid (7 June 1981).

The Iraqi nuclear weapon program began in 1968 on the Tigris River at Al Tuwaitha, 12 miles southeast of Baghdad. Originally, the Soviet Union supplied a 5 MWT research reactor to Iraq and during the summer of 1980, a 70 MWT French reactor (known as Osirak) was purchased to begin operation at the site as part of Project Tammuz. An Italian built “hot cell” to separate plutonium from the reactor fuel was installed at the site in February 1980.

Alarmed by the rapid development of these nuclear capabilities, Israel made a covert commando raid to destroy elements of the first French reactor at the port of La Seyne-sur-Mer on 6 April 1979. Seven skilled saboteurs used three plastic explosive charges to demolish the equipment and set back the Iraqi program by more than a year. The French hurried to deliver a second reactor and on 7 June 1981, Israel made a daring evening (6:40pm) airborne attack to destroy the Osirak reactor at Al Tuwaitha before it became operational.4,5

The nearly complete Osirak reactor is shown in Figure 16-2. It was surrounded by a 30 ft high soil revetment wall, three SAM-6 missile sites and three antiaircraft artillery (AAA) sites since the facility had already been bombed unsuccessfully by Iran on 30 September 1980. The Israeli raid on 7 June 1981 (known as Operation Babalon) was performed by eight F-16 aircraft, each carrying two Mark 84 slick 2,000 lb bombs. The slick bombs were carefully selected and spin-balanced to provide the highest possible accuracy during low-altitude strikes since Israel had no precision guided weapons at the time. All 16 bombs were aimed at the reactor dome (15 hit and one landed on the soil over an underground “neutron guide hall”). The reactor was badly damaged but the underground neutron guide hall (which according to Israeli intelligence existed to support weapon development) was undamaged.4 As noted later, this underground facility also survived undamaged after a severe U.S. bombing during Desert Storm.

The Israeli attack also failed to damage 26 lb of 93 percent enriched uranium (the first of six charges for the reactor) that were stored in a bunker at the Al Tuwaitha facility. The French estimated that $25–30 million damage had been done and it would take 18 months to repair. The optimistic Israeli estimate of damage suggested 3–5 years to rebuild the facility. However, Iraq recovered the 26 lb (11.8 kg) of uranium and gas centrifuge equipment that had been delivered to the site. When the war with Iran ended in 1988, Iraq rebuilt and extended the Al Tuwaitha facility. French engineers who worked on the reactor reported that the facility was secretly modified to produce weapon-grade plutonium outside the scope of international inspection.6
Osirak reactor diagram. Note underground Neutron Guide Hall.

CHARACTERISTICS

- 10 ft deep, covered by several feet of soil and concrete
- 60 ft x 30 ft x 30 ft chamber with 20-ton crane
- Location: 33°12'N, 44°31'E

Figure 16-2. Osirak reactor attacked by Israel, 7 June 1981.
16.1.2 The Iraqi Nuclear Weapon Program.

Iraqi efforts to develop nuclear weapons and evade the U.N. Nuclear Nonproliferation Treaty took on breathtaking proportions after 1988. Virtually every aspect of bomb design was addressed by multiple approaches and the work was dispersed to a number of super-secret facilities throughout the country. International Atomic Energy Agency (IAEA) officials were given false or misleading data, critical components and equipment were purchased from a dozen unsuspecting countries, while backup component designs were tested internally. Following the Desert Storm War, U.N. inspectors found documents in Baghdad that outlined the astonishing scope of the program.\(^7\) Figure 16-3 shows 18 locations at which development activities were in progress...roughly half the sites were not known to U.S. and Coalition intelligence agencies before or during the war.\(^8\)

Figure 16-3. Locations of Iraqi nuclear facilities.
The Implosion Bomb.

Based on the Iraqi reports, emphasis was focused on an implosion bomb design of the type illustrated in Figure 16-4. It had a spherical core of highly enriched uranium surrounded by a "reflector shell" of natural uranium (or hard steel or tungsten) to keep the core from blowing apart prematurely. Conventional high explosives were wrapped around the uranium to form a pressure wave directed toward the center of the device. A set of 32 detonators were arrayed around the surface to ignite the explosive at many points. Finally, an initiator, made of polonium-210 and beryllium (separated by a layer of gold) was embedded at the center to generate neutrons. In theory, a uniform explosion in the outer layer would send shock waves inward to squeeze the uranium core to supercritical pressure. The shock wave would destroy the gold barrier in the initiator to generate an intense burst of neutrons. The neutrons would help trigger and enhance the chain reaction. This implosion device was expected to yield energy equivalent to at least 20 kt of TNT.\textsuperscript{7}

![Diagram of Implosion Bomb Design]

**CHARACTERISTICS**
- Diameter: 3 ft
- Weight: ~1,000 lb
  - Core: 15-18 Kg
  - HMX Explosive: 250 Kg
  - Uranium Reflectors: 100-200 Kg
  - 32 Detonators: 15-20 Kg
- Yield: 20 kt
- Sources: Ref. 6, 8

![Figure 16-4. Iraqi implosion bomb design.]

The original bomb design was large by today's standards: about 3 ft in diameter and weighing nearly a ton. However, a series of high explosive tests permitted the weight to be reduced to about 1,000 lb.\textsuperscript{7,9} The design was considered to be unstable by IAEA analysts because, "it crammed so much weapon-grade uranium into the core that it was on the verge of going off." The early design
was too large to be delivered by Scud-class missiles but the newer design could be delivered by larger Aabed (Worshipper) and Tamouz long-range missiles and by bombers (see Subsection 16.2.1).

The Radiological Bomb.

The concept of radioactive isotope bombs was first suggested by the U.S. during the Korean War as a means for creating a radioactive barrier between North Korea and China (see Nuclear Weapons for the Korean War, Subsection 3.1.5). In the late 1980s, Egypt initiated a program, known as Ivis-I, to build a radiological warhead for its Scud missiles. The concept involved use of radioactive Cobalt-60 in powdered form to be explosively dispensed from the missile at high altitude to pollute large areas with radiation. Poor missile accuracy and uncertainty in dispensing fallout patterns prevented the Egyptian design from even being field tested.4

Iraq began developing a radiological warhead before Desert Storm as a backup to its implosion bomb program.10 The concept involved packing radioactive zirconium oxide into conventional bomb and missile warheads. Irradiated zirconium oxide was available in large quantities since it was used for insulation in nuclear reactors.11 This program was located at the Al Tuwaitha facility.

Seven Technology Labors.

Iraq’s nuclear weapon development program was paced by seven technology issues. It is useful to review these issues to understand the program status when the conflict began.

1. Enriched Nuclear Materials: The Iraqi weapon design was estimated to require 15–18 kg of enriched uranium for its core. Iraq had 12.3 kg of 93 percent U-235 from the Osirak reactor and about 10 kg of 80 percent U-235 from the Soviet research reactor at Tuwaitha.12 The U.N. inspectors estimated that an additional 3 kg had been enriched by chemical and calutron processes.7 One report showed that Iraq had produced 6 milligrams of polonium-210 by irradiating bismuth in the Soviet research reactor. Therefore, there was sufficient material for nearly two bombs and their initiators.
Iraq had produced a small amount of plutonium and 254 kg of uranium metal. The ability to cast uranium metal into bomb parts in a vacuum furnace had been demonstrated at Al Aheer. Unknown before or during Desert Storm, Al Aheer was the heart of the nuclear weapons development program. Its facility layout is shown in Figure 16-5. During the late 1980s, Iraq purchased 422 tons of uranium ore from Brazil, Portugal, Niger, Germany, and Italy. Most of the ore was moved to Al Qaim in the western desert to be refined into uranium Yellow Cake. The Yellow Cake was stored at Tikrit until it could be enriched. Enrichment of the nuclear materials paced the ability to build more than a few bombs; therefore, two approaches were taken:
• Electromagnetic isotope separation based on U.S. World War II calutron technology was developed at Tarmiya. This site, unknown to U.S. intelligence, had the capacity for 90 large calutron magnets but only 17 were installed and 8 were operational when the war ended. The first calutrons were built by the Austrian firm, Voest-Alpine. They were 12 ft in diameter and weighed 60 tons. Several units found at the Falugia plant are shown in Figure 16-6.

• The German firm, H. & H. Metalform, sold Iraq three “flow-through” machines needed to build high-speed gas centrifuges. A second German company, Export Union, delivered 50 metric tons of maraging steel to permit production of over 2,000 centrifuges. The centrifuges were in early stages of development testing at Tuwaitha when the war started. Initial production was in process at Al Furat, south of Baghdad, a facility that escaped detection and bombing.

![Calutrons found at Al Falugia plant.](image)

Figure 16-6. Calutrons found at Al Falugia plant.

2. High Explosive Triggers: Beginning in 1988, Iraq contacted Maxwell Laboratories and E.G. & G. Corporation in the U.S. to obtain “weapon grade” krytron spark-gap capacitors for bomb triggers. When export permits from the U.S. were denied, 60 capacitors were purchased through CSI Technologies Corporation in San Marcos, CA. Forty of the capacitors were delivered to British undercover agents at London’s Heathrow airport where they intercepted the Iraqi pick-up in a sting operation on 29 March 1990. Within a few days, Saddam Hussein appeared on television holding Iraqi-made triggers to prove they did not need U.S. technology. The Iraqi triggers were developed at Al Qaqaa State Establishment in Baghdad (see Figure 16-3).
3. Detonation Devices and High Explosives: The captured Iraqi reports revealed that electronic circuits and cabling to power the 32 detonators had been designed and tested.\textsuperscript{17} The explosive HMX had been selected and "flyer plates" of the material were found at Al Atheer. The Swedish-Swiss firm, Asea Brown Boveri, sold Iraq an isothermic press used for shaping the explosive charges. Five versions of the explosive component were produced and evaluated through a series of 20 tests by 31 May 1990.\textsuperscript{9} These tests were credited with reducing the bomb weight to about half a ton.

4. Reflector Design: The natural uranium ball which surrounds the inner core was not a serious technology problem.\textsuperscript{18} Iraq could alternately use high-grade steel or tungsten to contain the reaction. The only difficulty was to establish the proper thickness for available material properties. The necessary computer design tools to determine thickness were found at Al Atheer.

5. Initiator (or Neutron Starter): The neutron starter design was complete and materials had been laboratory tested. This technology was not considered to be a problem for the Iraqi bomb developers.\textsuperscript{18}

6. Fabrication and Testing: A few atomic devices could be built by hand; although it is a difficult job working with radioactive and explosive materials. A prototype device would normally be tested (above or underground) before weapon production would be initiated. Tooling to produce multiple bomb components was being prepared before the conflict started. In August 1995, Iraq turned over to IAEA officials, a number of high-quality steel parts that were made to produce weapon components in addition to the gas centrifuges.\textsuperscript{19}

7. Weapon System Design and Production: The SAAD-16 complex at Mosul was responsible for design and development of aircraft and missile warheads.\textsuperscript{12} Repackaging the nuclear device into an operational bomb or missile warhead is an engineering problem that would challenge most third world countries. It is likely that the first operational weapon would be a gravity bomb. Iraq had 8 Tu-16 Badger and 8 Tu-22 Blinder bombers plus 50 Su-20 Fritter and 30 Su-25 Frogfoot ground-attack fighter-bombers that could deliver the bombs.\textsuperscript{20} The half ton warhead would require a reentry vehicle and fusing system to achieve missile delivery. This would exceed the payload capacity of Scud missiles but could be carried on the larger Iraqi missiles.
**Development Status.**

U.S. intelligence agencies were deplorably behind in their analysis of the Iraqi nuclear threat before the war. In March 1990, the CIA and DIA held a position that it would be five years before Iraq could initiate production of nuclear weapons. In April 1990, the U.S. State Department reported “no near-term” nuclear weapon capability.\textsuperscript{20, 21} Israeli intelligence estimated in 1990 that weapon production might begin within 2–3 years. At the time of the Desert Storm conflict, U.S. and allied intelligence agencies estimated that a crude weapon could be constructed within six months by using uranium fuel from its reactors.\textsuperscript{12} Secretary of Defense Richard Cheney confirmed this approach was being taken and he stated, “it’s only a matter of time until Saddam Hussein acquires nuclear weapons and the capability to deliver them.”

From early August 1990 through mid-January 1991 (i.e., the Desert Shield preparation period), the Coalition intelligence agencies worked around the clock to locate important nuclear targets and estimate the status of development. It was found that satellite and aircraft reconnaissance capabilities were less effective in finding the facilities than interviews with Iraqi defectors and discussions with industries that had supplied equipment or performed construction projects for Iraq. Consider the case of Al Atheer. After the invasion of Kuwait, Iraq started to relocate vital equipment from the facility, electric power lines were hidden, and unused concrete floors were broken up to “sanitize” the site from overhead reconnaissance.\textsuperscript{12}

Open-source literature during early 1990 revealed that the reactors at Al Tuwaitha were operational, missile and reentry vehicle developments were in progress at the SAAD-16 complex in Mosul, Al Qaim was processing uranium Yellow Cake, and an underground processing plant was reported in the mountains near Irbil (detected by the British National Image Analysis Center, Cambridge, England). The British reporter, Farzad Bazoft, was captured in September at Al Iskandariyah within a few miles of Al Tuwaitha and the centrifuge manufacturing plant at Al Furat. He was executed by Iraq as a spy on 15 March 1990.\textsuperscript{22} There was strong evidence of nuclear weapon and long-range missile developments in the area more than a year before Desert Storm. However, when Kuwait was invaded, only about half of the important facilities had been located and identified as important targets.

On 8 August 1995, Saddam Hussein’s son-in-law (Lt. General Hussein Kamel al-Majid) and his wife defected to Jordan where they were given asylum. During debriefings with U.S. intelligence experts, he reported that in August 1990, Iraqi scientists initiated plans to remove uranium fuel
from the Tuwaitha reactors for the purpose of building one or two prototype bombs. The goal was to prepare the weapons for testing or use within three months (i.e., by December 1990). When Desert Storm started, they were, "grappling with other major technical problems and had not determined how to deliver the nuclear weapon."19, 23

In parallel with the priority effort to develop a nuclear bomb, Iraq also initiated a program in July 1990 to build and deploy 200 biological warheads for bombs, artillery, and Scud missiles.24 One hundred bombs with botulin toxin plus 25 missile warheads had been loaded with agents before the war began. On 18 April 1991, in accordance with the U.N. terms for the cease-fire, Iraq reported it had nearly 1,500 chemical bombs and 30 chemical warheads for Scud missiles.25 Hussein's threat to use WMD against Israel early in the war was probably based on confidence in the availability of these weapons plus accelerated development of nuclear weapons. However, Iraq also reported a large quantity of battlefield chemical weapons that survived the war. About 6,200 155mm mustard gas artillery projectiles and about 1,000 122mm sarin/cyclo-sarin nerve gas short-range rockets were stored in bunkers at Nasiriyah and Khamisiyah ammunition storage areas.48

16.1.3 Coalition Objectives and Target Planning.

The stated objective of the Desert Storm conflict (endorsed by the political leaders of all Coalition countries and the United Nations) was to restore Kuwait's sovereignty and liberate areas captured by Iraq in early August 1990. However, a second objective (proposed by President George Bush but not endorsed by the United Nations) was to destroy the threat that Iraq presented to other countries.25 These objectives were translated into five specific military goals as follows:

1. Cut off the Iraqi Army supplies and command/control capabilities to Kuwait in preparation for a later ground campaign to liberate the country.

2. Eliminate Iraqi long-range offensive capability that threatened Saudi Arabia and Israel. The later requirement was specified to keep Israel out of the conflict since several Coalition Arab countries harbored traditional animosities toward the Jewish nation.

3. Eliminate the current and future Iraqi threat of nuclear, chemical, and biological warfare.

4. Destroy Saddam Hussein's ability to control Iraq's military forces. This included attacks to destroy command centers and communications links.
5. Destabilize Saddam Hussein's political regime by attacks on party headquarters and centers near Tikrit (Hussein's hometown) where important associates were located.

On 12 January 1991, the U.S. Congress passed a resolution in support of President Bush's use of military force in the Persian Gulf. The vote was close; 52–47 in the Senate and 250–183 in the House of Representatives. One of the several reasons listed for employing the armed forces pursuant to United Nations Resolution 678 was explicitly stated:

"Whereas Iraq's conventional, chemical, biological, and nuclear weapons and ballistic missile programs and its demonstrated willingness to use weapons of mass destruction pose a grave threat to world peace."

Thus, the U.S. government expressly advocated the need to destroy the weapons of mass destruction.

The Coalition Central Command Headquarters was established by 17 August 1990 at the Ministry of Defense building in Riyadh, Saudi Arabia. It was under the leadership of Major General H. Norman Schwarzkopf. The war room, where the Coalition leaders coordinated the air and ground campaigns, was five stories below the ministry building. The combined Coalition air forces, under the command of Lieutenant General Charles Horner, were located at the Royal Saudi Air Force headquarters in Riyadh. General Horner set up a "strike cell" in a basement storage area of the headquarters, under the command of Brigadier General Buster C. Glosson, to plan targeting operations. This top secret area was known as the "Black Hole." General Glosson's small staff of officers and civilians deliberated on how to recapture Kuwait and eliminate the Iraqi weapons of mass destruction. Starting in early August, Colonel John Warden was responsible for putting together the air plan known as "Instant Thunder." A separate group of officers known as the "Jedi Knights" developed the ground campaign plan. Intelligence officers reviewed targets, weaponeering experts matched delivery systems and munitions to target characteristics, and senior officers picked and ranked the final target lists.

United Nations Resolution 678 was passed on 29 November 1990 and it set a deadline date (15 January 1991) for Iraq to withdraw from Kuwait. Diplomatic pressure on Iraq was increased to resolve the crisis during December and early January. Iraqi Foreign Minister Tariq Aziz met with U.S. Secretary of State James Baker in Geneva on 15 January to help close differences. However, Aziz took a defiant position and refused to deliver a letter from President Bush to Saddam Hussein, "because it was insufficiently respectful." This hard position served to strengthen the resolve of the anti-Iraq Coalition.
Because war appeared inevitable, Hussein took several last-minute steps during the first week in January.28

- Eager to defuse any potential threat to his power, he exiled many of Iraq’s most competent politicians and military officers.
- He sent his wife (Sajia Khayrallah), their five children, and a mistress (Samira Shahondar) to live in Mauritania for the duration of the conflict.29
- Leaders in the Kurdish areas of northern Iraq were imprisoned to prevent a possible coup.
- Aziz threatened to destroy Kuwait’s oil installations if the Coalition attacked.
- Hussein threatened to “burn half of Israel” by aircraft and missile attacks if the Coalition bombed Iraq.12 His objective was to draw Israel into the war to cause a split in Coalition solidarity.

Following the war, some military analysts observed that Hussein may have made the final threats to gain time...three or four months to complete development of a nuclear capability.

General Glosson’s Black Hole planning staff organized the air campaign into four phases:

- **Phase 1:** Strategic targets such as nuclear, chemical, and biological facilities, Scud missiles sites, and key military industries would be destroyed by cruise missiles, stealth fighters (F-117A) and conventional bombers.

- **Phase 2:** Air defense suppression would be accomplished by attacking early-warning radars, SAM sites, and enemy airfields.

- **Phase 3:** Military supply lines from Baghdad to Kuwait would be destroyed while tactical aircraft operations would savage ground forces and supply depots in Kuwait.

- **Phase 4:** Tactical aircraft would provide close support for the ground invasion of Kuwait.

Nearly 500 important fixed targets were identified (including thousands of specific aimpoints) for the first three phases of the air campaign. This paper is concerned with the strategic targets attacked during Phase 1. They were made top-priority for destruction during the first few days of combat to insure that they would not survive if Iraq suddenly agreed to withdraw from Kuwait.25

It was estimated that 99 percent of the targets were military; although, several political infrastructure and civilian communications targets were included to accomplish overall objectives.27
It is interesting to review the Leadership and Communications targets before discussing the targets associated with weapons of mass destruction. In 1976, U.S. military policy banned assassination attacks; consequently, President Bush issued an Executive Order that the person of Saddam Hussein would not be a target. A targeting list published on 14 January identified the facilities of Table 16-1. The Department of Defense was quick to explain that these targets, "were instruments of Iraq's military command authority."\textsuperscript{30} Saddam Hussein was considered to be the Commander-in-Chief of Iraqi forces.

Table 16-1. Initial leadership and communications targets.

<table>
<thead>
<tr>
<th>Target &amp; Function</th>
<th>Location</th>
<th>Attacked</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saddam Hussein's Palace</td>
<td>Baghdad</td>
<td>Yes</td>
<td>30</td>
</tr>
<tr>
<td>Abu Ghurayb President Grounds</td>
<td>Baghdad Airport</td>
<td>No</td>
<td>30</td>
</tr>
<tr>
<td>Taji Presidential Retreat</td>
<td>Al Taji</td>
<td>Yes</td>
<td>30</td>
</tr>
<tr>
<td>Baath Party Headquarters</td>
<td>Baghdad</td>
<td>Yes</td>
<td>27</td>
</tr>
<tr>
<td>Palace of Congresses</td>
<td>Baghdad</td>
<td>Yes</td>
<td>25</td>
</tr>
<tr>
<td>Ministry of Defense</td>
<td>Baghdad</td>
<td>Yes</td>
<td>26</td>
</tr>
<tr>
<td>Air Force Headquarters/C3</td>
<td>Baghdad</td>
<td>Yes</td>
<td>26</td>
</tr>
<tr>
<td>AT&amp;T International Comm.</td>
<td>Baghdad</td>
<td>Yes</td>
<td>26</td>
</tr>
<tr>
<td>Al Rashid Hotel (C3 site)</td>
<td>Baghdad</td>
<td>No</td>
<td>27</td>
</tr>
<tr>
<td>ITT/Radio &amp; TV Station</td>
<td>Baghdad</td>
<td>Yes</td>
<td>26</td>
</tr>
<tr>
<td>40 foot Statue of Hussein</td>
<td>Baghdad</td>
<td>No</td>
<td>26</td>
</tr>
<tr>
<td>Triumphal Swords Arch</td>
<td>Baghdad</td>
<td>No</td>
<td>26</td>
</tr>
</tbody>
</table>

Politically symbolic targets were stripped from the list in mid-December by the Pentagon General Counsel's Office since they represented cultural landmarks of no military significance.\textsuperscript{26} The Al Rashid Hotel, where a number of commercial news agencies (e.g., CNN, CBS, and NBC) had set up quarters, was also removed even though intelligence reports indicated its basement was being used as an Iraqi communications center.\textsuperscript{25} General Colin Powell, Chairman of the Joint Chiefs of Staff, stated that, "it is no secret that in targeting command bunkers, the allied forces would be gratified if Hussein himself were in one when it got hit...it is a classic decapitation strategy in all but the name."\textsuperscript{31}
to urgently develop and deploy the GBU-28 (4,700 lb munition capable of penetrating more than 30 ft of soil and concrete).\textsuperscript{25} It was used once successfully on the last day of the war to destroy an underground command center at Al Taji.

In addition to the leadership and four critical air defense early warning (EW) radar sites, the final strategic target list included two dozen WMD facilities summarized in Table 16-2. Altogether, the initial attack plan called for slightly over 30 strategic targets to be hit by a combination of Tomahawk cruise missiles and F-117A stealth fighters with GBU-27 laser-guided bombs in the first wave of attacks. Most of these important facilities were cross-targeted to insure their destruction, in accordance with Strategic Air Command policy (i.e., a cruise missile was launched against a specific target aimpoint and it was followed within minutes by an F-117A strike sortie against the same aimpoint).

The U.S. force of 42 F-117As operated from a base of underground hangarettes at Khamis Mushait near the southern tip of Saudi Arabia, nearly 1,000 miles from the Baghdad area. They needed refueling near the southern border of Iraq, both going and coming from their targets. This required suppression of three Iraqi border EW radars after dark on the night of 16 January, since air tankers would be detected by Iraqi air defenses. The radars were cross-targeted by two forces:

- U.S. Special Forces located near the Iraqi border at Hafar Al Batin air base made a daring nap-of-the-earth flight in eight Army AH-64 Apache helicopters across the desert below the radar horizons. Leaving their base at about 10:00pm the night of 16 January they successfully launched 15 Hellfire missiles against the radars at about 11:00pm as illustrated in Figure 16-7.\textsuperscript{27,32}
- F-117As, not scheduled for the attacks near Baghdad, hit the same radars with GBU-27 laser-guided bombs shortly after 11:00pm.\textsuperscript{32}

The radars were all out of action before midnight, permitting 10–15 KC-135A tanker aircraft to move north through a radar-free corridor to refuel F-117As on their way to Baghdad. This operation, in which two F-117As were refueled simultaneously by each tanker at about 27,000 ft altitude, is illustrated in Figure 16-8.\textsuperscript{33} The initial target strikes were scheduled to occur at 3:00am Riyadh time on 17 January to give the aircraft time to get out of Iraqi airspace in total darkness. The attack time was also selected to minimize collateral casualties, since most Iraqis would be home asleep.\textsuperscript{26}
Table 16-2. Probable Phase I weapons of mass destruction targets.

<table>
<thead>
<tr>
<th>Target Category/Location</th>
<th>Primary Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nuclear Research Facilities (6)</strong></td>
<td></td>
</tr>
<tr>
<td>Al Qaim</td>
<td>Uranium ore processing &amp; fertilizer</td>
</tr>
<tr>
<td>Tuwaitha</td>
<td>Nuclear materials processing</td>
</tr>
<tr>
<td>Irbil/Gara Mountains</td>
<td>Nuclear materials processing</td>
</tr>
<tr>
<td>Tadji</td>
<td>Factory 10 centrifuges</td>
</tr>
<tr>
<td>Mosul</td>
<td>SAAD-16 warhead R&amp;D design</td>
</tr>
<tr>
<td>Al Qaqaa</td>
<td>State establishment R&amp;D test sites</td>
</tr>
<tr>
<td><strong>Chemical Weapon Facilities (9)</strong></td>
<td></td>
</tr>
<tr>
<td>Salman Pak</td>
<td>Weapon labs and headquarters</td>
</tr>
<tr>
<td>Samarra (Al Muthanna)</td>
<td>Large mustard and phosphorous gas production &amp; storage complex</td>
</tr>
<tr>
<td>Muhammadiyat (Qubaysah)</td>
<td>Weapon storage depot</td>
</tr>
<tr>
<td>Al Fallujah (3 sites)</td>
<td>Warhead research &amp; test</td>
</tr>
<tr>
<td>Mosul</td>
<td>SAAD-16 warhead/bomb design</td>
</tr>
<tr>
<td>Baiji</td>
<td>Chemical production &amp; refinery</td>
</tr>
<tr>
<td>Akashat</td>
<td>Chemical production</td>
</tr>
<tr>
<td><strong>Biological Research Facilities (2)</strong></td>
<td></td>
</tr>
<tr>
<td>Salman Pak</td>
<td>Labs and headquarters</td>
</tr>
<tr>
<td>Badoush</td>
<td>Labs</td>
</tr>
<tr>
<td><strong>Missile Plants, Tests, and Deployments (7)</strong></td>
<td></td>
</tr>
<tr>
<td>Al Anbar</td>
<td>R&amp;D test launch site</td>
</tr>
<tr>
<td>Karballa</td>
<td>Missile ground test</td>
</tr>
<tr>
<td>Al Hillah</td>
<td>DO-1 rocket fuel plant</td>
</tr>
<tr>
<td>Mosul</td>
<td>SAAD-16 missile design</td>
</tr>
<tr>
<td>Al Fallujah</td>
<td>DO-2 Scud missile plant</td>
</tr>
<tr>
<td>H-2 airfield</td>
<td>Scud deployment &amp; C3</td>
</tr>
<tr>
<td>H-3 airfield</td>
<td>Scud deployment</td>
</tr>
</tbody>
</table>
Figure 16-7. Special Operations Forces suppression of Iraqi EW radars (January 16, 1991).

Figure 16-8. Air refueling of F-117As after suppression of EW radars.
The Tomahawk missiles were used against heavily defended targets and area targets (e.g., chemical, biological, and nuclear facilities) containing many aimpoints and requiring too many F-117A sorties. Fifty-two Tomahawks were launched in the first wave attack from surface ships (i.e., destroyers, cruisers, and the battleship Wisconsin) at about 1:30am on 17 January. The ships had moved north in the Persian Gulf after darkness to a position off the coast of Kuwait. Many Tomahawks had to be launched at their extreme range (500–550 miles) to reach Samarra and Baghdad targets. An additional 52 launchers were made before morning and a total of 196 Tomahawks were fired by the end of the second day.34 The ships, unable to reload at sea under combat conditions, retired to the south for more than a week.

Although a few Tomahawks were used against leadership targets during the first wave (some F-117A pilots saw them strike as they approached targets), 30–42 missiles were fired at each of the large chemical and biological weapon centers at Salman Pak and Samarra. This is interesting because a few days before the attack, while the final target list was being reviewed in the Pentagon by Secretary of Defense Cheney, a question was asked about the possibility of releasing toxic agents that would cause high collateral casualties. It was decided that the targets would be hit because they were remote from civilian population centers. The primary concern was release of biological agents. On 15 January, Sir David Craig (Chairman of the British Chiefs of Staff) called General Powell and asked, “do you still intend to bomb Iraq’s biological installations?” Powell responded that there was a risk in hitting these plants but bombing might destroy or burn up the agents.26 Both the British and U.S. were worried that if agents were released, Hussein might openly use them against Coalition forces. U.S. and allied troops were prepared for chemical warfare but there was little protection against biological agents. Powell feared that if biological warfare started and there was no way to retaliate in kind, the international media might advocate use of nuclear weapons.

Similar logic was applied to the strikes against the nuclear facilities at Al Tuwaitha. Fortunately, the heavy bombing strikes of 17–18 January did not cause a large-scale release of radioactive isotopes as some planners feared. There was no Chernobyl-like disaster; perhaps because Iraq had removed the enriched uranium fuel to use in making bombs.

For completeness, 20 B-52 bombers from Diego Garcia in the Indian Ocean (each with nearly 40,000 lb of Mark-82, 500 lb bombs) hit the undefended Scud assembly plant at Al Fallujah and a refinery south of Baghdad.35 The following night, a squadron of B-52s from Moron, Spain, hit the rocket fuel plant at Al Hillah.36 In a spectacular 30 hour mission, 10 B-52s (armed with three
dozen air-launched cruise missiles) took off from Barksdale Air Force Base, Louisiana, on 16 January to strike 20 electric power generation plants throughout Iraq. Information on this strike was not released until mid-summer 1991. Finally, F-117A and F-15E fighters hit the fixed and mobile Scud missile deployment areas near the H-2 and H-3 air bases in the western desert of Iraq.

16.1.4 Exogenous Planning Considerations.

There were two relevant planning activities that also took place in preparation for Desert Storm that deserve attention.

Chemical and Biological Warfare.

The Coalition knew that Iraq had large quantities of chemical agents and that chemical weapons had been used to kill thousands of Kurdish rebels in 1988 and during the battle of the marshlands during the Iran-Iraq War. The Joint Chiefs of Staff considered sending U.S. chemical weapons to Saudi Arabia during August 1990. However, it was decided not to deploy the weapons because the Iraqi chemical threat was manageable. The U.S. and allied troops had protective suits, decontamination equipment, and detection sensors. An Iraqi use of chemical weapons would be met by fast movement of forces and evacuation of civilians. It would be a public relations problem, but not a military disaster.

Six years after the war, the U.S. Department of Defense acknowledged that about 10,000 personnel had reported long-term illness including rashes, weakness, and muscle tremors which became known as “Gulf War Syndrome.” Medical studies showed that chemicals used to protect them from insects and nerve gas effects induced OPIDN (Organophosphate Induced Delayed Neural Toxicity).\(^{37}\) DoD acknowledged seven chemical weapon dispersions during the first week of the war. A few days after the cease-fire (4 March 1991 at 2:05pm), the U.S. Army 37th Engineer Battalion blew up 33 captured Iraqi munition bunkers at Kamisiyah arsenal. By accident, Bunker Number 73 contained unmarked weapons with sarin nerve gas which caused 27 of the 150 soldiers to become ill.\(^{97}\) Several days later (12 March), the engineers found a pit containing over 900 122mm rockets with sarin/cyclo-sarin warheads. The Iraqis had attempted to bury them to prevent their destruction. These were also blown up and contributed to a toxic cloud that drifted southward toward U.S. and allied troop positions in Kuwait. Thus, decisions made during the war and at its termination without thorough understanding of the medical implications caused long-term problems.
What to do about Iraq's biological weapons was a more troubling problem. Brigadier General John Jumper headed a team known as "bugs and gases" to study the biological defenses. The CIA believed that Iraq possessed botulinum toxin; therefore, General Jumper contracted with the University of Minnesota (Veterinary College) to produce 300 liters of antibody plasma to neutralize the lethal paralytic effects of the toxin. This was insufficient to protect more than a small fraction of the half-million Coalition troops who might be exposed. Production of antibodies and inoculations against botulinum continued through the conflict. Fortunately, the Iraqis did not use their inventory of 100 bombs or 25 Scud warheads loaded with botulin. There was virtually no protection against Anthrax or other toxins that Iraq had experimented with.

Nuclear Battlefield Warfare.

During a meeting with Secretary of Defense Cheney in early October 1990, General Powell was asked to investigate the requirements for use of nuclear weapons in support of the ground campaign. Lieutenant General Tom Kelly of the Joint Staff, Operations Office, gathered a handful of planners in a secure cell of the Pentagon to work out nuclear strike options. It was assumed that the weapons would be used in a defensive mode to seriously damage a dispersed Iraqi armored division in the desert. The analysis showed that it took a considerable number of small tactical nuclear bombs or artillery projectiles to defeat the force.

The results of the study were shown to Secretary Cheney on about 20 October. General Powell said, "Let's not even think about nukes. You know we're not going to let that genie loose." They agreed to stop the investigation and destroy the analysis. However, the study planted doubts in the Army staff about the practicality of nuclear weapons on the battlefield.

16.1.5 Attack Summary and Damage Results.

Campaign Overview.

The Phase 1 strategic target strike campaign initiated on the night of 16/17 January, was planned to take 7–10 days. It began with nearly 1,300 aircraft sorties each of the first three nights. Then the effort tailed off to a few hundred sorties per night due to bad weather over Baghdad and the need to perform "Bomb Damage Assessment" before committing restrikes or hitting new targets. Lt. General Charles A. Horner observed that all the nuclear facilities in Iraq that were known during the war were destroyed. In July 1991, he revised the estimate, "possibly 80 percent of all the
facilities were destroyed. By 1992, as U.N. inspection teams surveyed the target sites, it became apparent that a somewhat smaller fraction of the facilities were damaged.

The F-117As were the only aircraft to strike targets in the immediate Baghdad area. The air strikes involved 1,271 F-117A sorties directed against the leadership and WMD targets presented in Tables 16-1 and 16-2. Once the defenses were suppressed, some F-15E strike sorties were also flown against strategic targets. Steven L. Head (who took part in campaign planning), provided the distribution of sorties flown against high priority strategic targets during the 44 day war as summarized in Table 16-3.

Table 16-3. Sorties flown against high priority strategic targets.

<table>
<thead>
<tr>
<th>Target Category</th>
<th>Total Sorties</th>
<th>Percent of Total Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear, Biological, and Chemical</td>
<td>902</td>
<td>4.94</td>
</tr>
<tr>
<td>National Leadership</td>
<td>429</td>
<td>2.35</td>
</tr>
<tr>
<td>Communications, Command, Control</td>
<td>601</td>
<td>3.29</td>
</tr>
<tr>
<td>Fraction of 18,276 strategic sorties</td>
<td>1,932</td>
<td>10.58</td>
</tr>
</tbody>
</table>

The F-117As typically carried two GBU-27 (or GBU-24) bombs and a total of 288 Tomahawk missiles were launched during the war (almost all against strategic targets). Therefore, it can be concluded that the Nuclear, Biological, and Chemical (NBC) targets were hit with about 2,000 precision-guided weapons (i.e., roughly 1,000 tons of explosives).

The U.S. Air Force and Defense Special Weapons Agency have compiled a large data base of targets that were attacked, the weapons used, and strike photographs. However, there is little comprehensive analysis of physical and functional damage that resulted to specific targets similar to the World War II USAAF Strategic Bombing Survey. It was assumed that Iraq would grant access to most of the important targets under cease-fire conditions; however, that did not happen. Iraqi leaders systematically kept vital portions of their WMD programs hidden and they kept the critical materials needed to build nuclear weapons.

To show that the bombing campaign was not as successful as originally reported and to suggest that high levels of collateral casualties could have occurred, it is useful to review the damage at
selected sites. This review is not to detract from target planners, who performed exceptionally well
the tasks of identifying critical aimpoints, selecting available and appropriate weapons, and
assessing target damage. They were required to restrict attacks under unfavorable weather
conditions (e.g., winds) which might disperse toxic agents and when there was close proximity to
works of art, antiquities, or archeological sites. Likewise, combat pilots during the heat of battle
attempted to judge unfavorable bombing conditions and often returned to their bases without
launching their weapons. A high priority was placed on limiting collateral damage and casualties.

**Comments on Selected Nuclear Targets.**

1. **Al Tuwaitha:** The above ground elements at this facility including the reactors were virtually
leveled within the 30 ft high berm perimeter. However, in November 1991 U.N. inspectors found
the underground neutron guide hall (known as Al Hamath) with two huge cranes capable of lifting
many tons across its ceiling in an undamaged condition.\(^8\) In July 1991, inspectors took four soil
samples at the facility that showed traces of weapon-grade uranium contamination. The traces did
not have the same metallic composition as reported by the French who delivered the reactor fuel,
suggesting that a different source of material was present. Because the samples may have been
contaminated after they left Iraq, new tests were made in October 1991.\(^9\) They proved that nuclear
material processing was going on at the site and some fallout occurred from the bombing.

2. **Al Atheer:** This facility suffered only a few bomb hits during the war and was virtually
undamaged. It contained an IBM PS/2-80 computer, uranium metallurgy, induction furnaces, and
plasma coating machines.\(^9\) The U.N. inspectors ordered Iraq to destroy the nuclear-related
equipment and a dozen buildings at the site in March 1992. The remaining 100 buildings at the site
including offices, garages, and a cafeteria were spared.\(^42\)

3. **Al Qaim:** Figure 16-9 shows an overhead photograph of this target following a B-52 bombing
raid.\(^43\) Bomb craters are noted in the Tactical Reconnaissance System (TARPS) photograph of the
superphosphate plant. Although the extent of functional damage is unknown, bombs probably
caused little damage to piles of unprocessed uranium ore.

4. **Al Tadji:** The facilities that housed the centrifuges were destroyed or badly damaged. U.N.
inspectors noted that the centrifuges, which were about 4 ft high and 1 ft in diameter, were hard
equipment that was easily dismantled and hidden.\(^44\)
Figure 16-9. TARPS photograph of Al Qaim bombing.

5. Al Sharkat: This facility was under construction when it was attacked. It was planned to contain eight calutron isotope separation units similar to Al Tarmiya. Figure 16-10 shows the facility after its bombing.98

At the time of the cease-fire, Iraq declared there were 24 nuclear weapon development sites. The unknown sites, most of which were not attacked or damaged during the bombing campaign, are listed at the top of Table 16-4. Several sites were simply places where nuclear equipment such as the centrifuges were buried.45 Additional sites have been identified by subsequent inspection teams.
Table 16-4. Weapons of mass destruction targets identified during or after the conflict.

<table>
<thead>
<tr>
<th>Target Category/Location</th>
<th>Primary Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear Weapons (8)</td>
<td></td>
</tr>
<tr>
<td>• Tarmiya</td>
<td>Calutron isotope separation</td>
</tr>
<tr>
<td>• Al Sharkat</td>
<td>Calutron isotope separation</td>
</tr>
<tr>
<td>• Al Atheer</td>
<td>Weapon design laboratories</td>
</tr>
<tr>
<td>• Al Furat</td>
<td>Centrifuge production</td>
</tr>
<tr>
<td>• Mosul (Al Jesira)</td>
<td>Uranium processing</td>
</tr>
<tr>
<td>• Mosul Location 6</td>
<td>Buried nuclear equipment</td>
</tr>
<tr>
<td>• Suwaira</td>
<td>Buried nuclear equipment</td>
</tr>
<tr>
<td>• As Hagi</td>
<td>Buried nuclear equipment</td>
</tr>
<tr>
<td>Chemical Weapons (10)</td>
<td></td>
</tr>
<tr>
<td>• Al Fallujah</td>
<td>Proving ground storage site</td>
</tr>
<tr>
<td>• Munitions Storage Sites</td>
<td></td>
</tr>
<tr>
<td>• Al Walid Air Base</td>
<td>Binary chemical bombs</td>
</tr>
<tr>
<td>• Tammuz Air Base</td>
<td>200 mustard bombs</td>
</tr>
<tr>
<td>• Al Mutasim Air Base</td>
<td>160 mustard &amp; nerve gas containers</td>
</tr>
<tr>
<td>• Saddam Air Base</td>
<td>Mustard filled bombs</td>
</tr>
<tr>
<td>• Al Tuz Air Base</td>
<td>Mustard gas agents</td>
</tr>
<tr>
<td>• Dujayl</td>
<td>30 Scud warheads with nerve gas</td>
</tr>
<tr>
<td>• Khamisiyah</td>
<td>Artillery shells and rocket storage with mustard &amp; sarin nerve gas</td>
</tr>
<tr>
<td>• An Nasiriyah</td>
<td>Artillery shells (moved to Khamisiyah in February 1991)</td>
</tr>
<tr>
<td>• Basara Air Base</td>
<td>Bomb storage</td>
</tr>
<tr>
<td>Biological Weapons (1)</td>
<td></td>
</tr>
<tr>
<td>• Al Hakim</td>
<td>Labs and test center</td>
</tr>
</tbody>
</table>
In January 1992, the Sunday Times (London) reported that Iraq had smuggled 10 tons of uranium ore and nuclear scientists to Algeria. The materials were trucked to Jordan and moved from there by ship. The article indicated that the two countries had formed a "nuclear axis" to build the Islamic world's first atom bomb. The development was centered at Ain Oussera, 100 miles south of Algiers. Iraq's nuclear alliance with Algeria would allow Saddam Hussein to bypass the intense scrutiny of U.N. inspectors.46

Comments on Selected Chemical and Biological Facilities.

Anticipating effective Coalition bombing of vulnerable chemical production facilities, some critical equipment was removed from plants and buried at dispersed locations before mid-January. This was observed during post-war inspections of the following facilities.
6. Samarra (Muthanna State Establishment): This large complex, 80 km northwest of Baghdad, incorporated a number of above ground buildings that were destroyed by GBU-27/BLU-109B bombs and Tomahawk missiles. At least 32 Tomahawks were launched against Samarra aimpoints. A number of aimpoints were weapon storage bunkers dispersed over open desert as illustrated in Figure 16-11. After the war, the Iraqi military reported a few casualties caused when they entered or cleaned up the debris around damaged bunkers. An analysis based on 2,500 destroyed chemical rockets, suggested that toxic effects may have drifted as far as Baghdad. David A. Kay (who supported the post-war inspection) reported that many underground facilities survived but some were flooded with toxic liquids and unburned Tomahawk missile fuel.

![Image](image.png)

Figure 16-11. Typical dispersed weapon storage bunkers hit by F-117A/GBU-27 weapons.

7. Salman Pak: This facility, which served as headquarters for both chemical and biological weapons research, was extensively damaged by laser-guided bombs and Tomahawk missiles. Either the bombing or Iraqis destroyed many of the records at the site. The U.N. inspection team was supplied with samples of six different biological agents prepared there. CNN and foreign
news agencies reported people were treated for Anthrax and Botulism downwind of this facility after the attacks.  

8. Muhammadiyat: Iraq declared that 200 mustard and 12 sarin filled bombs, plus a number of 122mm rockets, were in this facility when it was hit by a laser-guided bomb on 19 January. The building and its contents were destroyed as shown in Figure 16-12. A post-war analysis suggests that a toxic cloud drifted about 100 miles south over uninhabited desert.

![Figure 16-12. Muhammadiyat chemical weapon storehouse.](image)

9. An Nasiriyah: The munitions storage bunkers at An Nasiriyah were heavily bombed on 17 January but the chemical weapons survived. However, Iraq moved the weapons to Khamisiyah by 15 February where they were captured and destroyed by ground forces. A very large fraction of the chemical weapons survived the bombings.
Comments on Missile Facilities.

Although Iraq modified and rebuilt a number of short- and long-range missiles, it did not develop an indigenous production capability. This point deserves further discussion. During the late 1980s, the USSR sold Iraq 350 Scud-B (R-17) liquid fueled missiles. Iraq modified some of them to generate the Al Hussein and Al Abbas configurations described in Subsection 16.2.1. The Russians also sold Iraq 9–12 Soviet MAZ-543 transporter-erector-launchers (TELs). With the help of Swedish Saab-Scania tractors, Iraq designed and built 100–225 Al Waleed missile-erector-launchers (MELs).50 This weapon system is shown in the photograph of Figure 16-13.

![Image of Al Waleed MEL with Al Hussein missile (March 1991).](image)

In late 1990, Iraq purchased 24 treaty-banned SS-12 missiles from Russia. The missiles had been turned over to East Germany in 1984 or 1985 to avoid INF treaty constraints. The German government in Bonn found East German documentation in 1988 that the missiles had been sent to Iraq. They informed President Bush in mid-January 1991 that the missiles were delivered with “adapters” essential to affix nuclear warheads but the warheads were kept under Soviet custody.51 It appears Iraq was trying to obtain a higher payload, long-range (800 km) missile, that could be fired from MAZ-543 TELs to deliver its own heavier nuclear warhead. In a backup move, Iraq also purchased Scuds from North Korea in December 1990. Due to the economic embargo on
Iraq, it had to pay for these weapons with oil. Therefore, the Korean missiles were not delivered promptly. During the conflict (February 1991), Iraqi Deputy Foreign Minister Saddam Hamad made an urgent trip to Pongyang to expedite delivery...the missiles were never delivered.

Although Iraq had a fuel production plant, missile design, and test facilities (as indicated in Table 16-2), the only plant capable of modifying or producing missile hardware was in Al Fallujah. This site was heavily damaged by bombing. After the war, U.N. inspectors required that its surviving equipment be destroyed including welders, lathes, hydraulic presses, computers, and the remaining structures.\textsuperscript{52} Iraq strongly resisted this order, declaring that it would not accept future monitoring of arms-building or purchasing.\textsuperscript{53} But following U.N. pressure, demolition of equipment started on 19 April 1992.

This damage did not stop the Iraqi quest for intermediate-range missiles. Convinced that Iraq was violating U.N. treaty constraints on building missiles, the U.S. launched 32 Tomahawk cruise missiles at the Zaa'farana advanced engineering facility on 18 January 1993.\textsuperscript{54} However, the quest continued. Based on a tip from U.S. intelligence, Jordan intercepted a shipment of missile guidance systems to Iraq on 7 December 1995.\textsuperscript{55}

Coalition intelligence estimates of Iraqi Scud capabilities before the war varied from a low of 200 operational missiles deployed at 30 fixed launch sites and on 70 mobile launchers to a high of 800 missiles at the fixed sites and over 250 mobile launchers.\textsuperscript{50} This factor of four uncertainty in estimates reveals how poor the intelligence information was concerning Iraq. Because the Scuds were hard to find and difficult to destroy, there was great uncertainty in the number that survived the war. In April 1991, Iraq declared to the U.N. that 53 missiles (all but one converted to Al Hussein and 30 with chemical warheads), six MAZ-543 TELs, and four MELs remained. All these missiles (with ranges longer than 150 km) were destroyed in accordance with the cease-fire conditions.\textsuperscript{50}

Several attempts were made after the war to account for all the missiles since reports of additional surviving weapons persisted. For example, in late 1991, it was suggested that 10 missiles and 12–20 TELs or MELs were still in Iraq. By another account, "as many as 50 Scud-B, Al Hussein, or Al Abbas missiles remained hidden in February 1992."\textsuperscript{56} A pessimistic accounting in March 1993 suggests that 100–200 Scuds and 12–20 TELs may have survived.\textsuperscript{50} These estimates do not include any SS-12s or long-range (2,000 km) three-stage Al Abid (Worshipper) or Tammuz.
developmental missiles tested in December 1989.\textsuperscript{57} In conclusion, the Coalition had difficulty in destroying the dispersed missile production facilities and even greater difficulty in accounting for the surviving missile inventory after the war. It is probable that Iraq still possesses the ability to launch a small force of Scud or longer-range missiles.

16.2 \hspace*{1cm} THE GREAT SCUD MISSILE GAMBIT.

The Scud missile threat became apparent to Western nations in March 1990 when fixed missile launch sites were built in the western desert of Iraq at the H-2 and H-3 airfields. Six missile batteries were constructed in concrete revetments near each airfield along the road that serviced the oil pipeline from Kirkuk to the Jordanian border. Figure 16-14 shows the layout of the H-2 site where a command and control headquarters and missile support facilities were built.\textsuperscript{58} Reload missiles were stored in concrete bunkers and in aircraft hangarettes at the airfield.\textsuperscript{59} During the summer of 1990, up to 30 fixed launchers were built and mobile MELs were deployed to operate in the desert along the sparse road network.

16.2.1 Characteristics of the Threat.

Figure 16-15 illustrates the size and performance of the Scud-B (Soviet design), Al Hussein, and Al Abbas (Iraqi design) missiles. Iraqi motivation for modifying the Scud-B is easily understood when one studies the coverage map in the upper right corner of the figure. The Soviet Scud-B had insufficient range to reach either Israeli or Saudi Arabian targets from deployments near the H-2/H-3 airfields or Basra, respectively. By extending the length of the Scud-B to add fuel and reducing its payload to about 350 kg, the Al Hussein design was developed with a range of nearly 650 km.\textsuperscript{60} This design, first flown on 4 August 1987, permitted coverage of all Israeli targets. It could carry either a small high explosive or chemical warhead but it had insufficient payload to deliver Iraq's nuclear warhead. The Al Abbas design with a payload of roughly 750 kg and a range of nearly 900 km permitted coverage of all Israeli targets, Riyadh (Saudi Arabia), and the Arabian coast south to the United Arab Emirates. Furthermore, it could carry Iraq's nuclear warhead design. The first Al Abbas was tested on 25 April 1988.\textsuperscript{60}

Consequently, Iraq was developing the missile systems necessary to deliver its WMD more than two years before the warheads were available. The deployment bases were under construction
**REPRESENTATIVE DEPLOYMENT**

- ▲ 3 Fixed Missile Batteries (2 Launchers Each)
- ■ Missile Storage & Maintenance
  - Support for 1 Mobile BN (4 MELs, 4 LCCs, & 2 C3)
  - Storage for 20 Reload Missiles (12 Rixed and 8 Mobile)
- □ Missile Hdq., C³, and Barracks

**MOBILE MISSILE OPERATIONS**

- ▶ Deploy On Alert to Secondary Airfield (AR Rutbah South) or Highway Prepared Sites
  - Revetted and Camouflaged
  - Stay 1 to 3 Days
- ▶ Return to H-2 Base for Reloads, Maintenance, and Support

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Figure 16-14. Representative Scud deployment at H-2 airfield.
Figure 16-15. Scud B and Iraqi derivative missiles.

### CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>SCUD B</th>
<th>AL HUSSEIN</th>
<th>AL ABBAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (m)</td>
<td>11.25</td>
<td>13.0</td>
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<td>Diameter (m)</td>
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<td>750</td>
</tr>
<tr>
<td>Range (Km)</td>
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<td>900</td>
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<tr>
<td>Accuracy (CEP. m)</td>
<td>450</td>
<td>1,000</td>
<td>1,500</td>
</tr>
</tbody>
</table>

**SOURCES:** References 60, 61, and 62
nearly a year before the invasion of Kuwait. Note, all three Scud missile derivatives were single stage, liquid fueled designs that flew from launch to impact as a unitary body. They had large radar cross-sections, easily detected by air defense radars. It was not uncommon for their tail fins and parts of empty booster tanks to burn off during reentry. This phenomena caused multiple radar sightings, false estimates of impact locations, and it confused the guidance of Patriot air defense missiles as discussed in Subsection 16.2.4.\textsuperscript{61}

A few days after the invasion of Kuwait, Iraq moved three dozen of the short-range Scud-B missiles into Kuwait, some within 50 km of the Saudi Arabian border. The longer range Al Hussein and Al Abbas missiles were deployed at the fixed sites and in the western desert facing Israel.\textsuperscript{63} This provided greater coverage of Saudi Arabian targets and raised fears among Coalition allies that chemical warheads would be used against them. After the war, it was learned that Iraq had loaded 1,500 gallons of anthrax toxin into 50 bombs and 10 missile warheads which were stored at the H-2/H-3 airfields. Another 100 bombs and 15 missile warheads were loaded with Ricin nerve agent and deployed at An Nasiriyah and Tallil Air Base 160 km west of Basra.\textsuperscript{64}

16.2.2 Initial Scud Attacks and Coalition Responses.

When U.S. Secretary of State James Baker emerged from his final meeting with Iraqi Foreign Minister Tariq Aziz in Geneva on 15 January 1991, the Israeli government was relieved to know that the gulf crisis would not be linked with Israel’s occupation of the West Bank and Gaza. But the relief lasted only an hour before reporters asked Aziz whether Iraq would respond to a U.S. attack by striking Israel. Aziz’s cold response was, “Yes, absolutely, yes.”\textsuperscript{65}

From a military viewpoint, Aziz’s threat seemed foolish since Israeli missiles and bombers could do far more damage to Baghdad than Iraq’s missiles could do to Tel Aviv. But Hussein’s aim was political, to change the perception of the struggle from “renegade Iraq against the world” into a conflict of “Iraq and Arab nations against Israel, the U.S., and their stooges in Riyadh and Cairo.” Hopefully, Arab support for the Coalition would breakup and delay or prevent the need for all-out war.

Israel’s Prime Minister Yitzhak Shamir immediately ordered air force planners to prepare for strikes into Iraq and he placed the military on a state-of-alert. Eager to keep Israel out of the impending conflict, President Bush put intense pressure on Shamir to prevent him from launching preemptive or retaliatory strikes. He offered Israel the prospect of increased economic and military
aid plus the sharing of intelligence information. He also promised that the U.S. would retaliate on behalf of Israel if it were attacked. Thus, the lines were drawn, awaiting the opening move.

After the U.S. attacked Baghdad on the night of 16/17 January, Iraq quickly responded with a series of missile launches. The first 12 launches were against Israel (18–20 January) and the second 21 were against Saudi Arabia (21–24 January). This was clearly a policy driven move but it may also have been activated by the U.S. strikes against the H-2/H-3 airfields and other missile deployments (i.e., Iraq faced a use them or lose them situation). The first few missile launches against Israel caused the following damage:

- **Early Friday Morning (18 January):** The first Iraqi missile landed in a dirt parking lot in Tel Aviv. It caused little damage and no casualties.

- **Saturday Morning (19 January):** The second weapon landed in Tel Aviv on the street near an apartment building shown in Figure 16-16. It blew out glass windows, caused structural damage, but miraculously did not kill anyone. Sixteen people with minor injuries were all released from hospitals by Saturday evening.

![Figure 16-16. Israeli apartment building hit by Al Hussein missile on 19 January 1991.](image)
• **Sunday Morning (20 January):** A salvo of three Al Hussein missiles hit Tel Aviv. The worst hit was a missile that exploded directly above a community center's underground bomb shelter. It blew a gaping hole in the ceiling, twisted metal rods, and collapsed concrete walls as shown in Figure 16-17. Fortunately, 61 people who had been directed to the shelter, chose to go into a nearby exercise room. The other two shots damaged empty buildings but caused no casualties. Sightseers ignored air raid warnings to visit the sites.

![Image of damaged bomb shelter](image)

**Figure 16-17.** Israeli bomb shelter damaged by hit on 20 January 1991.
Israeli General Shai reported that the public was "orderly and obedient" in observing the air raid warnings. However, during this period four false alarms were sounded based on radar detection of reentry debris. Millions of Israelis had been ordered to closet themselves in sealed rooms and don gas masks in case of chemical warhead attacks. The prolonged tension and repeated spurts of sudden terror resulted in several deaths due to improper use of gas masks and heart attacks. A post war study showed that the death rate in Tel Aviv jumped from a normal 93 to 147 (58 percent) during these early attacks due to heart attacks, cardiac problems, and stress.\textsuperscript{67}

\textbf{Israeli Responses.}

Despite Prime Minister Shamir's requests for restraint, his Cabinet demanded prompt action. Israel had never backed down from a confrontation with the Arab nations. Two responses were planned.\textsuperscript{68}

- \textbf{Airborne Assault:} A large air and land assault would be made into western Iraq to destroy the missile launch sites at H-2/H-3. This plan included use of helicopter gunships and commando teams to secure a corridor through Jordan or Saudi Arabia to support the operation. A temporary base (supplied by transports) would be set up in the Iraqi desert to refuel helicopters while they went on search and destroy raids against the Scuds. Fighter aircraft would provide air cover throughout the operation. The attack would begin about 27 January and last for several days.

- \textbf{Limited Air and Missile Strike:} This plan called for a salvo of Jericho medium-range missiles directed at the H-2/H-3 sites, followed by aircraft bombardments. This plan was not favored by the Israeli military who argued that it would not guarantee destruction of the Scud missiles. Note, the Jericho-I missile was conventional, chemical, or nuclear-capable as described in Section 12.2.3.

On 17 or 18 January, President Bush learned of the Israeli plans and hurriedly contacted Prime Minister Shamir to request that they be deferred. Meanwhile, Israel asked for American aircraft identification codes (friend or foe). The codes would permit Israeli aircraft to enter Iraqi airspace and recognize American aircraft. Shamir put a hold on the airborne assault but told Defense Minister Moshe Arens to continue planning for the missile and air strikes.\textsuperscript{69}

\textbf{U.S. Responses.}

The Israeli Arrow air defense missile system was under development but was not scheduled to become operational before the mid-1990s. Therefore, in March 1990, the U.S. sold two batteries
(12 launchers) of Patriot (SAM-D) missiles to Israel. These antiaircraft missiles became operational with Israeli troops during late December but they had very limited capability against Scud missiles. However, on 5 January 1991 (just before the war), U.S. Deputy Secretary of State Lawrence S. Engleberger flew to Tel Aviv to offer Israel two additional batteries of improved Patriot PAC-2 missiles to protect its major cities. The offer was made on condition that Israel promise, "not to act against Saddam Hussein in case he fired missiles." Israeli Air Force Commander Avihu Bin-Nun reported that at the time the condition was unacceptable.

To convince Shamir that Israel should not retaliate for the initial missile attacks, President Bush implemented two responses.

- Patriot PAC-2 Batteries: Two improved Patriot PAC-2 batteries (about 10 launchers) were flown to Israel on 19 January with U.S. operations troops. This was the first deployment of U.S. forces on Israeli soil. Simultaneously, the CIA and Air Force began maneuvering six or seven reconnaissance and Defense Support Program (DSP) satellites to provide better early warning for the Patriot batteries. The DSP satellites with satellite communication links provided up to 5 minutes warning of a Scud warhead impact.

- The Great Scud Hunt: While U.S. tactical aircraft had already destroyed all 30 fixed Al Hussein launchers and were searching for mobile launchers each day, General Schwarzkopf redirected 1,500 sorties from strategic targets to hunt Scuds.

Figure 16-18 provides a daily summary of the Scud-class missile launches against Israel and Saudi Arabia during the first two weeks of the war. The sporadic launch rate resulted from several causes:

- Most launches were done at night to avoid detection since it took 2–3 hours to move to a launch position, erect the missile, fuel it, align its guidance, and perform the countdown.

- Bad weather fronts (i.e., cloud cover and rains) were used to prepare missiles; thereby, reducing the probability of being detected by Coalition reconnaissance. This was proven by a Pennsylvania State University study after the first eight days of launches.

- There were conflicting reports of launches because of false alarm detections (i.e., some Scuds failed during powered flight and others broke up during reentry). Figure 16-19 shows a reentry warhead in Israel that failed to detonate.
Figure 16-18. Scud-class missiles launched.
The U.S. Patriot PAC-2 missiles deployed in Israel were credited with shooting down their first Scud on 24 January. The high rate of Scud-class missile launches reduced dramatically after 27 January, as noted in Figure 16-18, once the Great Scud Hunt forced the Iraqis to stay in hide conditions. However, it was at this turning point that the subject of nuclear retaliation became critical.

16.2.3 The U.S. and U.K. Nuclear Considerations.

Anticipating that the ground campaign would begin soon, the Gallup Poll questioned a large cross-section of the American public during the week of 27 January, "should the U.S. use nuclear weapons in the Persian Gulf?" The results showed that 45% favored use of nuclear weapons "if it might save the lives of U.S. troops." This contrasted sharply with results of a similar survey three weeks earlier when 72% were opposed to using nuclear weapons. This shift in position was driven in part by Hussein's threat to use nuclear as well as chemical weapons against Israel.

On 2 February, Secretary of Defense Richard Cheney responded to a television interview by saying, "I assume he knows that if he resorts to chemical weapons...that would be an escalation to
WMD and the possibility would then exist, certainly with respect to the Israelis, that they might retaliate with unconventional (nuclear) weapons as well.” When asked later whether the U.S. would use nuclear weapons, Cheney answered, “we don’t rule options in or out.” U.S. forces had identified at least 100 tactical division headquarters and troop concentrations. General Schwarzkoph commented, “if Saddam Hussein chooses to use WMD, then the rules of this campaign change.” Media speculation ranged from “a nuclear weapon could be detonated as a warning if Iraq used chemical weapons,” to “a nuclear strike could be made on Baghdad to wipe out Hussein and his aides.”

After the war, Prime Minister Shamir reported that if Hussein had used non-conventional weapons, “we would have had to respond.” Former President Jimmy Carter noted that Israel had 85–100 atomic bombs and that it would attack Baghdad. Unofficial comments by senior U.S. Strategic Air Command officers indicated that during the week of 27 January to 3 February, Hussein held a meeting with his top military advisors to discuss using chemical warhead Al Hussein missiles against Israel. The decision was made to withhold chemical weapons for fear that Israel or the U.S. would attack Baghdad with nuclear weapons.

On the day of Cheney’s interview (2 February), Vice President Dan Quayle flew to London for a morning meeting with British Defense Secretary Tom King. During the meeting he was asked about possible use of nuclear weapons. He answered, “nuclear weapons are always an option, an option you are not going to rule out...I am not going to sit here and rule out options that the President may or may not have to contemplate.” His wording was much stronger than British Prime Minister John Major’s comments. Major said he did not “envisage” the use of the ultimate military sanction. He added that, “if Hussein uses chemical weapons, one option is to overwhelm him with conventional bombing.”

To understand how urgent the threat had become, the British Army decided to vaccinate all frontline troops against the plague starting 26 January. The decision was based on Pentagon intelligence that Saddam Hussein had directed local commanders in Kuwait to decide when to use chemical and biological weapons. British combat troops completed a three-stage immunization process by 3 February. After the war, the Pentagon released reports showing that some chemical weapons were found on the Kuwaiti battlefield and chemical agents were detected in the air.
The political debate concerning use of nuclear weapons continued for another week. The Young Americans for Freedom political action group held a conference in Washington on 7 February. It took the position that the U.S. should use nuclear weapons against Iraqi troops in order to end the war quickly and avoid a bloody ground campaign. Moderate politicians argued the following points.75

- Use of atomic weapons would shatter the nuclear taboo that had existed since World War II...lowering the nuclear threshold in warfare.
- Countries that already had nuclear weapons (e.g., Israel) would place them on alert, increasing the risk of accidental or deliberate use.
- Use of nuclear weapons would send a message to all countries to develop or acquire nuclear weapons for their military.
- It would reverse the 1978 U.S. policy not to use nuclear weapons against any country that does not have them and has signed the Nuclear Non-Proliferation Treaty.
- Use of nuclear weapons against an Arab nation might shatter the alliance against Iraq.80

In early February, there were over 450 tactical nuclear weapons aboard American ships in the Persian Gulf region. The destroyers, cruisers, battleships and attack submarines that carried Sea Launched Cruise Missiles (SLCMs) normally included about 25 percent of their load-outs in nuclear Tomahawk Land-Attack Missiles (TLAM-Ns). These missiles and their performance characteristics are presented in Figure 16-20. With a range of 1,550 miles, they could cover targets throughout Iraq from launch locations in the Persian Gulf, Red Sea, or eastern Mediterranean Sea. A total of 284 Tomahawk cruise missiles were launched by the U.S. Navy during Desert Storm.93 Therefore, it is likely that about 70 TLAM-Ns were also on-board the ships. Similarly, at least two fleet aircraft carriers were operating in the Persian Gulf within aircraft strike range of targets in southern Iraq. Each carrier normally had a load-out of up to 200 tactical nuclear bombs as discussed in Sections 8.2 and 10.2.3. An additional 300 nuclear bombs and artillery shells were stored at U.S. bases in Turkey.75 Therefore, there were ample tactical nuclear weapons available for immediate delivery.

* The other 75 percent of their load-outs were usually a mix of conventional TLAM-C (unitary warhead), TLAM-D (combined effects bomblet warhead), and anti-ship missile warhead (TASM).
CHARACTERISTICS
- Length: 219 in
- Diameter: 21 in
- Wing Span: 104 in
- Launch Weight:
  - TLAM-N: 2,650 lb
  - TLAM-C: 3,200 lb
  - TLAM-D: 2,760 lb
- Warhead Weight:
  - TLAM-N: 300 lb (W-80)
  - TLAM-C: 1,000 lb (BULLPUP)
  - TLAM-D: 560 lb (CEB)

PERFORMANCE
- Flight Range:
  - TLAM-N: 1,550 miles
  - TLAM-C: 600 miles
  - TLAM-D: 826 miles
- Accuracy (CEP):
  - TLAM-N: 260 ft
  - TLAM-C: 30 ft
  - TLAM-D: 30 ft
- Speed: 550 mph

SOURCES
- References 94, 95, and 96

Figure 16-20. Characteristics of Tomahawk Land-Attack Missile (TLAM).
The debate concerning use of nuclear weapons died quickly after 8 February. Five reasons can be cited for this result: 1) no chemical or biological Scud missiles had been launched, 2) Scud launches dropped to only one or two per day, 3) there had been very little damage and few casualties, 4) Patriot air defense missiles appeared to work, and 5) exceptional conventional weapon capabilities were being demonstrated in finding and destroying armor in preparation for the ground campaign. The need for nuclear weapons vanished.

16.2.4 Summary of Scud Operations.

By U.N. records, 93 Scud-class missiles were fired at Israel and Saudi Arabia between 17 January and 28 February.\textsuperscript{81} Coalition data showed that 81 were detected.\textsuperscript{82} Of these missiles:

- 11 fell harmlessly in unpopulated areas: 13.6%
- 7 impacted on intended targets: 8.6%
- 29 were intercepted by Patriot missiles: 35.8%
- 34 missed their target or failed during flight: 42%

Overall, 33 Scuds were launched against Saudi Arabian targets including the capital (Riyadh), the port city of Dhahran, and King Khalid Military City. Of these, 21 (64%) were engaged by Patriots. At least 38 Scuds were launched against the Israeli cities of Tel Aviv and Haifa but only about eight were intercepted by Patriots.\textsuperscript{82}

From the Israeli viewpoint, the Patriot missiles were a strong physiological success in providing the people confidence of their defense. But the Patriots had relatively poor effectiveness.\textsuperscript{83} Typically, Patriot phased-array radars detected Scud targets at ranges of more than 100 km. The batteries would launch two missiles at each Scud when it reached an altitude of about 100,000 ft. The actual intercept would occur at distances of 10–30 km and at closing velocities of 2,000–4,000 feet per second. Army analysts noted that many Scuds lost parts during reentry, others impacted and were duds (see Figure 16-19), and some engagements resulted in large miss distances and no warhead kill. The great fear was that a Patriot near miss might explode and disperse Scud warhead chemical or biological agents.
A few specific missile attacks are worthy of note.

- An Al Hussein missile hit an apartment complex in downtown Tel Aviv on 22 January. It injured 100 people and three died due to heart attacks.\textsuperscript{74}

- An Al Abbas was fired at the Dimona nuclear reactor in central Israel on 17 February. It broke up during reentry.\textsuperscript{64}

- A Scud fired at the port of Al Jubayl (Saudi Arabia) on 16 February fell into the water next to wharfs used by logistics ships. It was a dud as discussed in Subsection 16.3.

- A Scud launched at Dhahran (Saudi Arabia) on 25 February disintegrated during reentry but part hit a warehouse used to billet U.S. logistics troops. It started a fire which killed 28 personnel while injuring 100 more.\textsuperscript{82}

Although extensive Scud hunting sorties were flown by Coalition aircraft through the end of the war, Iraq was able to launch one or two missiles each day. On 27 February, the last day of the war, allied reconnaissance detected intense Scud missile operations in the western desert. Iraqi launch crews were preparing 26 missiles for a barrage attack on Israel. Major General Wayne Downing, commander of the U.S. Delta Force and British SAS commandoes were sent in desert-mobility vehicles to find and destroy the Scuds. Three commandoes were killed in the night raid but all 26 Scuds were destroyed before they could be launched.\textsuperscript{85}

16.3 LESSONS LEARNED FROM DESERT STORM.

16.3.1 The Campaign to Destroy WMD.

The most obvious conclusion from the Desert Storm bombing campaign is that the U.S. and Coalition air forces were unable to destroy the facilities and storage sites supporting Iraq's development of WMD. Despite the air force's superb training, careful planning, heroic attacks, and precision conventional weapon systems, the Iraqis were able to hide or move critical elements of their nuclear, chemical, and biological weapon programs to ensure their survival. Their leaders, military, and scientific personnel showed unfailing determination in achieving their goals. However, two Coalition technological problems contributed to this conclusion:

- U.S. and allied intelligence was inadequate for the purpose. Specifically, it underestimated the development status, technical approaches, and numbers of development facilities by a wide margin. Overhead satellites and reconnaissance were unable to find and identify important elements of the Iraqi program. The difficulty of this problem is illustrated by the fact that six years later, with ground inspection teams, many of the elements still remain hidden.
• U.S. weapon systems were inadequate to destroy some of the known facilities. Specifically, many hard underground weapon storage sites and production plants survived direct hits or suffered only minor damage. This was driven by three considerations: 1) an inability to penetrate sufficiently deep through overburden soil and concrete, 2) an inadequate knowledge of the underground structures and vulnerabilities, and 3) insufficient munition yield or appropriate weapon effects (e.g., blast, incendiary, electromagnetic, or other).

The above shortfalls applied not only to the WMD targets but also to leadership and mobile Scud missile targets. Few leadership targets (with exception of the command bunker at Al Taji hit by a GBU-28) were damaged. Hussein’s command center 60 ft under the presidential palace and a similar bunker under the Ministry of Intelligence in Baghdad were not damaged by Tomahawk or GBU-27 hits. A command center in the basement of the Air Force headquarters in Baghdad was not damaged even though GBU-27 bombs destroyed upper floors of the multistory building. Thus, an enemy who digs deep enough and uses sufficient concrete to protect his targets can stay secure from conventional weapon attacks. This conclusion may apply to a lesser degree even if nuclear warheads are used for the attack.

The destruction of Scud missiles in their mobile hide areas is a different technological problem. A number of U.S. munitions could destroy the relatively soft targets once they are located; therefore, this was a major reconnaissance problem. Figure 16-21 shows a few empty Scud bunkers in the desert after launching their weapon. During the conflict, U.S. intelligence learned that the Soviet Union was providing Iraq with information for targeting their Scud missiles and for concealing them from American spy satellites. Very few Scuds were found and destroyed on the ground.

Figure 16-21. Empty Scud bunkers in the Iraqi desert.
during the bombing campaign. Figure 16-22 shows a rare example of Scud transporters located and hit by cluster bombs before 30 January. U.N. officials estimated that up to 100 Scud missiles remained hidden underground when the war ended. They found Scud guidance components buried at three different sites in March 1992.

Figure 16-22. Strike video of Scud transporters during attack in Iraqi desert.

The Great Scud Hunt did not fail for lack of trying. Roughly 3,700 reconnaissance and strike sorties were dedicated to finding or pinning down the mobile missiles. An average of 86 sorties were flown every day of the war for this purpose. In addition to satellites, TR-1A tactical reconnaissance, E-8A JSTARS ground surveillance, and fighter aircraft (F-16s and F-15Es) were used around the clock to search for Scuds. The disappointing results should have been anticipated based on data from previous conflicts.
• **World War II:** During the search for V-1 and V-2 missile launchers between August 1944 and March 1945, the Crossbow Operation flew 68,913 sorties (13.7% of all Allied sorties) and dropped 122,000 tons of bombs in the effort to destroy German mobile missiles. Although several thousand V-1s were destroyed at fixed ski sites and storage bunkers, none of the 3,000 operational V-2s (predecessor of Scuds) were found and destroyed by air strikes prior to being launched at London, Antwerp, Brussels, and other cities.

• **Iran-Iraq War:** Iraq launched its first Scud missiles at Iran in late 1982 and fired at least 100 by 1985. However, in 1988 it fired about 150 Al Hussein missiles at Tehran in four months. The Iranian Air Force, badly depleted at that time in the war, flew only 60–80 sorties per day. There is no evidence that any missiles were found and destroyed on the ground.

• **Vietnam War:** On numerous occasions between 1968–1973, North Vietnam moved convoys of up to 200 vehicles down the Ho Chi Minh trail to deliver supplies, artillery, and munitions to their forces in South Vietnam. The U.S. employed thousands of reconnaissance aircraft sorties, emplaced sensors, and remotely piloted vehicles to locate and interdict these convoys hidden under foliage and the cover of darkness.

The conclusion is that a determined and well-trained enemy which uses decoys, camouflage, and deception can hide a large fraction of his mobile systems. This problem will become more difficult as rapid launch-preparation time, solid propellant, GPS-guided missiles enter the inventories of third world countries.

The Coalition was very fortunate not to cause a large collateral damage event with the bombing of nuclear, chemical, and biological facilities. The ingredients were there and could have been released by a bomb or secondary explosion. That might have started a major disaster with thousands of civilian casualties and with political repercussions throughout the Arab world. It is insufficient to note that Hussein deliberately burned oil fields and caused oil slicks in the Persian Gulf. Because the Coalition stated objective was to limit collateral damage, it was important that bombing be accomplished within that guideline. Unfortunately, U.S. and allied munitions were not designed with minimum collateral damage goals in mind. New designs which incinerate toxic chemicals or biological agents are needed. There are also increased requirements on intelligence data and target planning to insure against future disasters.

16.3.2 What Might Have Happened.

It is important to consider what might have happened if Iraq had successfully developed a nuclear weapon before or during the conflict. Iraq with only a few nuclear weapons could have significantly altered the outcome and may have denied the Coalition victory.
First, assume that Coalition intelligence learned that Iraq had developed a nuclear bomb just prior to its invasion of Kuwait. Under this scenario, it is probable that the U.S. and its allies would not have moved rapidly to build up troops and equipment at the Saudi Arabian ports of Ad Dammam or Al Jubayl on the Persian Gulf coast. These key ports, with their sparse road links to Riyadh, supplied 95 percent of the military logistics transportation during the conflict as illustrated in Figure 16-23. These ports would have provided Iraq with irresistible nuclear targets. The only alternatives available to the Coalition were a small port in Bahrain and Jeddah (2,000 km across Saudi Arabia from the battle area) or an amphibious landing and contested buildup. The implication is that Iraq, with its superior army of over 100,000 mechanized troops, could have moved down the coast to capture the ports, Riyadh, and the United Arab Emirates. Within several days, it might have achieved the goals Hussein described to President Rafsanjani of Iran without using its nuclear weapons.

Figure 16-23. Road network and ports in Saudi Arabia.
Second, assume that Iraq achieved its nuclear capability during the Desert Shield buildup or early phases of the conflict. In this case, three Iraqi options would have become possible:

- A nuclear attack against Tel Aviv would certainly have brought Israel into the conflict. It is likely that Israel (or the U.S.) would have retaliated with nuclear attacks against Baghdad and Iraqi forces. However, it is also likely that some Arab nations might have pulled out of the Coalition.

- A decapitating nuclear attack could have been made on Riyadh to destroy the Coalition command and leadership in Saudi Arabia.

- A nuclear attack on the two ports (Al Jubayl and Ad Dammam) would have caused thousands of U.S. and allied casualties and closed the ports for the duration of the conflict.

Note that a disaster was narrowly avoided on 16 February 1991 during the war when a Scud missile with a conventional warhead landed in the harbor at Al Jubayl. As shown in Figure 16-24, it impacted a few hundred yards from eight ships containing aviation fuel for the U.S. Marine Corps Air Wings, 5,000 tons of 155 mm artillery shells, the aircraft carrier Tarawa, and a hospital ship. Fortunately, the warhead did not explode or the port might have been destroyed. To illustrate

Figure 16-24. Scud missile hit Al Jubayl, 16 February 1991.
the potential damage at the same port if a 10 kt nuclear weapon had been detonated at the Scud impact point, Science Applications International Corporation (SAIC) performed the analysis shown in Figure 16-25. All of the ships would be sunk and personnel within the outer circle would be killed. Port facilities would be destroyed and civilian refugees would clog the overburdened road network toward Riyadh. Although the U.S. would undoubtedly retaliate, the port area would require roughly a year to clear and repair.

16.3.3 Deterrence Value of Nuclear Weapons.

Rapid moves by President Bush and Vice President Quayle following the Iraqi missile attacks against Israel were instrumental in keeping Israel out of the conflict. The serious discussions of using nuclear weapons, including coordination meetings with the British government, were probably responsible for deterring Saddam Hussein from ordering the use of chemical and biological weapons. The presence of U.S. carrier battle groups, submarines, and surface ships with tactical nuclear weapons and SLCMs made the deterrence credible.

Figure 16-25. Ten kiloton nuclear weapon burst at Al Jubayl port.
SECTION 17.0
THE TAIWAN DILEMMA
W. C. Yengst

The relationship between the United States, the Nationalist Republic of China (NRC) on Taiwan (formerly Formosa), and the Democratic People’s Republic of China (PRC) has twice involved the deployment and exercise of nuclear weapon systems; first in August 1958 and again in March 1996, as this report was being prepared. Both of these conflict situations stemmed from the desire of the PRC to unify the country under its communist leadership in Beijing. In both cases the U.S. deployment of nuclear weapons was designed to deter escalation of the conflict and avoid large-scale warfare with the probable destruction of Taiwan and its representative form of government.

The Nationalist government, after losing the civil war to the communists on mainland China in 1949, have held control of Taiwan and 15 small islands close to the coast. It claims the coastal islands are needed for defense of Taiwan or alternatively, as jumping off points to reunify China under a Nationalistic government. The PRC has always regarded the islands as a renegade province that must be returned to its control. This has created a dilemma for the U.S. both politically and militarily for nearly 50 years.

Taiwan and its leadership under Generalissimo Chiang Kai-shek was America’s ally during World War II. Despite several faults, its government closely followed Western ideals of democracy and a free market economy. A close working relationship existed between the U.S. and Taiwan until 1971 when the U.S. supported the United Nations General Assembly vote to expel Nationalist China and admit Communist China to the U.N. Although the U.S. advocated that Nationalist China (a charter member of the U.N.) be allowed to retain its seat, the proposal was vetoed. The relationship deteriorated in 1972 after President Richard M. Nixon’s historic trip to Beijing. When the U.S. opened normal diplomatic relations with the PRC, it broke relations with Taiwan at the end of 1978. Subsequent moves by President Jimmy Carter to support reunification of China as a principle ended the mutual defense treaty between the U.S. and Taiwan in December 1979.

By contrast, the PRC government is characterized by totalitarian rule. Under communist principles, it is a police state, with a poorly run economy and an aggressive foreign policy. Extensive trade between the U.S. and PRC has been marred by disputes over tariffs, patents, copyrights, and intellectual property ownership. The U.S. has also criticized the PRC for human rights violations and ruthless suppression of its students seeking freedom of speech in Tiananmen
Square during December 1986. Although the U.S. official position is that Taiwan is China's internal affair, historically the U.S. has supported Taiwan and come to its defense in opposition to the PRC.

17.1 THE OFFSHORE ISLANDS AND EARLY ATTACKS.

Quemoy Island controls the entrance to the mainland port of Amoy, which is only 4 miles away, as shown in Figure 17-1. It is the largest of the Nationalist held coastal islands and a threat to PRC shipping. Barely 12 miles long and 5 miles wide, Quemoy has miles of broad sandy beaches. But, beyond the beaches are mudflats and rocky outcroppings, bristling with emplaced artillery and fortifications built by the Nationalist defenders. About 165 miles north of Quemoy is Matsu Island, at the entrance to Foochow harbor. Matsu is a rocky series of cliffs with only two small beaches and a total area of 6.5 square miles.

Figure 17-1. Taiwan and Nationalist Chinese Islands.
In 1949, more than one-third of General Chiang Kai-shek’s active army of 50,000 troops defended these islands. When the PRC attempted an amphibious assault to capture them, its 20,000 man invasion force was driven off and suffered 13,000 dead. Concern that the PRC might take advantage of the Korean War as an opportunity to invade Taiwan, General MacArthur sent three squadrons of F-80 fighter aircraft from Japan to Taipei on 31 July 1950 (see Subsection 3.2.1). Although this invasion did not materialize, communist troops captured the tiny Nationalist garrison on Yiquangshan Island north of Matsu in 1954. The garrison of 800 defenders held them off for 56 hours before surrendering. Thus, there was an early history of communist Chinese attempts to take the islands by force.

17.2 THE 1958 CAMPAIGN.

17.2.1 Conflict Description.

By 1958, Quemoy and Matsu were heavily defended. Barbed wire and mines covered the beaches, pillboxes dotted every hillside, trenches and tunnels were linked with underground bunkers holding ammunition and supplies for a siege of several months. Quemoy had 50,000 troops and Matsu had another 18,000. The islands were only vulnerable in two respects: 1) they needed air support from Taiwan which had fewer than 300 jet fighters on airfields about 150 miles away, and 2) they could only be resupplied by ship.

Communist Buildup.

Across the narrow stretch of water, communist China built up a force of 300,000 troops during 1957. It constructed six airfields which contained hundreds of MiG-15 and MiG-17 fighters and Il-28 bombers. It deployed about 400 Soviet-supplied 152 mm and 208 mm heavy guns along the coast (i.e., five times the guns emplaced on the Nationalist islands).

U.S. Military Aid.

As the buildup of communist forces developed, the U.S. sent additional aircraft, Nike Ajax air defense missiles, and an Air Force unit with MGM-1 Matador missiles to Taiwan. The Matador missiles were newly developed, nuclear capable, and the first pilotless bombers (i.e., cruise
missiles) deployed overseas. The State Department, which resisted the deployment of the 690 mile range missile, described the commitment in an internal bulletin on 27 May 1957.

Initial Harassment.

During the summer of 1958, a "shouting war" broke out between the mainland Communists and the defenders of Quemoy. Desultory comments were made over loud speakers across the 4 miles of water. "Surrender...The island is doomed...Your sea lanes to Taiwan have been blockaded by our forces on all sides." In fact, the PRC was not prepared to enforce a naval blockade but it used patrol-torpedo boats to perform threatening maneuvers. The harassment continued for nearly three months and included leaflet-carrying balloons, leaflets in shells, kites with banners, and radio broadcasts from Beijing.

The Communist Objectives.

The PRC appeared to have three objectives in causing the conflict:

- Test Taiwan defenses and U.S. resolve in supporting Taiwan under the mutual defense agreement.
- Create a crisis in the Far East, then accuse the U.S. of "intervention" in a matter of internal Chinese affairs.
- Isolate the U.S. from its allies, few of whom supported the American policy of no recognition for Communist China.

The scheme was believed to have been worked out between Russia's Nikita Khrushchev and China's Mao Tse-tung during a secret meeting in Beijing in early August. The plan was predicated on the assumption of a quick victory. Failing that, neither country wanted to engage in a costly and drawn out war.

The Attack.

On 22 August, the shouting war ended and the Communists fired the heaviest artillery barrage ever laid down on the islands. Quemoy was hit by 41,000 projectiles in a two-hour period. MiG-17s carried out bombing and strafing raids against Nationalist gun positions. When the shelling stopped, there were 200 military and civilian casualties on the island. During the next six days,
roughly 120,000 high-explosive shells hit the island. One of the Tan islets received over 7,000 projectiles in a single hour on a 50 acre area. The Beijing radio announced that an invasion of Quemoy was imminent.

**U.S. Reinforcements.**

By 28 August, the U.S. Seventh Fleet sailed to the eastern coast of Taiwan. It was joined by the carriers U.S.S. Midway from Pearl Harbor and the U.S.S. Essex from the Mediterranean Sea via the Suez Canal. The Fifth Air Force flew squadrons of F-100 Super Saber jets from the Philippines to Taiwan airfields. A Marine battalion, which was on shore leave at Singapore, was hurried back to Okinawa to join the Third Marine Division and the First Marine Air Wing left Japanese bases to join the buildup on Okinawa.

**The Diplomatic and Planning Moves.**

The U.S. was committed by treaty to help defend Taiwan and its Pescadore Islands. By 28 August, Congress also gave President Dwight D. Eisenhower discretion to include “related positions” (i.e., the offshore islands) in his responses. Eisenhower ordered the Navy to help convoy supplies from Taiwan to the islands but not to become involved in combat. Meanwhile, Army Secretary Wilber M. Brucker led a team of JCS and civilian officials to Taiwan to plan operations if the U.S. decided to intervene with force.

As the U.S. fleet gathered off Taiwan, Beijing announced that it was extending its territorial waters from 3 to 12 miles. This placed Quemoy, Matsu, and the other coastal islands within China’s borders. Communist torpedo boats began to patrol the waters and successfully prevented the Nationalists from transporting supplies to the islands. President Eisenhower was at his Newport, RI, vacation residence when these events took place and he had not yet decided whether the offshore islands were essential for defense of Taiwan and worth fighting to save. With Secretary of State John F. Dulles and Undersecretary of State Dean Acheson, he discussed the possibility of bombing mainland China (e.g., to destroy its six airfields, suppress its artillery positions, and destroy its torpedo boat bases).

After 26 August, the Seventh Fleet had six aircraft carriers, three heavy cruisers, 40 destroyers and 20 support ships off the coast of Taiwan. At least one of the heavy cruisers (U.S.S. Los
Angeles) had been converted to carry Regulus I, surface-to-surface nuclear cruise missiles as described in Subsection 17.2.2. On 27 August, two of the heavy cruisers and six destroyers challenged the Chinese patrol boats in daylight by escorting a Nationalist supply convoy to within 4 miles of the Quemoy beach.

In Russia, it was reported by Pravda that Premier Nikolai A. Bulganin had been purged from the Communist Party. He was replaced by Nikita S. Khrushchev who made a speech on 27 August in which he lightly complained about, "the suspicious maneuvering by the Seventh Fleet." However, the Soviet Union, under new leadership, was not prepared to contest the U.S. operations.

On 5 September, a Pravda "Observer" article noted that the U.S. might use tactical nuclear weapons against the China mainland. It warned the U.S. to exclude the use of atomic arms by American forces in the Far East. At the time, China had no nuclear weapons and was dependent on their Soviet allies in the event of a nuclear war. On 6 September, Secretary of State Dulles made a speech from Newport in which he suggested that the U.S. might attack the mainland if there were an attack by the PRC on Quemoy. Later that day, Chinese Premier Chou En-lai offered to renew ambassadorial talks with the U.S. concerning the Taiwan situation.

On 7 September, Khrushchev wrote President Eisenhower a letter in which he indicated that an attack on the PRC would be regarded as an attack on the Soviet Union. He said, "If China is attacked with atomic weapons, the aggressor will at once get a rebuff by the same means." He repeated the message in a second letter on 19 September. However, Russia made no efforts to alert forces or send aid to China during these transactions. On 3 October, the Chinese news media claimed the crisis, which had been worsened by U.S. aggression, was over. A cease-fire was officially proclaimed by the Chinese Communists on 6 October.

17.2.2 The Nuclear Weapon Systems.

It is useful to review the three nuclear-capable weapon systems deployed by the U.S. during this crisis.
Matador.

The Matador cruise missile entered development by the U.S. Air Force in 1946 under a small budget that included three years of development and testing at Holloman AFB. The missile was of conventional aircraft design and was launched to flight speed from a “zero-length” truck mounted ramp using a solid propellant jet assist rocket motor. Powered by a turbojet engine, the missile was guided by radio command from a ground station. A later model (TM-76A Mace) included a self-contained map-matching “Pinpoint” guidance system which caused the missile to fly along a strip-map (stored on film) of the terrain along the flight route. Matador’s characteristics and performance are presented in Figure 17-2.³

The Korean War showed the need for a long-range tactical bombardment missile; therefore, production of Matador was initiated in October 1951. The design permitted changing from conventional to a nuclear warhead at the site of operations. The nuclear warhead (W-5) had a yield of 40–50 kt and 65 were produced between February and June 1953.⁸ Only a few hundred Matadors were produced before the production line was closed at the end of 1957.

In January 1954, Matador became the basis for the first Pilotless Bomber Squadron (PBS) which was set up under the Tactical Air Command. Two months later the system was deployed operationally in West Germany at Hahan and Sembach Air Force Bases.⁹ A training and support unit was set up at Martin Corporation in Orlando, FL. A Tactical Missile Wing was deployed to Wheelus AFB, Libya, in early 1957 for training and launching of 36 missiles. The missile group at Wheelus AFB was transportable by C-119 and C-124 aircraft. It was probably the group that was deployed to Taiwan in May 1957. It consisted of three Tactical Missile Squadrons, a Communications and Guidance Squadron, and a Support Squadron.³,⁹ Each squadron had a dozen launchers and two or three missiles per launcher.

The group deployed to Taiwan was probably operational with mobile launchers within several days. However, as the crisis ended (i.e., the week of 14–21 September 1957) there was a report that U.S. technicians were rushing completion of missile sites.⁷ Perhaps these were defensive missile or nuclear warhead storage facilities. No evidence was found that nuclear warheads were deployed on Taiwan in 1958 but they could have been flown in from storage on Guam within several hours.
PERFORMANCE
- Range: 690 miles
- Speed: 650 mph
- Cruise Altitude: 35,000 ft

CHARACTERISTICS
- Length: 39 ft, 7 in
- Diameter: 54 in
- Wing Span: 27 ft, 8 in
- Weight: 12,000 lb
- Warhead Options:
  - <1,000 lb H.E.
  - W-5 nuclear (40–50 kt yield)

SOURCES
- References 3, 8, and 9

Figure 17-2. Characteristics of MGM-1 (TM-61) Matador.
Regulus I.

The Regulus I (RGM-6A) entered operational service in 1955 as the U.S. Navy's first submarine launched, nuclear missile. It was designed as a cruise missile to be launched from the decks of diesel-powered submarines, U.S.S. Grayback, Tunny, and Barbero. However, in mid-1956 the deployment was extended to four aircraft carriers and four heavy cruisers including the U.S.S. Los Angeles as indicated in Figure 17-3. According to Rear Admiral Robert H. Wertheim (U.S. Navy retired), the Los Angeles was converted during 1957 to add a Regulus I launch ramp on its stern in place of discarded aircraft catapults.

The Regulus I was strictly a nuclear weapon system which carried the same W-5 warhead as the Matador (i.e., 40–50 kt yield). In operation, it was launched to flight speed from the ramp by a solid-propellant booster. It had relatively poor accuracy since it relied on a determination of the ship's location, pre-set range to the target, and launch azimuth for guidance. Therefore, a conventional warhead configuration was not developed since it would not be effective.

The Navy produced 514 Regulus I missiles during the development and test program but only 200 were operational worldwide in 1958. Only 35 W-5 warheads (produced between February and June 1953) were allocated to Regulus I. Therefore, the submarines carried two nuclear weapons and the surface ships carried up to four weapons. The Navy also developed the Mach 2 Regulus II missile system between April 1952 and June 1958 as a replacement for Regulus I. However, after producing 70 missiles and conducting 48 flight tests, the program was cancelled in favor of submarine launched ballistic missiles (SLBMs).

The Aircraft Carriers.

The Seventh Fleet had six aircraft carriers with nearly 500 aircraft off the coast of Taiwan by 8 September. At least two of the carriers (U.S.S. Midway and Essex) were nuclear-capable as described in Subsection 4.2.2. During the first week in September, four of the carriers plus the heavy cruiser Los Angeles moved into the Taiwan Strait to "show the flag" and provide ready support for the ships covering the Nationalist Chinese supply convoy. Communist aircraft flew within 30 miles of the U.S. fleet at one point, then veered away.
Characteristics
- Length: 34 ft, 4 in
- Diameter: 54 in
- Wing Span: 21 ft
- Weight: 14,520 lb
- Warhead: W-5 nuclear (40–50 kt yield)

Performance
- Range: 500 miles
- Speed: 0.87 Mach (535 mph) and 1.1 Mach terminal dive

Deployments
- 3 submarines (U.S.S. Grayback, Tunny, and Barbero)
- 4 heavy cruisers (U.S.S. Helena, Los Angeles, Macon, and Toledo)
- 4 aircraft carriers

Sources
- References 3, 8, and 25

Figure 17-3. Characteristics of RGM-6A Regulus I missile.
17.3 THE 1996 CAMPAIGN.

In July 1995, the PRC launched six ballistic missiles into a sea test area 85 miles north of Taiwan as shown in Figure 17-4. Four of the missiles were solid-propellant M-9 nuclear-capable weapons launched from Leping with a range of 375 miles. The other two missiles were medium-range (1,120 miles) DF-21 weapons launched from a more remote base into the same impact area.\textsuperscript{10} Aside from the training or developmental purposes of these tests, they demonstrated that all of Taiwan was within range of Chinese attacks.

Figure 17-4. Chinese 1996 missile and amphibious exercise areas.

U.S. Ambassador, Charles Freeman, met with senior Chinese officials in Beijing during December 1995 and reported that China was completing preparations for an attack on Taiwan, including plans to launch conventionally armed missiles at Taiwan for a period of up to 30 days.\textsuperscript{10} However, U.S. State Department officials told news reporters in mid-March 1996, "there was no change in Chinese intentions to seek a peaceful resolution to the Taiwan question."\textsuperscript{11}
17.3.1 The Missile Launching Exercises.

The PRC Objectives.

In 1996, the PRC still maintains that Taiwan is a Chinese province. Therefore, the PRC government was highly disturbed when the Nationalists planned an election for 23 March to select a new president. Its aggravation was increased when incumbent Nationalist President Lee Teng-hui advocated that Taiwan seek an independent image and give up on its long-term focus of reunification. By contrast, Lin Yang-kang, a pronuclearification candidate, advocated that Taiwan negotiate with the mainland PRC government. While the majority of Taiwanese people favored Lee's position, the PRC's Central Military Commission openly denounced the election and supported Lin's position.\(^\text{12}\)

To influence the Taiwanese to cancel their election and support Lin Yang-kang's approach, President Jiang Zemin of the PRC assigned General Zhang Wannian to implement a series of intimidating military exercises. The exercises, including missile launches and amphibious landings, would provide valuable training and help restore the PRC military confidence. There was no reason to believe that the PRC intended to invade Taiwan or destroy its vibrant economy.\(^\text{12}\)

The First Exercises.

The PRC began military exercises in the Taiwan Strait using live ammunition on 8 March. For nine days, it diverted ships and airliners from a large area between Quemoy and Taiwan Island as illustrated in Figure 17-4. During this period, gunboats, guided-missile destroyers, and fighter aircraft maneuvered and played war games within 11 miles of Taiwan. Figure 17-5 shows one of China's seven modern destroyers launching a guided missile during the exercises. The PRC launched four M-9 missiles from the mainland to impact areas about 20 miles from Taiwan's two main ports, Kaohslung and Keelung.\(^\text{13}\) Careful inspection of Figure 17-4 shows that the circled aimpoints were selected such that missiles flying along their launch azimuths would not hit Taiwan even if they fell short or overflowed the aimpoints.

The Chinese state television reported the exercises and showed a five-minute film of the missile launches. Accompanied by patriotic music, the 2nd Artillery Force fired gleaming white missiles into the night sky, over nearby mountains, and through to impact in the Taiwan Strait. Then the troops packed up their launch equipment and disappeared into the darkness.\(^\text{14}\) Figure 17-6 shows
Figure 17-5. Chinese guided missile destroyer during exercise launch.

Figure 17-6. Chinese launch of surface-to-air missile during exercise.
a launch photograph released by China’s Xinhua news agency on 20 March. The news agency announced that normal air and sea traffic could resume that evening since the first sequence of exercises were completed.\textsuperscript{15}

**U.S. and Taiwan Meetings.**

The U.S., Japan, Britain, and Canada immediately condemned the Chinese exercises. Although the U.S. had no diplomatic relationship or military agreements with Taiwan at the time, Deputy National Security Advisor Samuel Berger and Undersecretary of State Peter Tarnoff met secretly in Washington, D.C., on 11 March with the secretary general of Taiwan’s National Security Council, Ting Mao-Shih. The U.S. wanted to ensure that Taiwan would refrain from provoking China and prevent any escalation of tension. State Department spokesman Glyn Davies also reported that the U.S. was willing to defend Taiwan in the event of an unprovoked attack but not if Taiwan declared its independence from China.\textsuperscript{16}

Meanwhile, Ambassador Charles Freeman reported from Beijing that a Chinese official stated that the U.S. will not interfere in the dispute because, “it cares more about Los Angeles than it does Taipei.” There was an implied threat that China would launch nuclear missiles at Los Angeles.\textsuperscript{10} This threat was quickly discounted; however, some analysts speculated that the PRC intended to use the exercises as a cover for an invasion of Taiwan. Secretary of Defense William J. Perry observed, “what is not going on is a buildup to an attack.”\textsuperscript{11} He noted that the exercises did not involve joint army, navy, and air force elements needed for an assault. China had carefully planned its exercises to avoid the impression of a coordinated, combined arms wargame.

**The U.S. Response.**

To back up its position, the U.S. ordered two carrier battle groups to the area on 15 March. The carrier U.S.S. Independence arrived 100 miles off the eastern coast of Taiwan on 16 March. It used F-14 and F-18 aircraft to monitor the Chinese exercises twice each day.\textsuperscript{14} The second carrier, U.S.S. Nimitz, accompanied by the Aegis missile cruiser U.S.S. Bunker Hill and three attack submarines would arrive from the Persian Gulf one week later.

These U.S. moves caused Chinese Premier Li Peng to warn the U.S. on Sunday, 17 March, “that it should keep its warships out of the Taiwan Strait.” At the same time, Li announced a second
sequence of exercises to be conducted in the Haitian Islands near the mainland. The People’s Liberation Army would take advantage of high tides to practice amphibious landings on Pingtan Island only 11 miles from Matsu between 18–25 March. This area is shown in Figure 17-4. Despite defiant responses by Nationalist President Lee Teng-hui, 300 civilians living on the Chu Islands near the exercise area began to evacuate on 17 March.

In Washington, D.C., the House of Representatives approved a resolution on 19 March stating that the U.S. would defend Taiwan if it were attacked. Secretary of Defense Perry also issued a statement saying, “America has the best damned navy in the world and could sail the Taiwan Straits if it chose.” The State Department, acting in a “good guy” mode, hastened to note that this was not meant to provoke Beijing. Secretary of State Warren Christopher arranged to meet with his PRC counterpart, Qian Qichen, at the Hague on 21 April to discuss the problem.

U.S. Aid for Taiwan.

During the secret negotiations with Taiwan after 11 March, President William Clinton approved a plan to sell Stinger air defense missiles to the Nationalists to help protect the islands. Taiwan was permitted to produce Patriot PAC-2 point defense missiles under license. The U.S. had already sold Taiwan Hawk air defense batteries, Sidewinder air-to-air missiles, Hellfire anti-armor and Harpoon anti-ship missiles. For the immediate threat, the Aegis missile cruiser Bunker Hill was moved close in to shore near Kaohsiung to provide a measure of ballistic missile defense for the southern port. Taiwan also asked for six diesel submarines; however, this request was turned down.

President Lee Teng-hui held a press-report interview on 20 May in which he repeated the request for submarines and stressed Taiwan’s need to replace its aging F-104s and F-5Es. The PRC was building modern warships and Soviet-design Su-27 fighters. Therefore, Taiwan planned to purchase U.S. F-16s and French Mirage fighters. The PRC government publicly opposed the Taiwan missile defense projects and expressed grave misgivings about the U.S. sales of Sidewinders, new aircraft, and other missiles to Taiwan. It cautioned the U.S. about a new arms race in Asia.
Aftermath.

The Nationalist election was held as scheduled on 23 March and President Lee Teng-hui was reelected by a significant margin. The PRC wargames ended without incident and the government in Beijing made few comments about the election results. The Chinese leaders, struggling over who should succeed the aging Communist Party General Secretary Deng Xiaoping, did not want the population to note that Taiwan had elected its own leader. They also did not want speculation concerning independence for Taiwan.23

There was no attempt by the U.S. Seventh Fleet to sail through the Taiwan Straits to avoid provoking the Chinese. Some analysts treated the exercise events off Taiwan as a pantomime conflict rather than an actual confrontation. One month later, China’s President Jiang Zemin issued an eight-point plan to peacefully reunite Taiwan with the mainland.23 This was seen as a diplomatic breakthrough. Meanwhile, the U.S. is still faced with the foreign policy challenge of defending its Taiwan friends while working with and recognizing sometimes difficult Communist China as the single China.

17.3.2 The Nuclear Weapon Systems.

The Chinese Weapons.

China launched two different types of nuclear-capable missile systems during its 1996 campaign to intimidate Taiwan:

<table>
<thead>
<tr>
<th>Model</th>
<th>Range (miles)</th>
<th>Payload (pounds)</th>
<th>Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-9</td>
<td>375</td>
<td>1,025</td>
<td>solid</td>
</tr>
<tr>
<td>DF-21</td>
<td>1,120</td>
<td>1,325</td>
<td>solid</td>
</tr>
</tbody>
</table>

The M-9 is mobile and entered operational service in China in 1991. It was designed for export and has been sold to Iran, Syria, Pakistan, and Egypt.10 The DF-21 is also mobile and is capable of carrying nuclear, chemical, biological, and conventional warheads. Somewhat more advanced than the Scud missiles of Desert Storm, the Chinese missiles were estimated to have an accuracy of 330–550 yards Circular Error Probable (CEP).24
U.S. Nuclear Weapons and Arms Control Considerations.

The U.S. warships sent to Taiwan carried several nuclear-capable weapon systems; however, they carried no nuclear warheads. This seemingly contradictory statement deserves further explanation. Specifically, the aircraft carriers (U.S.S. Independence and Nimitz) had roughly 125 aircraft of which about one-third were capable of delivering nuclear weapons. But the ships no longer carried the nuclear bombs on board. Similarly, the destroyer escorts (U.S.S. Hewitt, O’Brien, McClusky), guided missile cruiser U.S.S. Bunker Hill, and submarines (U.S.S. Bremerton, Columbus, and Portsmouth) carried between them about 200 Tomahawk Land Attack Missiles (TLAMs). During the late 1980s, these ships would typically carry a loadout which included three-quarters conventional (TLAM-C) and anti-ship missiles (TASMNs) and one-quarter tactical nuclear missiles (TLAM-N). The TLAM-Ns had W-80 nuclear warheads with 200 kt yields. However, in 1992, the U.S. decided unilaterally to remove the tactical nuclear warheads from operational ships for the reasons described below.

During the Strategic Arms Reduction Treaty (START) negotiations between the U.S. and Soviet Union in 1987 to 1990, it became apparent that there was no acceptable means for monitoring the numbers of deployed nuclear Sea Launched Cruise Missiles (SLCMs) held by either country. The nuclear-armed SLCMs had no distinguishing features from the conventional weapons with respect to size, shape, and launch systems. The same difficulty applied to dual-capable (i.e., nuclear and conventional) strike aircraft. Therefore, thousands of conventional SLCMs and strike aircraft could be quickly and covertly configured to deliver nuclear weapons. These and other complications such as nuclear safety, accidental events, and operational restrictions associated with nuclear weapons caused some to advocate banning nuclear weapons or reducing their inventories to near zero. These extremes were also considered unacceptable since the deterrence value of the nuclear forces would be lost.

Shortly after the Desert Storm conflict (Section 16), President George Bush decided to eliminate tactical nuclear weapons in Europe and Asia. This decision was fully achieved by 2 July 1992. However, it also helped to resolve U.S. and Soviet differences concerning nuclear force reduction for Europe, leading to an agreement under START on 5 October 1991. By 17 October 1991, 80 percent of the tactical nuclear weapons had been removed from NATO, leaving only 700 air-delivered atomic bombs at European bases. In a parallel move, President Bush announced the removal of U.S. tactical nuclear weapons from the Korean peninsula and from ships offshore. This later move was to test North Korea’s willingness to permit U.N. IAEA inspections of its
nuclear facilities. As a result of these actions, the U.S. ships that responded to the Taiwan crisis in March 1996 carried no nuclear warheads. Most of the news media referred to the deployment of nuclear-capable forces and few recognized the subtle fact that they did not carry nuclear warheads. Although the Chinese undoubtedly knew this fact, they realized that the nuclear capability could be restored within days.

17.4 LESSONS LEARNED FROM THE TAIWAN CRISIS.

The PRC has always held that Taiwan was a province that must be reunited with the mainland. Although the U.S. insists that reunification must take place by peaceful means (1979 resolution), the Chinese leadership has never renounced the use of force to achieve its objective. Thus, the U.S. is faced with the dilemma of defending its old friend and World War II ally (Taiwan) while recognizing the PRC as the single China. Because the PRC considers independence for Taiwan as unacceptable, the U.S. must abate confrontations and continue negotiations towards peaceful reunification.

The 1958 Campaign.

Aggressive action by the U.S. Seventh Fleet plus the active and overt deployment of nuclear-capable aircraft carriers, Regulus I, and Matador land-launched missiles probably prevented the escalation of bloody PRC attacks against the offshore islands. When the PRC requested nuclear weapon backing from the Soviet Union, Premier Khrushchev responded only with letters of warning to President Eisenhower. Consequently, the PRC was not prepared to risk a larger, and potentially nuclear war with the U.S.

The U.S. learned that the operational features of the Matador missile were unsuitable for modern warfare. Its radio-command guidance was vulnerable to jamming and the missile was particularly vulnerable to in-flight jet aircraft attacks when flying at 35,000 ft altitude. Therefore, Matador production was stopped at the end of 1957 and 100 of the existing missiles were converted to pilotless target drones.3 The Mace missile with its new Pinpoint guidance system was retained in the inventory (primarily as a conventional weapon system) until 1970. Likewise, the Regulus I program was terminated in 1958 and existing missiles were converted to KDU target drones.
The 1996 Campaign.

This was the first time that nuclear-capable weapon systems were used in exercises to intimidate a government and influence its parliamentary elections. The PRC did not prepare to go to war. However, there was no guarantee for Taiwan, its neighboring countries, or the U.S. that Beijing would not heighten the military pressure by seizing one of Taiwan’s coastal islands or launching missiles at its primary targets.

The timely resolution by the House of Representatives (stating that the U.S. should help defend Taiwan) and the rapid response of the Seventh Fleet with its nuclear strike systems helped to deter further Chinese actions. By not challenging the Chinese threat by sailing through the Taiwan Strait during the exercises or by trying to shoot down a missile, the U.S. avoided escalation of the crisis. Even then, Beijing complained about the U.S. for what is called a “brazen show of force.” Taiwan remains an American foreign policy challenge.
SECTION 18.0
REPORT REFERENCES BY SECTION

Section 1: Executive Summary.


Section 2: Japan Bombing.


Section 3: Korean War.


The author wishes to thank Michael O. Wheeler for his extensive research on the political aspects of nuclear weapons during the Korean War as noted in Reference 4.
Section 4: Dien Bien Phu.


37. "Prelude to the Geneva Conference," Memorandum for the Record (751G.00/3-2154) by Captain G. W. Anderson, USN, Assistant to the Chairman of the Joint Chiefs of Staff (Radford), 21 March 1954, Truman Library, pp. 1137–1140, Declassified from original Top Secret.


Section 5: Suez Canal Crisis.


Section 6: Lebanon War.


Section 7: The Cuban Missile Crisis.


Section 8: Assault on the U.S.S. Liberty.


Section 9: Capture of the U.S.S. Pueblo.


Section 10: Khe Sanh.


Section 11: Sino-Soviet Border.


Section 12: Israeli “October War”.


7. The Yom Kippur War, p. 102.


12. Cordesman, p. 35.


22. Ibid.


418


32. Ibid.


34. Spector, p. 154.

35. Barnaby, p. 6.


37. Ibid.


40. Ibid.


43. Ibid.

44. Barnaby, p. 51.


46. Ibid., pp. 53–54.

47. Barnaby, p. 59.

48. Ibid.
Section 13: South African Weapons.


Section 14: Afghanistan.


Section 15: Falkland Islands.


Section 16: Desert Storm.


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Section 17: Taiwan.


25. Grayback Simulates Missile Launching,” W. S. Reed, Aviation Week, 26 January 1959, pp. 69 and 70.


APPENDIX A
EVALUATION OF CHARACTERISTIC FEATURES
S. J. Lukasik

The 15 case histories of Sections 2 through 16 were carefully reviewed and evaluated in terms of eight characteristic features. The political setting included five features that reflect nuclear warfare theory (i.e., deterrence, escalation control, proliferation control, force credibility, and attitudes toward use). Military actions reflected three features concerning operational practice (i.e., command and control, collateral damage, and delivery systems). Thus, an eight by fifteen matrix was prepared as shown in Table A-1.

The notations in various blocks of the table provide shorthand statements indicating how that particular feature was relevant to the crisis or conflict situation. Consequently, Table A-1 represents a summary overview of all the cases studied. Some of the statements in the matrix were based upon interpretation of the events when hard historical data was not available. A blank in the table signifies that the specific feature was not of significant importance in the resolution of the crisis or conflict.

Nine important conclusions were extracted by studying the summary matrix. These conclusions are presented in Section 1.4 along with examples to support their understanding. Although one may derive additional observations from the matrix based on the theory of nuclear warfare, there may be exceptions or too few cases to provide convincing support.
Table A-1. Summary of cases.

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Political Setting</th>
<th>Attitude Toward Nuclear War</th>
<th>Deterrance</th>
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<tbody>
<tr>
<td>Japan</td>
<td>1945</td>
<td>• Signaling U.S. power to Japan • Establishing U.S. power in postwar world, especially to USSR</td>
<td>• Use of nuclear weapons seen as prosecution of WWII with damage comparable to that from conventional weapon use</td>
<td>• USSR sees need for nuclear weapons</td>
<td>• Fewer than five strategic targets • Anticipated use of six tactical weapons in invasion</td>
<td>• No specifically tactical weapons available</td>
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<td></td>
<td></td>
<td>• Objective was military targets • Truman terminated use after two weapons</td>
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<tr>
<td>Korea</td>
<td>1950–1953</td>
<td>• Unification of Korea through force by North Korea</td>
<td>• US desire to deter PRC from entering war in Oct 50</td>
<td>• US concern that USSR would enter war • Eisenhower threat in Dec 52 to use nuclear weapons broke stalemate • Also considered using radioactive waste to cut peninsula</td>
<td>• USSR providing nuclear weapon assistance to PRC</td>
<td>• Few tactical targets beyond Yalu bridges and tunnels • Following entry of PRC events moved too rapidly to employ nuclear weapons • Defensive use rejected in Jun 51 because of lack of battlefield targets</td>
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<td></td>
<td>• Removal of MacArthur in Apr 51 after unauthorized nuclear threat. The President is in charge • Truman against use of nuclear weapons on civilians</td>
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<tr>
<td>Dien Bien Phu</td>
<td>1954</td>
<td>• Domino theory required US help France • U.S. leadership demanded substantial domestic and international political support for use of nuclear weapons</td>
<td>• Weapons deployed outside US, in custody of military, for rapid response • This may have resulted in more active nuclear planning for their use</td>
<td>• US did not want to reopen war with Korea or PRC</td>
<td>• Lack of US nuclear support fostered French weapon program</td>
<td>• US credibility to use nuclear weapons high</td>
<td>• Up to three weapons planned; situation deteriorated too rapidly for them to have been employed</td>
<td>• Three tactical nuclear weapons considered: Mk 5 (40-50kT); Mk 6 (70kT); and &quot;new&quot; 150-200kT weapon</td>
<td></td>
<td>• Consideration given to providing a nuclear weapon to France for use • Possible French casualties of concern</td>
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</table>
Table A-1. Summary of cases (Continued).

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<tbody>
<tr>
<td>Suez</td>
<td>1956</td>
<td>- Oil supply to West</td>
<td>- US believes USSR will risk nuclear war&lt;br&gt; - Nuclear &quot;umbrella&quot; put over NATO and Mid-East</td>
<td>- USSR deterred by than 3:1 US nuclear force superiority&lt;br&gt; - Concerns cause US to moderate its actions nevertheless</td>
<td>- US providing nuclear weapon assistance to UK&lt;br&gt; - France is further encouraged to develop an independent nuclear capability</td>
<td>- US nuclear forces put on alert&lt;br&gt; - I&amp;W surveillance&lt;br&gt; - Second strike thinking&lt;br&gt; - No theater targets identified&lt;br&gt; - 2000 weapons in US inventory</td>
<td>- Of concern even for conventional attacks</td>
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<tr>
<td>Lebanon</td>
<td>1958</td>
<td>- Oil supply to West</td>
<td>- JCS willing to use nuclear weapons &quot;judiciously, in right place, for particular problem&quot;</td>
<td>- USSR deterred by 2:1 US nuclear force superiority</td>
<td>- US nuclear weapons deterred conventional escalation (Jordan, Iraq, Syria)</td>
<td>- Nuclear parity and nuclear balance considerations emerge as requirements</td>
<td>- Forces placed on alert as a signal&lt;br&gt; - JCS urges nuclear weapons for Army in theater&lt;br&gt; - No theater targets identified&lt;br&gt; - 5500 weapons in US inventory</td>
<td>- Five nuclear options considered, one strategic, four tactical</td>
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<tr>
<td>Taiwan and offshore islands</td>
<td>1958</td>
<td>- Unification of China either under PRC or Nationalists&lt;br&gt; - Crisis planned by PRC/USSR to isolate U.S. from its allies over recognition of Taiwan</td>
<td>- Neither of nuclear-armed participants is willing to risk nuclear conflict</td>
<td>- USSR uses threat of nuclear response to deter U.S. use of nuclear weapons against PRC</td>
<td>- USSR unprepared to contest U.S. deployments and to risk conflict with U.S.&lt;br&gt; - U.S. undecided over importance of offshore islands</td>
<td>- Continued dependence of PRC on USSR for nuclear support&lt;br&gt; - Test of U.S. resolve in defense of Taiwan</td>
<td>- PRC artillery and bombing attacks, announces invasion of Quemoy&lt;br&gt; - U.S. deploys land-based Matador cruise missiles and nuclear capable carriers and heavy cruiser</td>
<td>- Additional TNW systems: land-based Matador and Mace cruise missiles; sea-based Regulus</td>
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<tr>
<td>Cuba</td>
<td>1962</td>
<td>- Exodus through Berlin&lt;br&gt;- US missiles in Turkey&lt;br&gt;- Castro nationalization of US assets</td>
<td>- Arms race discussion&lt;br&gt;- Nuclear parity important&lt;br&gt;- Issue centered around strategic balance</td>
<td>- US deterred from all but blockade option&lt;br&gt;- First superpower nuclear confrontation&lt;br&gt;- Confrontation tested deterrence to its limits</td>
<td>- Crisis went to brink of nuclear war within a week&lt;br&gt;- Kennedy seen as weak after Bay of Pigs fiasco&lt;br&gt;- US response restored credibility</td>
<td>- US forces go to DEFCON 2&lt;br&gt;- Call-up of reserves&lt;br&gt;- Precision weapons would have allowed for conventional attack on USSR missiles&lt;br&gt;- Intelligence failure</td>
<td>- Preparations made for President's evacuation</td>
<td>- Concern for indirect attack option</td>
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<td>Liberty</td>
<td>1967</td>
<td>Six Day War</td>
<td>- Concern about accidental use of nuclear weapons in USSR-supported conflict</td>
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<td></td>
<td>- Presence of TNW complicated US response</td>
<td>- Slow C3 in normal Navy channels&lt;br&gt;- Immediate Sec Def recall of aircraft</td>
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<tr>
<td>Pueblo</td>
<td>1968</td>
<td>- NK becomes more self-reliant and presses vigorously for reunification with SK&lt;br&gt;- U.S. is overextended in Pacific due to war in VN. Concern over U.S. support to SK</td>
<td>- Desire not to allow crisis to escalate to war while engaged in VN</td>
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<td></td>
<td>- All AF response forces in SK committed to nuclear missions&lt;br&gt;- Deployment of Enterprise from Japan with nuclear weapons exacerbated Japanese concern over U.S. nuclear weapons</td>
<td>- Rapid evolution of the tactical situation precluded timely and effective decision-making</td>
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</table>
Table A-1. Summary of cases (Continued).

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</table>
| Khe Sanh | 1968 | • Tet offensive turning point  
• Khe Sanh a symbol of US determination and a signal to NVN  
• Domino theory | • JCS accepts nuclear risks  
• President rejects nuclear use for political reasons  
• Public attitude supports strategic nuclear mission  
• Public rejects tactical use of nuclear weapons except to save US forces from annihilation | • Sec Def focus on strategic deterrence of USSR | • PRC potential involvement  
• Desire to avoid even conventional escalation | | | • Planning initiated for use of four weapons | | + Need to avoid US and SNV forces  
+ NVN bombing targets chosen to avoid USSR and PRC aircraft and damage to civilians |
| SinoSov | 1969 | • Long-standing border dispute  
• Undermine USSR influence worldwide | • PRC was prepared for nuclear war  
• Both sides did work on public attitudes | • USSR not prepared to fight nuclear war | • Rapid  
• Staged by USSR  
• No USSR nuclear alert | • Excuse to destroy PRC nuclear and missile R&D?  
• Price seen as too high? | • Willingness of USSR to fight was tested by PRC | • Long-standing invasion plan of USSR to invade PRC | • USSR deployed TNW; PRC also? |
| Israel | 1973 | • Four Arab-Israel conflicts in the previous 20 years  
• Territorial dispute | • Nuclear weapons as force multiplier and to deter conventional attacks  
• May have caused Egypt and Syria to limit their war aims | • Was not an issue when survival of nation was at stake | • Long-term assistance from France plus aid from Norway, South Africa and others  
• Theft of enriched uranium from U.S. | • Unquestionably high  
• Enhanced by Israeli actions in this event | • Surprise attack and short distances created time critical situation  
• Mobilization reinforcement and Day 3 success was turning point | • 13 nuclear weapons assembled and remain deployed  
• Lack of coordination by Egypt and Syria on war aims | • Not an issue in either counter force or counter value role |
<table>
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<tr>
<td>Afghanistan</td>
<td>1979-1987</td>
<td>• Support Marxist government in Afghanistan</td>
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<td>• Possibility of war with Pakistan over support of Afghan rebels</td>
<td>• Speculation in Spring 80 that USSR might attempt to strike PRC nuclear installations</td>
<td>• Warhead and nuclear system deployments made without consideration of need in 79</td>
<td>• Wakhano Corridor objective to threaten PRC and Pakistan nuclear facilities</td>
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<td></td>
<td></td>
<td>• Support USSR thrust into Indian Ocean</td>
<td></td>
<td>• Nuclear deployments, if overt, could result in reaction from US or SEATO</td>
<td>• USSR might also strike Pakistan nuclear facilities</td>
<td>• Likely SS-12 deployment</td>
<td>• Like the US in VN, the USSR intervention was unsuccessful</td>
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<td></td>
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<td>• Control or influence neighbor states</td>
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<td>• US, by choosing to ignore evidence of nuclear deployments, was able to avoid escalation</td>
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<tr>
<td>Falklands</td>
<td>1982</td>
<td>• Disputed territory between UK and Argentina</td>
<td>• Statements that nuclear war was morally acceptable</td>
<td>• Diversion of UK assets to Falklands did not impair NATO deterrent posture</td>
<td>• UK attack on cruiser Belgrano was unprovoked</td>
<td>• Argentina seizes territory</td>
<td>• Rapid deployment to crisis precluded off-loading of TNW</td>
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<td>• But Trident II program delayed in favor of investments in conventional capability</td>
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<tr>
<td>Angola</td>
<td>1984</td>
<td>• South African concern about communist government in Angola; substantial Soviet and Cuban support • Domino theory • Domestic policies isolated South Africa internationally</td>
<td>• Political leadership asserted weapons might have been used on neighbor state or Black area in South Africa</td>
<td>• Sophisticated deterrence strategy; uncertainty; then covert acknowledgment; finally public acknowledgment</td>
<td>• Intent was to deter stronger Soviet and Cuban intervention</td>
<td>• South Africa did not sign the non-proliferation treaty, signaling an intent to protect its nuclear option • Lack of international security support forced S. Africa to exercise its nuclear option • Cooperation with Israel aided both weapon programs • Unilaterally terminated program, destroyed stockpile, and put material under IAEA monitoring</td>
<td>• Recognition that credibility of political strategy required actual weapons</td>
<td>• Never integrated into South Africa's military doctrine and never deployed. • Few nuclear targets in Angola except for ports and military airfields • Intent of S. African program was political, not one of weapon efficiency or operational reliability</td>
<td>• Buccaneer low-level strike aircraft available</td>
<td>• Did not extend beyond political level of government</td>
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<td>Kuwait</td>
<td>1991</td>
<td>• Access to oil fields and continued supply of oil to the West</td>
<td>• US Army questions utility of TNW in view of limitations on use</td>
<td>• Iraq deterred from use of BW/CW by fear of US or Israeli nuclear weapons</td>
<td>• US deterred for fear others would employ nuclear weapons</td>
<td>• Iraq nuclear and missile programs</td>
<td>• US and Israel had high credibility to Iraq</td>
<td>• Strategic air attacks on Iraq NBC capability less than 40% successful. Iraq CCD was very successful</td>
<td>• Public speculation covered nuclear warning or strike on Baghdad</td>
<td>• High priority to minimize. Accomplished through attack cautioning and target exclusion</td>
<td>• Important factor in NBC target attack</td>
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<td>• Rebuilding of Iraq following Iran/Iraq war</td>
<td>• 45% of US favors use of nuclear weapons to save US lives</td>
<td>• US deterred for fear others would employ nuclear weapons</td>
<td>• Possibility of destabilizing Iraq regime</td>
<td>• Destruction of those programs as a goal of the US response</td>
<td>• Poor prewar intelligence on military order of battle, production facilities, international suppliers, weapon storage, mobile missile location</td>
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<td>• Goal was to liberate Kuwait following Iraqi Invasion</td>
<td>• Retaliation for Iraq use would also justify use</td>
<td>• Concern that resort to nuclear weapons would lower the nuclear threshold</td>
<td>• Possible cooperative nuclear venture with Algeria cf. Israel and South Africa</td>
<td></td>
<td>• Strategic air attacks on Iraq NBC capability less than 40% successful. Iraq CCD was very successful</td>
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<td></td>
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<td>• Need for nuclear weapons overtaken by rapid successful use of conventional capability</td>
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<td>• US did not deploy CW weapons</td>
<td>• Concern that Iraq would employ BW/CW against Consortium or Israel</td>
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<td>• Difficult to attack Iraq programs: CCD, hardened underground facilities, multinational assistance</td>
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<td>• Israel would have used nuclear weapons if provoked</td>
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<td>• Concern that Iraq would employ BW/CW against Israel</td>
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<td>• Delivery vehicle proliferation USSR to Iraq</td>
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<td>• US concern that nuclear use would make nuclear weapons even more attractive to potential proliferators</td>
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<td>• Successful TMD act to reduce pressure for nuclear proliferation and nuclear use</td>
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<td>Taiwan</td>
<td>1995-1996</td>
<td>• Influence Taiwan elections to encourage election of candidate favoring reunification negotiations with PRC</td>
<td>• PRC makes nuclear threat against U.S.</td>
<td>• U.S. efforts to reduce chance that Taiwan would provoke PRC to take military action</td>
<td>• U.S. refrains from sailing through Straits of Taiwan</td>
<td>• PRC orchestrates its military exercises to avoid the impression of a coordinated combined arms attack</td>
<td>• PRC launches nuclear-capable missiles toward Taiwan’s major ports and undertaking conventional wargames and amphibious landings</td>
<td>• US responds with conventional deployments only</td>
<td>• US aids Taiwan by providing ballistics missile defense capabilities</td>
<td>• No nuclear deployments as part of U.S. naval response</td>
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</tbody>
</table>