Seeing Off the Bear: Anglo-American Air Power Cooperation During the Cold War

Proceedings,
Joint Meeting of the
Royal Air Force Historical Society
and the
Air Force Historical Foundation

Roger G. Miller
Editor

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Dedicated to
Dr. Malcolm Postgate
(1937 — 1994)
Royal Air Force Historical Society

Preface

On September 9th and 10th, 1993, more than two hundred men and women—active duty and retired military personnel, scholars, and private individuals from the United Kingdom and the United States—convened at the Bolling Air Force Base Officers Club in Washington, D.C., for a symposium on "Anglo-American Air Power Cooperation During the Cold War." The Air Force Historical Foundation and the Royal Air Force Historical Society, working in close association with the U.S. Air Force History and Museums Program and the RAF Air Historical Branch, jointly sponsored the symposium. The symposium recognized the special relationship between the United Kingdom of Great Britain and the United States of America, possibly the most enduring attribute of the Cold War. Sustained consistently despite frequently divergent policies and goals, this special relationship was a primary reason for ultimate Western victory.

Planning for the 1993 Air Power History Symposium began in late 1992 under the direction of General Bryce Poe II, President of the Air Force Historical Foundation, Air Marshal Sir Frederick Sowrey, President of the RAF Historical Society, and Jacob Neufeld of the Air Force Historical Program. They agreed to have three sessions on "Policy Decisions," "Acquisition," and "Crisis Response." Within this framework, the challenge for the symposium's organizers was to strike a balance between scholarly monographs and first-person remembrances, and to include as many of the significant episodes of the Cold War that time allowed. As a result, the panelists addressed an impressive number of important topics and major developments during this critical period in the history of both nations.

Perhaps nowhere was the special relationship more visible or significant than in the activities of the airmen and air forces of the two nations. The 1993 symposium was a meeting of old friends, some of whose associations dated from World War II. Many of the attendees, as well as participants, experienced some of the most important and dangerous episodes of the Cold War in close association with their opposite numbers in the Royal Air Force or U.S. Air Force. The symposium vividly demonstrated the enduring nature of the singular, close relationship that the USAF and RAF share.

Dr. Richard P. Hallion
The Air Force Historian

Acknowledgements

The 1993 Air Power History Symposium followed a format traditional to most conferences. Initial planning called for three sessions on "Policy Decisions," "Acquisition," and "Crisis Response." In their final format, two sessions featured three formal papers, while one had four. The last session also included additional remarks by two distinguished individuals attending the symposium. Retired senior officers served as moderators for each session, introduced the speakers, and kept the session on schedule. The organizers agreed to follow British custom and omitted the American practice of using commentators. An interval for questions and answers followed each session. Rather than take oral questions, however, the organizers provided note cards to each attendee. Questions written on the cards were then collected and given to the appropriate panel member to answer at the podium. While some spontaneity was lost, this procedure eliminated the need for additional sound equipment and personnel, encouraged shorter, more direct questions, enabled the symposium to stay on schedule, and, perhaps most important, gave the panel member a few minutes in which to frame a thoughtful response.

A twenty-page pictorial section featuring many of the aircraft contributing to Anglo-American air power during the Cold War begins on page 153. The pictorial traces the American presence in England necessitated by the Berlin Airlift and Soviet threat to a free Europe, shows many of the USAF aircraft that were stationed at RAF bases during the Cold War, and features the distinctive RAF aircraft that contributed to peace during that era. It closes with the principal USAF and RAF aircraft that fought in Desert Shield/Desert Storm, the most celebrated joint combat effort by the two air forces since World War II.

Special thanks must go to Jacob Neufeld of the Air Force Historical Program, Maj. John Kreis, USAF retired, of the Air Force Historical Foundation, and Group Captain Ian Madelin, head of the Royal Air Force Air Historical Branch in London. The 1993 Air Power History Symposium could not have been successful without their extraordinary efforts. Their hard work and common sense prevented a multitude of challenges from evolving into problems.

Col. Steven B. Richards, Commander, Air Force District Washington, and Lt. Col. Christine M. Jaremko, Deputy Commander, 11th Air Base Group, made the symposium participants and attendees welcome at the facilities on Bolling

Air Force Base. Bruce I. John and Susan J. Linders from the Air Force Central Graphic Arts Facility at the Pentagon assisted with programs, brochures, signs, and name tags. Tresha Mabile and Mark Chesney from the Directorate of Information Service, Defense Intelligence Agency, provided audiovisual support for the symposium proceedings. A1C. Vincent Jones, SrA. Jay Applegate, and Amn. Michael Pivarnik, 1100th Communications Squadron, took still photographs. Sgt. William B. Savage from the Air Force's Executive Support Staff in the Pentagon transcribed the proceeding tapes.

The book version of the proceedings was produced by the Air Force Historical Support Office. Several rules have been followed in preparing the proceedings for publication. First, as little change as possible has been made in the papers. In general, British spelling was maintained in papers from the United Kingdom and American spelling in those from the United States. Individuals presenting papers often prefaced their formal papers with casual comments and these have been retained to preserve the flavor of the symposium. The informal introductions and the answers to questions from the audience are reproduced verbatim with a minimum of editing for comprehension and proper style.

Robert "Gus" Bell supervised preparation of the cover and graphics. The cover, by Nilo Santiago, was based on information and photographs furnished by Peter H.R. Singleton, RAF Air Historical Branch, and SSgt. Stanley D. Gohl, Historian, 35th Wing, Keflavik, Iceland.

Dr. Roger G. Miller

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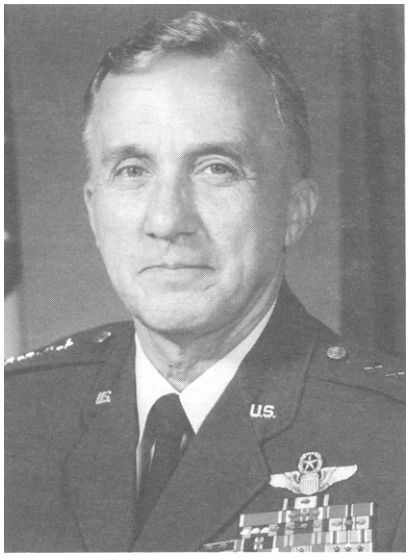
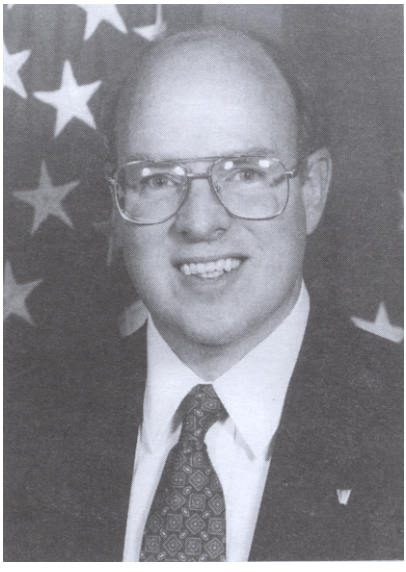
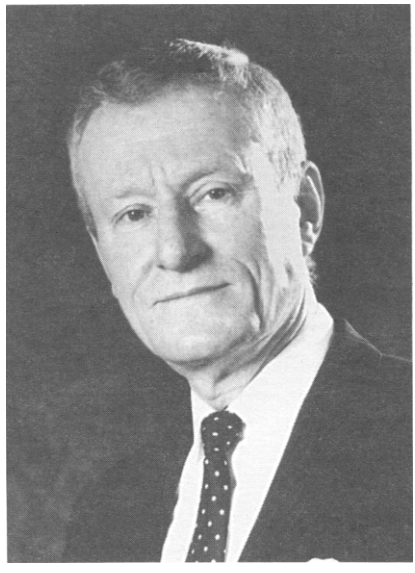


General Bryce Poe II,
President, Air Force
Historical Foundation

Air Marshal Sir Frederick Sowrey,
Chairman, Royal Air Force
Historical Society



Dr. Richard P. Hallion,
Air Force Historian



Group Captain Ian Madelin,
Chief, Air Historical Branch

Introduction and Welcome

General Bryce Poe II: This is the second joint meeting of the Royal Air Force Historical Society and the United States Air Force Historical Foundation. The first was held in 1990 in London and focused upon the relationship between the Royal Air Force and the U.S. Army Air Forces through 1945. A number of the American participants in that meeting are here as well as many of our British friends. We thought that gathering was such a success that we had to try it again, and this is the sequel we have been looking forward to. This year the Society and Foundation are joined in sponsorship by our respective air forces. Representing the U.S. Air Force is distinguished author and historian Dr. Richard Hallion, the Air Force Historian. The Royal Air Force is represented by an individual who will be introduced by my counterpart, the Chairman of the Royal Air Force Historical Society, Air Marshal Sir Frederick Sowrey.

Air Marshal Sir Frederick Sowrey: General Poe, ladies and gentlemen. What a great privilege it is for us all to be here for this historic occasion. The history of our two great air forces in both peace and war has been closely interwoven, and I think none more so than since 1945 and the advent of nuclear weapons and the Cold War, the period which we are going to be talking about during this symposium. Our aims are very much as yours. We look at history through the policies, the operations, and the personalities of our air force, and we hopefully can draw the lessons of the past to make some relevance to those who are operating an air force of today. We, for our part, look forward to the contribution that we can make to your symposium, and we particularly look forward to the warmth of friendship and comradeship which you have provided us. Now the people who have done all the hard work in this have been those in the Pentagon and the Ministry of Defence who have, in fact, been our channel of communication. Dick Hallion has already been introduced to you; perhaps I can introduce his opposite number in the Ministry of Defence, Group Captain Ian Madelin, the head of our Air Historical Branch.

General Poe: Thank you, very much. This relationship between our two air forces, forged in fire at the height of the gloomy days of World War II and tempered through many later confrontations, is very important to us.

General Merrill A. (Tony) McPeak, Chief of Staff, U.S. Air Force, earned a bachelor of arts in economics at San Diego State College and entered preflight training at Lackland AFB, Texas, in 1957. After graduating from flight instruction in in 1959, he flew F–100 and F–104 fighter aircraft, including a tour at RAF Woodbridge in England. From December 1966 to December 1968 he was a member of the USAF Air Demonstration Squadron, the Thunderbirds. In Vietnam between December 1968 and December 1969, General McPeak served as an F–100D fighter pilot with the 612th Tactical Fighter Squadron, commander of Operation Commando Sabre ("Misty" Fast FACs), and chief of the Standardization/Evaluation Division for the 31st Tactical Fighter Wing. Subsequent assignments found General Peak serving in numerous wing and heaquarters positions at every level throughout the USAF. He also attended the Armed Forces Staff College and National War College and was the military fellow at the Council on Foreign Relations in New York City. From February 1980 to June 1981 he commanded the 20th Tactical Fighter Wing at RAF Upper Heyford. Later, he was commander of 12th Air Force and U.S. Southern Command Air Forces at Bergstrom AFB, Texas, and commander in chief of Pacific Air Forces at Hickam AFB, Hawaii. General McPeak became Chief of Staff in October 1990.

Opening Address
To Protect Our Heritage*

General Merrill A. McPeak

It's a real honor to address this group of distinguished airmen and historians. I'm pleased to see so many of our friends from the RAF Historical Society. Much of our own heritage in the U.S. Air Force was built side-by-side with our British cousins. So we feel a special kinship with the RAF.

In this century a famous Briton—Winston Churchill—suggested that history would deal gently with him because, as he said, "I intend to write it." It's rather tempting, isn't it, to write one's own history, to preserve a legacy. We have that opportunity and responsibility today, in both the U.S. Air Force and the RAF.

If we try to look at today's developments from the viewpoint of some future historian, it is clear that the 1990s will be seen as a time of sharp downsizing, as a time of reorganization, and I hope, as a time in which we took care to protect our heritage. Let me spend a few minutes explaining why heritage is so important to us and what we're doing to protect it.

All of us understand that air forces exist for the ultimate purpose of putting fire and steel on targets. That means that the combat function is the core of our business. If you asked a man-on-the-street what it takes to get this job done, he would quite likely point to some tangible thing—a stealth aircraft, a precision-guided weapon, an air base. In any case, a material, and usually high-tech object—a thing.

But—and all professionals understand this—the important mission component is people. And, therefore, the most significant improvements we can make have to do with the human dimension—with recruiting, and training, and keeping, and motivating high-quality people. In my view, our history, our legacy, our heritage play an essential role in these human values.

Now, combat is often depicted as an individual event; like tennis. It sometimes does come down to pilot versus pilot, "1 v 1." And so we recognize individual achievement, or personal valor. But, more often than not, combat is a team sport, more like soccer than tennis. Individuals still score, but it's the team effort that makes scoring possible.

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* General McPeek's speech was published in *Air Power History* (Winter 1993), pp. 36–38.

You all know this, and I mention it only to help me explain to myself why it's so important for us to pay attention to team performance, to the units that people served in, to the flags that have flown under circumstances that cause us the greatest pride.

Anyway, we are paying attention. We've recently taken a comprehensive look back at wing and squadron flags across all communities: fighter, bomber, mobility, missile, C^3I, trainers, space, test, special operations—all of them.

Before this initiative, our heritage preservation effort—such as it was—was disjointed. Each command was left to its own approach. Commanders who cared—and many didn't—watched over their own small pot of unit flags. It was to prevent the piecemeal loss of our legacy that we decided on a systematic, three-step approach.

First, we looked at the age of our formations. This was fairly straightforward. As you know, by the early 1930s we had established thirteen combat groups. Of course, these groups are called wings today, but their numbers and their heritage still carry through. These groups and their squadrons are the oldest combat organizations we have. They are, kind of the original Air Force—our elder statesmen.

If you go back to the cities, towns, and villages of this country, these are the units people would most associate themselves with. This is true because, simply by being on the books for fifty or sixty years, more Air Force men and women would have cycled through these units.

So, we first resolved to protect out oldest units, to keep these original thirteen flags flying. By the way, some of these unit flags had already been folded by the time we got around to doing this; so we had some work to do.

Second, we looked at units established starting about 1940, during the rapid buildup for the Second World World War. Here, the issue was not age, but unit achievement. We identified flags with illustrious accomplishments to their credit, the flags that had literally earned the right to keep flying. We did not reach for particular specifics—preferring instead to let the history speak for itself. This list would include units such as:

- The 23rd Wing — the Flying Tigers
- The 4th Wing — with the RAF Eagle Squadrons and more combat victories than any other wing
- The 56th Wing — with thirty-nine aces
- The 60th Wing — which made our first paratroop drop of World War II, helped in the Berlin Airlift, made the first jet landing in the Antarctic
- The 305th Wing — whose logbook includes Schweinfurt, the Battle of the Bulge, and a commander named LeMay.

There are so many more, but you get the idea.

We wanted to keep wing flags in each operating element of the Air Force, so we tried to find fighter flags, bomber flags, missile flags, and so forth, of special distinction. I'll admit, given the desire to keep flags in each category,

there's a certain amount of subjective judgment. For instance, we've never fired an ICBM in anger, so it's hard to compare a missile wing's record against other kinds of combat wings. But President Kennedy called the 341st Wing his "ace in the hole" during the Cuban Missile Crisis and this fact distinguishes the 341st, sets it apart as a missile unit.

Other wings are associated with one-time spectaculars—the 509th Bomb Wing—for instance. The 509th was recently reestablished to stand-up the B-2 operation at Whiteman Air Force Base. The 509th, of course, is the only outfit that has ever dropped nuclear munitions in anger. Its record otherwise is not all that distinguished. Nevertheless, the 509th has a secure place in history and we thought it ought to be protected.

So, we decided to first preserve our thirteen oldest wings. Second, we identified a small number of additional wings that had a record of special accomplishment. As you might expect, there was some overlap here, because some of our original thirteen flags have served with great distinction. But for our purposes, it didn't matter. The thirteen oldest were given a "bye" into the finals and were joined there by units that fought their way through the qualifying rounds.

The final step was to rank-order the remaining wing flags. Here we used a scoring system with points awarded for years of service, decorations, streamers, aerial victories, and so on. We've done exactly the same thing for squadron flags that I've described for wings. That is, we've identified our oldest and most distinguished squadrons and have rank-ordered the rest.

Now, the idea is, as our force structure continues to shrink, the oldest and most distinguished flags will be "keepers." We will deactivate and turn in other wing and squadron flags, starting with those units that have the lowest heritage scores. As installations close, we'll move unit flags around to ensure the keepers are protected. We will no doubt take some criticism for this. Some will say, "What difference does it make? You take one number down over the door and put up another. So what?"

We can't really respond to these critics because they don't understand the institution. If the numbers don't mean anything to them—if heritage isn't important to them—they'll never understand what we're about.

I don't expect we'll see much of this kind of criticism inside the Air Force. We haven't been in business long—less than fifty years. Even so, most Air Force people understand the importance of pride and roots.

A second type of criticism will be more effective because there is a certain cost to doing this. We'll have to change signs around the base. We'll have to order new patches and new stationery and so forth. I've put out guidance that says don't repaint wholesale—wait until it's necessary. Don't buy new stationery until the old stock is used up and so on. We'll try to think it through so people don't have to go through this twice or three times. But, in the end, there will be a ceratin cost associated with this initiative.

In the context of our mission, these costs are trivial. I have absolutely no doubt that we'll be a better organization to accomplish our mission if we preserve our heritage. In fact, this may be the lowest cost approach to increasing combat effectiveness. Anything else we might do—enhancing training, buying better equipment, or improving facility support—would certainly cost more.

I don't suppose any of this would make much difference if the Air Force were growing—or even if it were staying the same size. Then all of our organizations—all our flags—would be safe.

But the problem in the Pentagon, or in Whitehall, for that matter, is that the drawdown is putting our heritage at risk—causing us to fold and shelve many proud unit flags. To me, these flags are more than symbols—they are living reminders of values that define the Air Force.

If we're not careful, just taking down of a squadron here, a wing there, we'll whittle away at our legacy, we'll create a new kind of hollow air force—one that's lost its heritage, its heroes, its famous campaigns, its core values.

That's a quick look at our heritage program. I know this was a bit like preaching to the choir, but I thought you'd appreciate my view of the process.

I'd like to take credit for recognizing that an Air Force without a past will not have a future. Unhappily for me, that simple, powerful idea was put forward by another Chief of Staff—Carl Spaatz. He remembered the lean years of the 1930s—how the future Great Captains of World War II prepared by studying and debating the lessons learned from World War I. Spaatz saw a parallel developing in the 1950s, so he set up the Air Force Historical Foundation.

That first meeting in 1953 was a Who's-Who of air power—Twining, Vandenberg, White, Eaker, McKee, Edwards, and others. It would have been fun to have been there. Spaatz gave one charge to the group—"Preserve and perpetuate the history and traditions of the Air Force and of the people who've devoted their lives to its service." All that is left for us to do is salute smartly and say, "Yes sir."

Session One

Policy Decisions

General Bryce Poe II, U.S. Air Force, retired, President, the Air Force Historical Foundation, graduated from the United States Military Academy at West Point in 1946. He earned an M.A. in history at the University of Nebraska in 1964 and an M.S. in international affairs at George Washington University, Washington, D.C., in 1965. From 1946 through 1948, General Poe served in one of the first jet-equipped squadrons in the United States Air Force and flew over ninety combat missions in Korea in RF–80 aircraft. Assigned to Allied Air Forces Northern Europe, Oslo, Norway, in 1952, he flew Vampires, Meteors, F–84s, and F–86s with the Royal Norwegian and Royal Danish Air Forces. Following graduation from Armed Forces Staff College in 1960, the general served in an Atlas missile squadron. In Vietnam, he flew 213 combat missions, most in RF–4Cs. Later General Poe was Commander of the 26th Tactical Reconnaissance Wing, Ramstein, Germany (1969 to 1970); Commander of Ogden Materiel Area, Hill AFB, Utah (1973 to 1974); Commander of Air Force Acquisition Logistics Division, Wright-Patterson AFB, Ohio (1976 to 1978); and Commander, Air Force Logistics Command at the same base from 1978 until his retirement in 1981. Since retiring, General Poe has done unpaid work for numerous agencies including the National Research Council, Congressional Office of Technology Assessment, National Air and Space Museum, and the Department of Energy.

Introduction

General Bryce Poe II

As you know, Panel I begins our symposium with "Policy Decisions," and I do not know how we could have picked a more pertinent or more difficult subject between allies. The many factors involved in policy decision making—relating it to the real threat, to the perceived threat, public reaction, government and bureaucratic reactions, system reliability and availability, finance, the influence of outside circumstances, differing service and national traditions, agreements and disputes on roles and missions within our services and with our allies—make it a fascinating subject for examination today. We are very fortunate that our panel members have selected subjects across the spectrum of Royal Air Force and U.S. Air Force efforts to confront and eventually solve problems through policy decisions. This session features four papers that detail important developments from just after World War II through the early 1980s.

The initial introduction of U.S. Air Force aircraft with atomic weapons, at no little risk to the United Kingdom, was to be marked by frustration, conflict, disagreement, and misunderstanding. But the common threat and common mission led to remarkable success and cooperation. In our first paper, Patrick Murray, the senior U.S. Air Force historian in the United Kingdom, gives a look at this process that is both unique and most interesting.

Our second speaker has been a historian, soldier, author, and holder of jobs with increasing responsibility up to and including the Assistant Under Secretary of State for the United Kingdom. Cecil James adds a special personal knowledge, as well as historical expertise, to the discussion of how Minister of Defence Duncan Sandys brought missiles into a prominent role as a major part of British defense activities.

Our third speaker, Air Chief Marshal Sir Denis Smallwood, is an old friend of mine. He moved up, as you know, through the ranks to the highest levels of the Royal Air Force. When you talk about "the view from the top," he has had that view. He has also had it down the line a bit. I can remember when you and I, sir, were keeping an eye on General Bubayev across the Iron Curtain; sharing concerns and, sometimes, amused comments about that Soviet general's activities. I am just delighted to have my old friend Sir Denis here. If anybody is a representative of the kind of attitudes and personalities that led to strong Anglo-American cooperation, it is "Splinters" Smallwood. He was there longer than

most, and he had much to do with the serious problems that had to be dealt with. Incidentally, I did have one problem, "Splinters." The State Department was a bit concerned. They came to me a couple of weeks ago about your coming over here—all of you, Freddie and all. It seems we have this terrorist problem and it was the 179th anniversary last week of the burning of Washington. I had to assure them that it was the Royal Marines that burned the place down, not the Royal Air Force!

Finally, as one of the hand-picked few selected to chart the way to solve an entirely new set of military problems and opportunities, Lieutenant Colonel Michael Kirtland is particularly well suited to the study of policy decisions, which he does at the Air Power Research Institute down at Maxwell AFB, Alabama. If you had to pick one activity that one would have assumed to have been routine operation, but that turned into a major controversy, it would have to be the deployment of ground-launched cruise missiles at Greenham Common. Colonel Kirtland was intimately involved in that deployment.

Session One Presentations

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Patrick E. Murray, Command Historian, Third Air Force, RAF Mildenhall, England, received his B.A. in Philosophy and M.A. in History from Notre Dame Seminary in New Orleans. Louisiana, and did graduate work at the University of Notre Dame and the University of Texas-San Antonio. He has worked extensively in Latin America and taught and lectured in Spanish. As an Air Force historian, Mr. Murray began at the Air Reserve Personnel Center in Denver, Colorado. Subsequently, he served as a historian at the United States Air Force Southern Division at Howard AFB in the Republic of Panama, Headquarters Eighth Air Force, and Headquarters Twelfth Air Force.

An Initial Response to the Cold War: The Buildup of the U.S. Air Force in the United Kingdom 1948–1956

Patrick E. Murray

The demobilization of Allied military forces following the surrender of Nazi Germany resulted in the withdrawal of all United States military combat aircraft from the United Kingdom. The general hope was that such a combat armada would never be needed again. That hope was short-lived. The closing of ground routes into West Berlin during the spring and summer of 1948 began the challenge, the threats, the show of force by Stalinist Soviet might, and, on the part of the United States, a corresponding demonstration of resolve, as shown by Operation Vittles, the airlift to blockaded Berlin. The increased tensions, response, and counter-response were elements that would characterize the history of Europe and Asia for decades. The Cold War was underway, and the United Kingdom found itself, not unwittingly, on the front line. "It must not be forgotten," Winston Churchill would state later, "that under the late Government, we took peculiar risks in providing the principal atomic base for the United States in East Anglia and that, in consequence, we placed ourselves in the very forefront of Soviet antagonism."[1] The United States and the United Kingdom had become inseparably allied in the East-West confrontation.

On July 17–18, 1948, at the invitation of British Prime Minister Clement Attlee, some sixty United States Air Force B–29 strategic bombers landed at three British air bases on a thirty-day training deployment. For the first time, the U.S. Air Force had stationed combat aircraft in another sovereign nation during peacetime. Unlike the situation in Germany, where the United States had acquired its bases by right of occupation, the United States had no bases of its own in the United Kingdom. Moreover, the two nations had no formal agreement allowing this deployment. Six squadrons of strategic bombers constituted a sizeable military force to be deployed on British soil in peacetime without formal agreements between the host nation and visiting forces.[2]

This absence of a formal agreement allowing foreign military forces on sovereign British soil was not the only irregularity that one could observe in this event. After the demobilization following World War II, hundreds of military airfields still remained in the United Kingdom. These were Class A Standard Airfields with runways only 6,000 feet long and 150 feet wide, adequate for combat-loaded B–17s and B–24s. However, USAF B–29s, capable of carrying

bomb loads three to four times greater than the earlier bombers, required runways 8,000 feet long and 200 feet wide. How was it possible that the largest combat-tested bomber in the free world, possessed only by the United States, could deploy to and operate safely from British military airfields in 1948? The answer is not immediately obvious and requires some explanation, while the long-term consequences of the B–29 event requires even more elaboration.

In 1946, while making a final tour of air force installations in the United Kingdom, Marshal of the Royal Air Force Sir Arthur Tedder, Chief of the Air Staff, and General Carl Spaatz, Commanding General, U.S. Army Air Forces, discussed the uneasy peace that resulted from the Allied victory in Europe.[3] The strength of the Soviet military, together with little indication of demobilization comparable to that of the other Allied nations, justified more than just a gut feeling that political and military struggle in Europe might not be over. The two airmen agreed that several air bases in East Anglia would be prepared for use by B–29s, in the eventuality that they would be needed in the theater. So it was that Royal Air Force (RAF) Scampton, RAF Marham, RAF Waddington, and RAF Lakenheath were able and ready to receive the six squadrons of USAF strategic bombers in the summer of 1948.[4]

On July 16, 1948, Lieutenant General Curtis E. LeMay, Commander, United States Air Forces in Europe (USAFE), issued General Order No. 54, establishing the 3rd Air Division (Provisional) at RAF Marham. The commanding officer designated for this provisional organization was Colonel Stanley T. Wray, a USAFE staff officer who happened to be in England at the time surveying airfields.[5] Two days later, the first phase of Operation Looker, the "movement of two medium Bomb Groups from the [United States] to Europe"[6] was completed, as the 28th Bomb Group from Rapid City, South Dakota, and the 307th Bomb Group from MacDill Air Force Base, Florida, landed in the United Kingdom for a thirty-day deployment. The advertised purpose of this thirty-day temporary duty, according to a news release sent from the Office of the Secretary of the Air Force to U.S. Military Attaché in London, was training:

> The flight is being made at the invitation of the Air Ministry. During their stay in England it is expected that the B–29's will visit Royal Air Force installations throughout England and engage in such joint exercises as may be decided upon there. . . . They are scheduled to return to the U.S. approximately July 31.[7]

Each group consisted of three squadrons of ten aircraft, while C–54 cargo aircraft transported maintenance personnel and supplies. The total number of U.S. airmen descending upon English soil was approximately fifteen hundred.[8] However, even before this initial deployment reached England, the decision had been made to extend the temporary duty to sixty days.[9]

> Training was definitely a consideration in the deployment concept, but, in larger terms, the basing of American strategic forces in England at that time represented a unified British-American response to the Soviet ground blockade of West Berlin.[10]

A new commander with the rank of general officer was assigned to 3rd Air Division (Provisional), adding credence to the probability that the USAF presence in England was more than a casual visit of old friends. On August 7, 1948, Major General Leon W. Johnson assumed command of the 3rd Air Division with responsibilities to exercise command jurisdiction over all USAF stations, activities, supporting and attached units; to exercise operational control under direction of the Commanding General, USAFE, of all USAF combat units based in the United Kingdom; to establish an air depot to provide depot support to Operation Vittles; and to organize logistical support for all USAF units in the United Kingdom.[11]

Two weeks later, on August 23, 1948, permanency took on a stronger claim when the parenthetical "provisional" was deleted from the air division designation, as Headquarters USAFE established the 3rd Air Division assigned to the USAFE.[12] Thus began four and a half decades of U.S. military presence in the United Kingdom; the mission as stated in 1948 has remained essentially unchanged.

As quickly as the thirty-day temporary deployment was changed to sixty days, so the sixty-day deployment was extended to ninety days. On November 13, 1948, the Air Ministry advised Washington that long-term use of RAF stations by the USAF "was assumed."[13] Thus, less than four months after the arrival of a thirty-day deployed task force, the governments of the United States and the United Kingdom had agreed that the basing of U.S. forces in the United Kingdom would continue indefinitely.

The long-term use of RAF stations necessitated extensive, usually protracted, negotiations. Whereas the early documentation occasionally reveals the frustration and weariness on both sides of the negotiating table, the U.S. and the U.K. governments succeeded in forging a substantial basis of cooperation that has coursed through the test of time for forty-five years. The mutual respect that had been earned during 1942–1945 undoubtedly contributed to the willingness of the British to do everything possible to make the American presence succeed. As General Johnson reported to Lieutenant General Edwin W. Rawlings in the Pentagon, referring to the British assistance and generosity to the USAF: "I think the RAF has leaned over backward to accomplish this."[14] From 1948 through 1955, the United States and the United Kingdom labored endlessly to establish a credible Cold War response to the Soviet Union, a response that included a capable strategic nuclear delivery force, an adequate air defense system, and the development of a logistic system and supply channel adequate for whatever might arise.

In these initial months, there were ample instances of cooperation between the two parties at virtually every echelon. At the lower levels, quite literally where the "rubber meets the road," the RAF made available to the USAF 385 vehicles of all types, from motorcycles to six-ton trucks.[15] In discussions about financial arrangements, they reached an early understanding that the British would supply the Americans with airfields, accommodations, and telecommunications free of charge, provided that the expenditures did not exceed the normal costs of RAF requirements and standards. That "free of charge"[16] aspect made the presence of the USAF in the U.K. different from the U.S. military presence in any other country, a fact that could go a long way toward supporting an opinion that a special sense of cooperation existed between the United States and the United Kingdom.

The first cooperative effort between the United States and United Kingdom occurred in September at a meeting at Bush House Central, where representatives of the Air Ministry, Headquarters Bomber Command, and 3rd Air Division worked out arrangements for the supply of aviation fuel, petrol, and lubricants.

> It was agreed that the airfields in the U.K. at which the USAF were established, where Royal Air Force provided headquarters facilities, M.T. petrol, lubricants, etc., required by the USAF, will be issued from local Royal Air Force stocks on repayment."[17]

Another example involving American and British military forces in a combined training exercise occurred six weeks after the arrival of the two U.S. bombardment groups described above. On September 3 through 5, 1948, the B–29s participated in a British defense exercise called Operation Dagger.[18] Officials of both countries had looked upon American participation with some apprehension because of the political implications involved, however, no serious problems arose.

Easy to overlook when considering the peacetime deployment of USAF strategic bombers to England in the summer of 1948 was the equally momentous decision to establish a major air force depot in the United Kingdom. In response to this decision, the Air Ministry made RAF Burtonwood available as an air depot site to support the airlift in Germany. On September 12, 1948, 96 officers and 1,451 airmen arrived from Rome, New York, to begin depot operations, doubling the USAF population in England. As the Berlin Blockade tightened, the airlift of supplies became the number one priority throughout the Air Force.[19] A week after its arrival at Burtonwood, the 59th Air Depot was assigned responsibility for performing 200-hour inspections on aircraft involved in Operation Vittles, and the depot commander received instructions to build an organization capable of completing seven inspections a day.[20]

RAF and USAF leaders quickly realized that the American presence demanded more comprehensive jurisdictional and financial arrangements than

existed prior to the arrival of a thirty-day TDY bomber force. The first group of peacetime American forces were governed under the existing statutes of the United Kingdom—the wartime Visiting Forces Act of 1942. The 3rd Air Division Regulations 111–2 (Military Justice), 30–1 (Personnel), and 30–2 (Paternity Claims) were all based on the provisions of this act.[21] The early financial agreements were premised upon a brief stay and a limited use of resources. Once both sides acknowledged that the USAF was in the U.K. for an indefinite duration, a stay which would involve a much larger force than sixty bombers and would require enormous expenditures of public money, more detailed and protracted negotiations were initiated.[22]

During the first half of 1949, the American forces carried out an intense but regular routine of rotating strategic bomber units for ninety-day tours. At the same time, the air depot at Burtonwood pushed C–47s through their maintenance line at an average of 8.4 aircraft per day.[23] In May 1949, the Soviets lifted the Berlin blockade, and for the first time in nine months, USAFE relaxed the six-hour alert that had been required of the B–29s in England.[24] By the time the USAF had completed its first year of Cold War deployments in the United Kingdom, ten strategic bomber groups—the 2nd, 22nd, 28th, 43rd, 92nd, 97th, 98th, 301st, 307th, and 509th—had acquired familiarity and experience in operating out of U.K. bases and training with RAF units.

While the Berlin Airlift and the training of rotational units were high priorities for the 3rd Air Division Headquarters, negotiations with the host nation also received considerable attention. Major activities included the selection of additional RAF bases for USAF use and the endless agreements necessary to define the privileges available to U.S. service members.

Of the seventy-four arrangements accomplished between the United States and the United Kingdom at this time, four must be singled out: the Johnson-Chilver Arrangement signed in January 1949; the Ambassadors' Agreement, signed in April 1950; the Special Construction Program signed in February 1951; and the U.S.-U.K. Cost Sharing Agreement of 1953. The importance of these four agreements cannot be overestimated.[25] As we look back on the Cold War as an historic event, the calibre of the initial response and cooperation between the United States and United Kingdom is exemplified in these four major decisions. In retrospect, it can be seen and must be acknowledged that they established the groundwork upon which the two nations have worked together for more than forty-five years.

The experience of the Berlin Airlift and the associated extended alert for the B–29 aircraft and air crews from September 1948 through May 1949 increased the USAF concern about the safety and protection of the bomber force. In May 1949, General Johnson wrote to the American Ambassador, Lewis Douglas, stating his desire to acquire better locations for basing the B–29s. Johnson believed that RAF Marham, RAF Lakenheath, and RAF Sculthorpe, all located in East Anglia, were "tactically unsuitable because of their nearness to the coast

and their obvious vulnerability to enemy air attack."[26] For adequate protection, the B–29s needed bases located behind the RAF fighter screen and behind the Greater London antiaircraft defenses.

The emergency plan Double Quick had provided for the movement of B–29s to other areas of England, preferably the Midlands, which were less vulnerable to attack. Double Quick required four bases adequate for B–29 combat operations. This early requirement for inland bases laid the foundation for the eventual procurement and rehabilitation of four airfields: RAF Brize Norton, RAF Fairfield, RAF Upper Heyford, and RAF Greenham Common.[27]

During 1949, 3rd Air Division did not see any major changes in the composition of U.S. forces in the United Kingdom. The rotational bomber units continued to come and go at RAF Marham, RAF Sculthorpe, and RAF Lakenheath. The USAF continued to seek more expansion of locations and facilities, but more bases required additional Congressional appropriations and securing a comparable commitment from the U.K. government during a period of a weakened British post-war economy.

Two events of 1949 which strengthened the U.S.-UK partnership in the Cold War were the signing of the North Atlantic Treaty in April and the ABC (American, British, Canadian) Conference held in Washington during September. At the ABC conference, officials agreed that the RAF would oversee the air defense of Great Britain, while the USAF would increase the number of wartime bomber units operating from U.K. bases. The explosion of the first nuclear device by the Soviet Union in August 1949, no doubt, provided incentive for greater U.S.-U.K. partnership in defense. As an additional sign of the cooperative efforts of the two air forces, the RAF agreed to commit fighters to the defense of the USAF bases, give radar coverage for the areas surrounding the East Anglian bases, and furnish RAF Regiment forces to guard the bases.[28]

The first major agreement that secured the expansion of USAF operations in the United Kingdom was the Ambassadors' Agreement, mentioned above. Although the Ambassadors' Agreement involved the expenditure of $17 million, it did not include any exchange of funds between the United States and the United Kingdom. Under this agreement, the United States contributed the services of three engineer aviation battalions for upgrading RAF Upper Heyford, Brize Norton, Fairford, and Greenham Common to B–29 operational standards. The British furnished all construction materials and a specified degree of contractual labor.[29] This agreement was significant in another aspect as well. The principle of "extra cost" was recognized, wherein the British Government agreed to provide land, facilities, and services at no cost to the USAF as long as such elements were surplus to British needs and involved no additional expense to British agencies.[30]

The Korean War, which began in June 1950, added a sense of urgency to the buildup of forces in the U.K. In July, the 20th Fighter-Bomber Group deployed sixty-nine F–84s to RAF Manston and established the first permanent

presence of U.S. fighter aircraft.[31] During the last half of the year, concern about the war in Korea and the influence it might have on Soviet expansion in Europe led to additional deployments, and two more B–29 bomb groups moved to the United Kingdom, the largest concentration of Strategic Air Command (SAC) bombers ever to occur in Britain. [32]

As the American military buildup progressed, U.S. and U.K. representatives continued to study and negotiate installation requirements in response to the decisions made at the ABC Conference held in Washington in September 1949. In addition to improving the four Midlands bases as agreed on in the Ambassadors' Agreement, the ABC Conference approved an expansion of the USAF to thirty bases.

This agreement led to the next important arrangement between the United States and the United Kingdom, the Special Construction Program, which called for improvements and construction at three air depots and twenty-three airfields. This jointly funded program, initially costing $109 million, was signed by U.S. and U.K. officials in February 1951.[33]

By 1951, the growing size and complexity of the mission of 3rd Air Division led to a separation of its responsibilities. The 7th Air Division under SAC took the strategic bombing mission of the B–29s, while the newly activated Third Air Force, which reported to USAFE, was responsible for all tactical operations, logistics and supply, and negotiations with the host nation. By the time 3rd Air Division had split in two, the USAF presence in the U.K. had grown to nearly twenty-five thousand personnel stationed at sixteen installations. For the next decade and a half, 7th Air Division and Third Air Force were the two principal USAF elements in the United Kingdom.[34]

In May 1951, to meet SAC's deployment requirements, Third Air Force transferred to 7th Air Division jurisdiction at nine bases—RAF Basingborne, RAF Lakenheath, RAF Lindholme, RAF Manston, RAF Marham, RAF Mildenhall, RAF Sculthorpe, RAF Wyton, and RAF Waddington. As soon as they were activated, six more bases—RAF Brize Norton, RAF Upper Heyford, RAF Fairford, RAF Greenham Common, RAF Woodbridge, and RAF Carnaley—were added to SAC's holdings.[35] In June 1951, the Air Ministry, the RAF, and SAC expanded SAC operations in England to included medium and heavy bombers, fighter escorts, reconnaissance, and air refuelers, an effort that required a total of twenty-four installations.[36]

For the next four years, the United States and the United Kingdom were joined in the common cause of construction to satisfy the burgeoning need for facilities to accommodate more USAF aircraft and personnel. SAC's 7th Air Division continued its large-scale unit rotations, while Third Air Force acquired tactical operational responsibilities. In August 1951, the 20th Fighter Bomber Wing at RAF Wethersfield was assigned to Third Air Force; in September, the 81st Fighter Interceptor Wing arrived at RAF Bentwaters; and in December, the 123rd Fighter Bomber Group at RAF Manston reported to Third Air Force. Six

months later, the 49th Air Division, equipped with B–45 medium bombers, was assigned to Third Air Force and stationed at RAF Sculthorpe. With the establishment of the 49th Air Division, the Third Air Force aircraft inventory consisted of eighty-six F–84 Thunderjets from the 20th Fighter Bomber Wing, sixty F–86 Sabrejets belonging to the 81st Fighter Interceptor Wing, thirty-one B–45s under the 47th Bomb Group, and a mix of forty F–84s and twenty-three F–86s flown by the 406th Fighter-Bomber Wing.[37]

As more forces arrived in the United Kingdom, both sides dedicated additional manpower to the continued development of negotiated agreement. It was a learning experience for all involved. After several instances of Third Air Force presenting its understanding of certain "contracts" for services, an official in the Air Ministry responded

> I am directed to refer to the increasing use in correspondence of the word "Contract" when allusion is made to the financial arrangements between the Air Ministry and the Third Air Force relating to equipment, facilities, services and supplies granted to the latter. The Air Ministry is not under contract to provide any such services and the written agreements relate only to the charges (or absence of charge) which will be appropriate when our good offices are used to assist the USAF. The distinction is an important one and I am to ask that care should be taken by all correspondents to avoid referring to the arrangements as "contracts."[38]

The other major agreement achieved regarding the development and financing for the upgrade, rehabilitation, and maintenance of USAF locations in the United Kingdom was the "U.S.-U.K. Cost Sharing Arrangement" of 1953, which involved expenditures of $640 million. The agreement, which went into force on September 9, 1953, was of indefinite duration. The cost-sharing approach reached in these negotiations has served as a basis for U.S.-U.K. cooperation since that time.[39]

The buildup of forces for 7th Air Division and Third Air Force continued throughout 1953 and 1954. By 1955 the USAF occupied eighty installations, of which twenty-three were airfields. At the installations utilized by the 7th Air Division, the wings participating in the ninety-day rotational deployments gradually changed from B–29s and B–50s to B–36s and B–47s. At this time, the USAF inventory consisted of four hundred aircraft and a total of eighty-two thousand USAF personnel, including dependents, permanently stationed in the United Kingdom.[40]

By 1956 major changes were on the horizon for both Third Air Force and the 7th Air Division. From a military perspective, the development of ballistic missiles and their operational potential indicated a lesser need for forward deployed forces. From an economic perspective, President Eisenhower, entering

his second term, began looking for ways to decrease overseas military expenditures, and one method was to reduce the number and size of units stationed abroad. Under the program known as "Big Shuffle" seventeen of the thirty USAF installations were designated for return to the Ministry of Defence. In the process of returning installations, force structure changed, units inactivated, and the size of the USAF in the United Kingdom diminished. Never again did U.S. troop strength reach the numbers stationed in the United Kingdom during the period from 1952 to 1955.

The U.S.-U.K. initial response to the Cold War, as illustrated in the buildup of USAF forces in the United Kingdom, had been both massive and rapid. Discussing the effect of this buildup on Soviet planning is not the purpose of this paper, however, there is little doubt that this demonstration of long-term commitment and resolve in the early years of the Cold War illustrated to Soviet leaders that the U.S. and U.K. were firm allies against the threat of aggression. In terms of U.S.-U.K. partnership, the principles of teamwork and bonds of trust established at the negotiation tables during those early years created a solid foundation for cooperation which still serves the two nations.

Notes

1. Winston Churchill, Nov 9, 1951, shortly after his return to power as Prime Minister.
2. History, 3rd Air Division (AD), Jul 1948-Jul 1949, p. 1; Kenneth Sams, HQ Third Air Force (3AF) Historical Division, Office of Information, History of Third Air Force, 1948-1962, pp. 12-17; Lawrence Benson, USAFE Historical Monograph, "USAF Aircraft Basing in Europe, North Africa, and the Middle East, 1945-1980, pp. 9-14. Most official USAF histories and monographs are classified or contain classified material. All of the material used in this paper is unclassified.
3. Simon Duke, *U.S. Defence Bases in the United Kingdom: A Matter for Joint Decision?* (Basingstoke: Macmillan with St. Antony's College Oxford, 1987), pp. 20-25.
4. Vernon D. Burke, "The USAF in the United Kingdom, 1948-1973: Organization" (HQ USAFE Historical Monograph, Nov 28, 1977), pp. 2-4); Vernon D. Burke, "US-UK Negotiations Concerning the U.S. Air Force in the UK, 1948-1973: Chronology and Document Collection" (HQ 3AF Draft Monograph, Nov 17, 1975), p. 1.
5. G.O. No.1, HQ USAFE, subj: "Assumption of Command," Jul 16, 1948; History, 3AD, Jul 1948-Jul 1949, Vol. I, pp. 13-14. During the planning for this operation, the deployment force was referred to simply as the "B–29 Task Force in the U.K."
6. Ltr, HQ USAF to Commanding General USAFE, subj: Assignment and Declassification of Code Word, Jul 19, 1948; History, 3AD, Jul 1948-Jul 1949, Vol. I, p. 16; Unit History, 28th Bombardment Group, 90-days TDY to England, Jul 17, 1948-Oct 19, 1948.
7. Msg, Office Sec Air Force to USAFE, USMA London, 161423Z Jun 1948.
8. Msg, Office Sec Air Force to USAFE, MacDill Fld, CG SAC, Rapid City AFB, ND, 160257Z Jul 1948; Msg, HQ SAC to USMA London, 160400Z Jul 1948.
9. History, 3AD, Jul 1948-Jul 1949, Vol. I, p. 17.
10. Burke, "USAF in the United Kingdom," p. 1.
11. Diary of Maj. Gen. Leon W. Johnson, Jul 48-Feb 52, p. 2; History, 3AD, July 1948-1949, Vol. I, p. 18.
12. Ltr. 322 (AFOOR 867), HQ USAF, Washington, D.C., "Establishment of the 3rd Air Division, Oct 7, 1948.

13. History, 3AD, Jul 1948-Jul 1949, Vol. 1, p. 27.
14. Diary of Maj Gen. Johnson.
15. Ltr, Col. Thomas O. Newell, USAF to Lt. Gen Edwin W. Rawlings, HQ USAF, Nov 4, 48, (A Matter of Decision file), pp. 336-40; L. Olewine, "A Matter of Decision," Vols. I, II, III. This document is a Third Air Force study on the financial arrangements and agreements between the U.S. and U.K. between 1948-1955. It is an essential source for anyone interested in this subject.
16. Johnson-Chilver, "Financial Arrangement for Supplies and Services for the United States Air Force in the United Kingdom"; History, 3AD, Jul 1948-Jul 1949, Vol. 1, pp. 44-52.
17. Notes of meeting held in Room 629, Air Ministry, Bush House Central, Sep 30, 1948, (HQ 3AF Historical Archives).
18. Unit History, 307th Bomb Group, contained in History, 3AD, Jul 1948-Jul 1949, Vol. II, p. 197, ff.
19. Unit History, 59th Air Depot Wing, Sep 12, 1948-Jun 30, 1949, included in 3AD History, Jul 1948-Jul 1949, Vol. IV; History, 3AD, Jul 1948-Jul 1949, Vol. I, pp. 22-24, 28-34.
20. History, 3AD, Jul 1948-Jul 1949, Vol. I, pp. 20-21.
21. Regulations, 3AD Reg. 111-2, Jun 29, 1949; 3AD Reg. 30-1, Mar 1, 1949; 3AD Reg. 30-2, May 17, 1949.
22. Visiting Forces Act of 1942; History, 3AD, Jul 1948-Jul 1949, Vol. I, pp. 51-97; Olewine, "A Matter of Decision," Vols. I, II, III.
23. Unit History, 59th Air Depot Wing, Sep 12, 1948-Jun 30, 1949, pp. 26-28.
24. Burke, "USAF in the United Kingdom," p. 6.
25. Olewine, "A Matter of Decision," Vols. I, II, III; Donald A. Walbrecht, "Anglo-American Air Co-operation, 1919-1992," (Unpublished Doctoral Dissertation).
26. E.R. Eggers, "History of the United States Air Force Construction Program in the United Kingdom, July 1948-December 1955" (HQ 3AF Monograph, Dec 1955), p. 46; Olewine, "A Matter of Decision," Vol. I, pp. 5-8.
27. History, 3AD, Jul 1948-Jul 1949, Vol. I, pp. 100-15.
28. *Ibid.*, p. 22.
29. Olewine, "A Matter of Decision," Vol. I.
30. Burke, "USAF in the United Kingdom," p. 18.
31. History, 3AD, Jan-Jun 1950, Vol. I, pp. 7-9; History, 3AD, Jul-Dec 1950, Vol. I, pp. 1-5, 83-95, 120-25.
32. Burke, "USAF in the United Kingdom," p. 23.
33. Olewine, "A Matter of Decision," Vol. I & II.
34. History, 3AD, Jan 1-Apr 30, 1951, Vol. I; History, HQ 3AF, May 1-December 31, 1951, Vol. I, pp. 1-8.
35. Agreement, "Transfer Agreement and Delineation of Responsibilities between USAFE and SAC in the United Kingdom," May 16, 1951 (HQ 3AF Historical Archives).
36. Benson, "USAF Aircraft Basing," pp. 29-30; Walbrecht, "Anglo-American Air Power Cooperation," pp. 167-71.
37. 3AF Director of Statistical Services, subj: "3AF Statistical Summary for October 1953" (HQ 3AF Historical Archives).
38. Ltr, Air Ministry to Headquarters Third Air Force, Dec 8, 1952.
39. Olewine, "A Matter of Decision," Vols. I & II; History, Headquarters Third Air Force, January-December 1954, Vol. I, pp. 84-94.
40. Benson "USAF Aircraft Basing," pp. 29-31.

The Role of Missiles in British Concepts of Defence: The Influence of Duncan Sandys

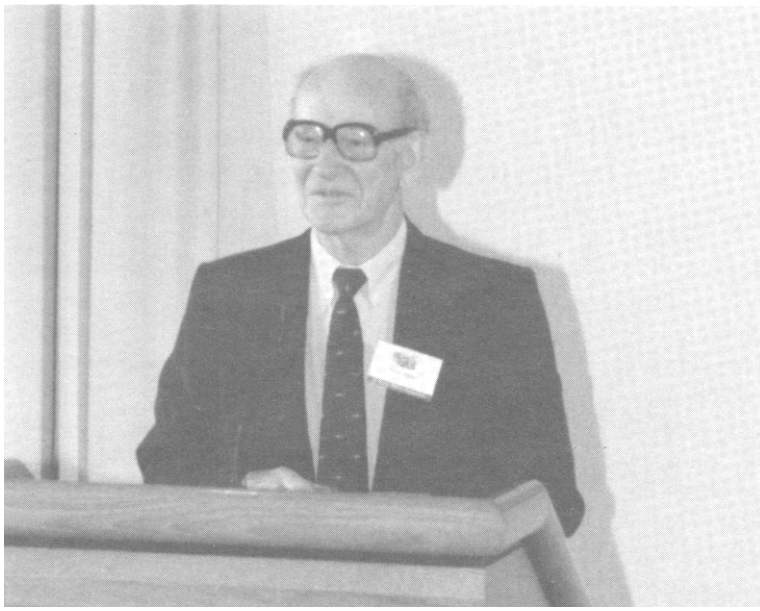
Cecil James

The moderator must not start counting, yet, timewise. I have my throat pastilles with me; we seem to have imported some London type fog today. And I do not mean for you to start counting yet, sir, because I've really been through a sort of "drowning man" experience from Patrick Murray. So much of what he was talking about, I was personally involved in, especially in the late 1940s and 1950s. There was a point in that history where, if I had died overnight, Greenham Common would have been found written on my heart!

But here we are. Missiles, concepts of defence, Duncan Sandys, in half an hour. Oh, boy! Brevity, of course, is important; there does seem to be a sort of relationship between the number of words and the importance of the subject: 56 words in the Lord's Prayer, 294 in the Ten Commandments, 300 in the Declaration of Independence, and 26,911 in the European Community directive on the export of duck eggs! Oh yes, I ought to also say, before you start counting, I had a word with Roger Miller about the balance of this particular talk as between high policy and personality, and he said, "For the sort of audience that we've got, personality is *far* more important than policy!"

Duncan Sandys was born in 1908. He had a typical education for his age and class: Eton and Cambridge University. His father had been a Member of Parliament, and Sandys became one also at an unusually early age, twenty-seven, and remained one, except for a break between 1945 and 1950, until 1974. His father-in-law, Winston Churchill, was also in Parliament for most of that long, dangerous, and turbulent period. Sandys' first ministerial appointment came in 1941, after he had been invalided out of the army with a serious disablement.

His wartime service is best known for his chairmanship of the Crossbow Committee, a subcommittee of the British War Cabinet that monitored and coordinated intelligence operations and air attacks against a range of targets crucial to the V-weapon offensive that the Germans were planning: V–1, the first cruise missile, and V–2, the first ballistic missile. On June 13 1944, a week after D-Day, the first V–1 landed in Britain; they then came thick and fast. Some ten thousand V–1s and one thousand V–2s were launched against Britain by April 1945. Looking back on World War II, on critical periods that could have turned out differently and altered the course of history, the German missile



Cecil James, member of the Royal Air Force Historical Society Committee, received his degree in history from Cambridge University in 1940. He served as a lieutenant in the Royal Artillery from 1940 to 1942, Subsequently, he was the author of numerous wartime information booklets on Royal Air Force operations. From 1951 to 1956, Mr. James was the Private Secretary to the Secretary of State for Air from 1951 to 1956. Later he served as Command Secretary for the Far East Air Force, Singapore, from 1963 to 1966 and as Chief of Public Relations, Ministry of Defence, from 1966 to 1968. Subsequently he became the Assistant Under Secretary of State from 1968 to 1977.

attack and Allied counteraction is just such a period. The intelligence effort from 1942 and the associated bombing missions of Eighth Air Force and Royal Air Force Bomber Command and Second Tactical Air Force not only reduced the scale of the V–1 and V–2 attacks, they seriously delayed them. A week after D-Day for the first V–1 had little effect on the invasion of Normandy; a week before would have been more than a nuisance; a month or longer before, who can say? V–1s could be shot down, with difficulty; V–2s, delayed until September 1944, could not. Duncan Sandys was steeped in all this; it left its mark.

He was next a minister from October 1951, when Churchill came back as Prime Minister. This was as Minister of Supply, with responsibilities that included the development of nuclear weapons and missiles in all the categories—ground-to-air, ground-to-ground, air-to-air, and air-to-ground. He was a member of the Cabinet at the time of the Anglo-French expedition at Suez, a watershed event. This, too, left its mark on Sandys. In January 1957 Harold Macmillan, who had replaced Anthony Eden as Prime Minister, appointed Sandys as Minister of Defence; and it is for his time and performance in this post that Sandys is best known and remembered. His name is associated, above all others, with deep and ill-conceived cuts in British defence, especially with a blinkered obsession with the development of missiles at the expense of aircraft. Whether this is a fair judgement or not, it cannot be denied that, in contrast with many political appointments in our democratic systems, Sandys became Minister of Defence knowing a lot about the subject for which he was responsible. The task was daunting.

The Suez Crisis of 1956 was a political disaster, but far more important was the growing realization, long before Egyptian President Gamal Nasser nationalized the Suez Canal, that the British were living beyond their means and had to get their priorities right. Concentrating, as we must, on defence—defence concepts and defence expenditures, and the two were closely linked—the process of scaling down the cost of defence and rethinking defence policy began when Churchill returned to power in 1951. Defence was seen as taking too big a share of government expenditure; too much industrial, scientific, and technical effort was going into defence industry at the expense of civil industry and exports; too much manpower was going into defence through National Service—the draft. The British Empire would surely shrink, but there were many commitments in the Mediterranean, in Asia, and in Africa which could last for many years. Could one meet them without the manpower provided by National Service? Could one even meet British commitments on the European mainland—over 30,000 men in the British Army of the Rhine (BAOR) and a large tactical air force—without National Service? There was no question of choosing between Imperial and North Atlantic Treaty Organization (NATO) commitments. Both had to be honoured, but could this be done less expensively, with differentially structured forces and a revised strategy; not only less

expensively in money, but in manpower as well? To get rid of National Service would be politically popular and provide good quality manpower for a languishing economy. Was there a solution, practicable and politically acceptable? Or was it the case, as some were becoming to suspect, that God had gotten tired of being an Englishman?

In May 1956, the Secretary to the British Cabinet delivered a memorandum to the Prime Minister, Anthony Eden. It had quite a title: "The Future of the United Kingdom in World Affairs." It was quite brief, but it was notable for both its common sense and its potential for controversy. As far as Defence was concerned, the basic reasons for change were expressed like this:

> The external situation confronting us has changed. The hydrogen bomb has transformed the military situation. It has made full-scale war with Russia or China unlikely. And conventional forces, though still of great importance in some situations, have become a relatively less important factor in world affairs. . . . It is clear that ever since the end of the war we have tried to do too much—with the result that we have only rarely been free from the danger of economic crisis. . . . Unless we make substantial reductions in the Government's claims on the national economy we shall endanger our capacity to play an effective role in world affairs.[1]

"The *hydrogen* bomb," the memorandum emphasized, "has transformed the military situation." What was sinking in, or what those who wrote that memorandum hoped was sinking in, was that the significant nuclear event was not so much Hiroshima as Bikini Atoll. So long as the ultimate weapon was measured in kilotons, you could just about conceive of a war in which such weapons might be used. Your insurance policy had to be shaped accordingly, with a serious element of conventional capability—which is where most of the money goes—as well as nuclear. But once there is a thermonuclear capability in some abundance you can and should rethink the terms of the insurance policy. What now matters most is the absolute priority to be given to avoiding general war.

The memorandum on future policy was the first such document to be considered when, in May 1956, the Eden government began what was intended to be a fundamental review of defence and national strategy. This made rapid progress that summer but ran into the sand, almost literally, and was nearly washed away when Nasser nationalized the Suez Canal on July 26th. For the rest of the year, the government concentrated on the Suez expedition and its numerous consequences. But some crucial decisions were beginning to emerge. One was that the keystone of defence policy would be an independent nuclear deterrent. It would be provided by a V-bomber force to begin with, followed by Blue Streak—a nuclear intermediate-range ballistic missile (IRBM) developed

by the British with a good deal of American help, but wholly under British control and with a British warhead. The possibility of deploying the Thor IRBM in Britain as a stop gap until Blue Streak became operational was also emerging. Whether or not that happened, two British air-launched cruise missiles were envisaged to keep the V-bomber deterrent credible for as long as possible and insure against delay over Blue Streak. These were the Blue Streak Mark 1 and, later, the more sophisticated and capable Blue Streak Mark 2. There could be, and was, argument about the size of the V-bomber force and the number of Blue Streaks, but otherwise there was unanimity between the government and the Air Staff. But there was a cloud on the horizon: the Royal Navy and Royal Army had their doubts to some extent about the concept of nuclear deterrence and certainly about the priority to be accorded to it and the resources that would be invested in it.

Another emerging concept was that Britain had become indefensible. In the thermonuclear age, if deterrence failed, you had to be able to knock everything down. You could not do this, even when the threat was from manned bombers. You certainly could not do so when the threat was from ballistic missiles; and the intelligence assessment in the late 1950s was that the missile threat to Britain would be serious within five or six years. Before Mr. Macmillan became Prime Minister he had said that the sensible decision was to disband Fighter Command—Fighter Command, the saviour of the nation and much else in 1940. No wonder that Macmillan said that the decision was difficult as well as sensible.*[2] The question that Duncan Sandys was required to answer was not how much air defense was needed for the protection of Britain. It was how much was needed for the credibility of the nuclear deterrent?

Precisely the same question arose in the next area of immense importance to the British Cabinet: the commitment to NATO. If nuclear deterrence was the name of the game, the purpose of conventional forces, at any rate in the NATO area, was not to fight a set-piece war but to enhance nuclear credibility. Indeed, the more prepared one was to fight such a war, the more it weakened his nuclear credibility, or so it could be argued. So before Duncan Sandys became Minister of Defence, a diplomatic offensive was launched to sell to the NATO allies the need for a radical reappraisal of NATO strategy and force levels, especially on the Central Front, but at sea as well. Inevitably, this antagonized the Supreme Allied Commander Atlantic (SACLANT) as well as the Supreme Allied Commander Europe (SACEUR).

Accordingly, Duncan Sandys came into office in January 1957 with a directive from Mr. Macmillan, the new Prime Minister, "to formulate in the light of present strategic needs a new defence policy which will secure a substantial reduction in expenditure and manpower."[3] In more detail, he was to build up and, as necessary, modernize an effective independent strategic nuclear

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* Macmillan was Chancellor of the Exchequer at the time.

deterrent; ensure that NATO accepted and applied the logic of nuclear deterrence; abolish National Service; achieve big savings in air defence, BAOR, and RAF Germany; and reduce the Navy's commitments and garrison forces worldwide.

A programme such as this demanded a politician who either could charm the birds from the trees or who could not be deflected whatever the opposition. Mr. Sandys was the second kind; he had always been. As a young artillery officer before the war, he had used his position as a Member of Parliament to expose the lamentable state of Britain's antiaircraft defences. His name still crops up twenty years after his retirement from active politics. In the *London Times* this very year, a distinguished political opponent described him as a politician of "monumental obstinacy," and a senior civil servant has likened him to "a programmed tank." Tales abound about how difficult he was to work for; but it must be said that he was as hard on himself as his staff; long hours, late into the night, week after week, were nothing to him. Memoranda were drafted and redrafted again and again. Civil servants were cannon fodder. Two of us went to see him one day to tell him that a missile range for the RAF in the Outer Hebrides in Scotland could no longer be justified and should be abandoned. We had taken a lot of criticism over this project: Whitehall blundering about in a beautiful part of Scotland in its big bureaucratic boots. He listened to us, saying nothing. I am not sure what we expected, but I was taken aback at what we got. When we had finished, he laughed—loudly. It was a bit like a crevasse suddenly opening up in a glacier, but it was a laugh, sure enough. I think he laughed because we civil servants had finished up with egg on our faces. Another missile project he had to deal with was the British link in the Ballistic Missile Early Warning System. The best site was in a National Park at Fylingdale in Yorkshire, and it was important to build the station quickly. Conservationists, naturalists, amenity societies were up in arms and demanded a public enquiry. One would have been conceded by the usual kind of politician, but not by Duncan Sandys. The tank was programmed for credible nuclear deterrence; early warning was essential for the credibility of Bomber Command as well as Strategic Air Command; the tank rolled on and over the opposition.

Sandys could claim formal acceptance for nuclear deterrence by NATO. After some hard lobbying in the last weeks of 1956, a new Political Directive to the Military Authorities was issued in December by the NATO Council. It was a document capable of differing interpretations, but formally it accepted a trip-wire strategy, sanctioned by massive nuclear retaliation at an early stage if war was not deterred. Sandys now had the basis he needed to argue within NATO that the British nuclear deterrent justified a reduction in the British conventional contribution; to support the case for a manifestly substantial strategic nuclear capability; and to apply the logic of nuclear deterrence to British force levels and capabilities outside the NATO area, as well as within. We must not forget that the objective was not only to bring the defence strategy

of the West up to date, to quote the Macmillan directive, it was also to "make a substantial reduction in expenditure and manpower."[4]

Within NATO, it had been difficult to get agreement on the new political directives of December 1956. The SACEUR and SACLANT had both argued against any change which would lead to smaller conventional forces. The SACEUR, General Walter Gruenther, was reported to have said, "As of now I hate the British."[5] His concern was that other NATO allies would also seek a reduction in their conventional forces and the Soviet Union would get the impression that NATO's unity and determination were weakening. Sandys was totally unshaken. He revised the old Roman maxim, "If you want peace prepare for war." The new formulation in his 1957 White Paper was, "The overriding consideration in military planning must be to prevent war rather than prepare for it." He insisted on this, despite being asked by the Chairman of the Chiefs of Staff to leave it out for similar reasons to those of General Gruenther.[6] The tank was programmed and rolling.

But it did not roll quite as far, or as fast, as Sandys intended. The British Cabinet had hoped to announce a reduction of the Rhine Army from 88,000 to 45,000 men within about two years, a reduction essential to an early ending to National Service to which they were committed. This reduction could not be reached: the final figure was 55,000, where it stayed for the next thirty years. RAF Germany, in contrast, was halved in size—from four hundred to two hundred frontline aircraft—within a year. The Air Staff were not far behind Duncan Sandys in being willing to put most of the RAF eggs in the nuclear basket. Their plans envisaged an even smaller force in Germany, exclusively for strike and reconnaissance, by the beginning of the 1960s. But what was the right balance between the nuclear and the conventional? I offer three quotations. First, the British Ambassador to NATO in March 1958:

> The Political Directive was still open to conflicting interpretations and . . . had plastered over the cracks rather than solved the strategic problems of the Alliance. In particular, the United Kingdom were known to take a more revolutionary view of military requirements in the nuclear age than was acceptable to their continental allies, with the Americans standing somewhat uneasily between, conscious of the strength of the United Kingdom arguments but equally concerned with their possibly dangerous effects on Continental policies.[7]

Second, Duncan Sandys at the NATO Council of December 1958:

> The safety of the West continues to depend on our ability to convince the Russians that a major attack upon any member of NATO will provoke a massive nuclear retaliation. . . . Effectiveness does not depend upon the possession of superiority. It depends upon the power

> to inflict on the aggressor a degree of injury which he is not prepared to accept.[8]

A third quotation was by Lord Mountbatten commenting on behalf of the British Chiefs of Staff in 1960 on a Ministry of Defence memorandum which was heavily critical of NATO's investment in a set-piece battle—all those F–104 Starfighters and tactical nuclear weapons, for instance—and of forward defence on the Central Front in strength:

> Our conclusions do not differ greatly in substance . . . but we must have regard for the morale of our own troops, the confidence of our allies—both in the military and political fields—and the continued belief of our enemies in our steadfastness of purpose. . . . We cannot admit, even to ourselves, that we would not fight on after a nuclear exchange, nor that we should not attempt to defend as much as possible of the territory of our continental allies. . . . we must organize, equip, train and supply our forces with those evident intentions in view. . . . we must therefore advocate the continuance of a doctrine whose basis we agree to be unrealistic from the strictly military point of view.[9]

These quotations illustrate several aspects of NATO's strategic position. Looking at them from the British point of view, the historical significance lies first in total commitment to the priority of nuclear deterrence; second, the application of the deterrent concept in terms of credible British nuclear capability, in part because of the political influence it bestowed but partly; and, this is the third point, because it would be a unique contribution from within Europe to strategic deterrence and justified a lesser conventional contribution by the British to NATO. Against this background, it is not surprising that the British were mainly interested in the strategic dimension of missilery. A very promising tactical ground-to-ground missile, code named Blue Water, which was under development before Sandys became Minister of Defence, was to be an early sacrifice on the alter of economy. In this area, the British relied on U.S. weaponry. With their view of correct NATO strategy, British ministers consistently deplored the immense and rapid increase from 1958 onwards, in SACEUR's stock of nuclear weapons. They conceded that there was an important political dividend, but they reckoned much smaller numbers would suffice. And they were strongly opposed to providing SACEUR with ground-launched missiles that could reach Soviet territory.[10] In their view, it was politically and strategically essential that capability of that kind should be under U.S. and British control.

Almost the first thing that Sandys did after he was appointed Minister of Defence was to write to his opposite number, U.S. Secretary of Defense Charles Wilson, confirming an agreement which had been reached in December 1956

thanks to the good relations of the two Air Staffs. This provided for the supply of U.S. atomic weapons until RAF stocks were adequate and for joint planning and operational coordination between SAC and RAF Bomber Command. President Dwight D. Eisenhower and Prime Minister Macmillan reconfirmed this agreement at their Bermuda Conference in March 1957. At this time there were also successful Anglo-American negotiations over nuclear information and materials and the Thor IRBM. The complicated technical and financial agreement, the training of RAF personnel to operate the weapon and the actual deployment and emplacement of sixty missiles were extraordinary achievements. But in one significant respect, the programmed tank came up against an immoveable obstacle. Blue Streak, the British IRBM, was in trouble. The Treasury had always been against it, and Sandys was almost continuously engaged in defending a project which he genuinely believed in and was personally committed to. Costs, the development programme, number to be deployed and, increasingly as time passed, the weapon's credibility as a deterrent, were the factors in the argument, especially costs. One possible cheaper alternative Sandys was obliged to examine was putting a British warhead into Thor, so long as—and this was the all-important proviso—the U.S. government would then concede unrestricted control of the weapon.

At a meeting with Mr. Macmillan in May 1957 Sandys reported what had taken place at a discussion with Secretary of State John Foster Dulles and Secretary of Defense Wilson—a very curious report.[11] According to the British record, Mr. Sandys thought that the two Americans had accepted the proposition of unrestricted control of Blue Streak; he had sent them a letter registering their understanding, but the letter had not been acknowledged. Anyway, the proposal was not to be seriously pursued. What was pursued was the case against Blue Streak. Blue Streak was cancelled, as a weapon launcher, six months after Sandys ceased to be Minister of Defence. It had taken longer to develop, and had been consequently more costly, than originally estimated. But then, what weapon system of this kind has not? The technical problems were eventually solved and Blue Streak proved to be satisfactory as a launcher for nonmilitary purposes. But accommodating production and deployment costs within a defence budget under heavy pressure was one reason for cancellation. The Air Staff were not all that enthusiastic; they had an understandable preference for an airborne deterrent. The key questions, however, were will it be credible and is there an alternative?

Sandys found himself defending an increasingly vulnerable position. Ballistic missiles were for him the only satisfactory instrument of deterrence in the long term. One of his earlier decisions had been to cancel all work on a supersonic successor to the V-bombers, and when, at the same time, he also cancelled the development of a supersonic interceptor fighter, it was because it was irrelevant to defence against ballistic missiles. Extending the life of the V-bombers by means of airborne cruise missiles was one possible option, but less

important to him than successful development of Blue Streak—a British product as well as a ballistic missile. But ground-based ballistic missiles in a country as small as Britain were open to criticism for military as well as political reasons. For some months in late 1958, Sandys procrastinated over proposals emanating from the Cabinet Office as well as the Treasury for a radical review of future deterrent systems. But for once his obstinacy was outmaneuvered.

There was a gathering in June 1959 at Chequers, the Prime Minister's country residence. All the appropriate top brass were there, civilian and military, but no politicians other than Mr. Macmillan. The cover story was that it was a farewell to the Chief of the Defence Staff who was about to retire. The real purpose was to launch a strategic review which, among other questions, would consider whether there was an alternative to an independent British deterrent; if not, what should be the successor system. So it came about that the British Nuclear Deterrent Study Group was formed. Blue Streak was abandoned early in 1960 because of its recommendations. Certainly, the weight of military as well as political opinion had now moved against Blue Streak, the clinching argument being that by the end of the 1960s, when Blue Streak would be fully deployed, Soviet missilery would be able to destroy a high proportion of the Blue Streak sites. In other words, if Blue Streak was vulnerable to a preemptive strike, it could have credibility only as a first-strike weapon, whereas British politics would be easier to manage if the deterrent was credible as a retaliatory weapon. Sandys, and there were important and able people to support him, persisted in the powerful counterargument that a scenario that assumed an attack exclusively against Britain was totally unrealistic and that the theoretical vulnerability of Blue Streak implied neither that the Soviet Union would be unimpressed by the system nor that it failed to provide the political clout of an independent British capability. But it was the need for that capability, as previously understood, that was coming into question. Semantics were significant: the terms of reference of the Nuclear Studies Group required it "to consider how the British-controlled contribution to the nuclear deterrent can be effectively maintained"—a "contribution," not necessarily a capability that would be a deterrent on its own.

The Air Staff suspected that these were weasel words and that the weasels were hankering after a deterrent system which was not necessarily wholly British and also one which had less delivery capability that the V-bomber force. On the first point, Polaris was now being advocated as the most credible deterrent system. The British Admiralty had been lukewarm at best about strategic deterrence, but now saw the possibility of a system operated by the Navy. But Polaris had a competitor: Skybolt, potentially a better airborne weapon than Blue Streak Mark 2, offered the cheapest way ahead. On the second point, capability, a somewhat arbitrary criterion had been used to justify the size of the V-bomber force, and there was undoubtedly scope for something smaller. How much is enough is a question that has always haunted the nuclear strategists.

The last months of 1959 and the first months of 1960 saw meeting after meeting with final decisions—perhaps I should say final provisional decisions—not taken until Mr. Macmillan had discussed with President Eisenhower the prospects of obtaining Polaris or Skybolt.[12] The outcome must be briefly described: Britain abandoned Blue Streak because it was no more than a first-strike weapon and continued nuclear deterrence by arming the V-bombers with Skybolt, not Blue Streak Mark 2 for which, it was said, the necessary development resources could not be made available. President John F. Kennedy and Secretary of Defense Robert S. MacNamara, who entered office at the end of 1960, decided that too many deterrent systems were under development and canceled Skybolt two years later. The cat was among the pigeons and the chickens had come home to roost. The panicky Nassau conference was held in December 1962 and Mr. Macmillan saved his political skin with the Polaris deal. One cannot be surprised that writing in his memoirs about the cancellation of Blue Streak he said, "I am not now convinced that it was wise."[13]

But if the strategic missilery to succeed the V-bombers had been an immensely difficult question, the determination to make the concept of strategic deterrence a key feature of defence policy was never abandoned. So it was necessary to address the question of how far should the logic of that concept be applied to defensive missilery. This was so much a question of air defence of deterrent forces in Britain, SAC as well as Bomber Command, that we shall concentrate on this.

A snapshot of RAF plans in 1957 gives a picture of twenty squadrons of interceptor fighters equipped with air-to-air missiles, a pursuit-course weapon to begin with and a collision-course weapon later on. Genie, an American weapon with a nuclear warhead, also figured in the programme. Plans for sizeable and progressively improving surface-to-air missile (SAM) defences were well advanced, with deployment determined by the need to protect SAC and Bomber Command airfields. Some missiles were planned to be nuclear tipped. As for numbers, there was a range of possibilities, but if I describe the 1957 snapshot as showing some twenty missile squadrons armed with between five hundred and eight hundred missiles, you will not be misled. Major improvements were planned in radar warning and in the control and reporting system. Here there was to be argument about the scale of improvements, but no conceptual problems. Whatever disputes there might be about the value of fighters and SAMs, the nuclear strike forces would be totally unconvincing—to both friend and foe—without a sophisticated warning system. It was the twenty squadrons of fighters and twenty squadrons of SAMs that were the target for those who believed that one area where there was massive scope for economy was the air defence of Britain.

One of Sandys' earliest decisions was to cancel the development of a supersonic interceptor fighter. From then on, the attack on the RAF programme

was relentless. More high-level attention was paid to air defence between 1957 and 1960 than to any other aspect of defence policy. The debate went on beyond Mr. Sandys' time and can be said finally to have ended at a meeting of the Cabinet Defence Committee in October 1960. As a result, the twenty fighter squadrons in the 1957 programme for home air defence had been reduced to four, with no more than a further six overseas—Germany, Cyprus, Aden, and Singapore. The twenty SAM squadrons were down to two, and these were not so much for air defence in Britain as backing for SAM squadrons in Cyprus and Singapore.[14] Whether the logic of nuclear deterrence could or should have been applied in other areas is highly debatable. It was certainly applied rigorously to the air defence of Britain. There is no time to trace the debate in detail. Here are some of the contrasting concepts and arguments: I shall typify the antagonists as Sandys and the Air Ministry—because senior civil servants fought just as hard as their Royal Air Force colleagues.

> **Sandys**: The Soviet Union will only attack airfields in Britain if it can simultaneously attack all the allied bomber bases, including those in the United States. It could not think in those terms until it has an adequate number of intercontinental ballistic missiles. This cannot be before the mid-1960s. Thereafter fighters will be irrelevant to the missile threat, so why spend anything on them in the meantime?
>
> **Air Ministry**: We have an independent deterrent and it should be defended. An attack could come against Britain alone. Anyway, there is still a bomber threat for some years to come, and it would be unwise to assume that bombers will be wholly replaced by missiles. And what will our allies think?
>
> **Sandys**: I take the last point. If we antagonize our allies we might make other economics, such as reductions in Germany, more difficult to negotiate. So we must be careful not to frighten the horses. But heavy involvement in fighter and SAM defences is a waste of money. Dispersal airfields for Bomber Command and quick reaction are more relevant to credibility.
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> **Air Ministry**: The objective is as much political as military. We are not asking for the ability to fight another Battle of Britain but only for sufficient forces to demonstrate that our airspace cannot be violated and our deterrent forces destroyed with impunity.
>
> **Sandys**: Game, set and match to me! You can have a few squadrons to police our airspace and see off Soviet aircraft on reconnaissance or similar intelligence missions.

I have somewhat simplified the debate and telescoped a controversy that lasted for more than three years. That it took so long is not because senior ministers, such as Mr. Macmillan and Duncan Sandys, were doubtful about the

merits of the case. Rather, it was because of the political fallout in Britain and NATO.

The programmed tank had got bogged down, not over the concept of strategic deterrence but over the missilery for applying the concept. Over air defence, it rumbled remorselessly on and attained its objective. A formidable man, Duncan Sandys; given a formidable task in a daunting political and economic situation. I wonder what the considered judgement of history will make of him?

Notes

1. Cabinet Office Records, PR (56).
2. Cabinet Office Records, Gen 51/2nd meeting, May 31, 1956.
3. Cabinet Office Records, Minutes of January 18, 1959.
4. *Ibid.*
5. UK D, Paris Tel No. 103, July 2, 1956, reporting a meeting between General Gruenther and Field Marshal Montgomery.
6. MOD Records MO2006, Minutes of February 7, 1957.
7. WUN 1-11/1 of March 8, 1958.
8. MOD Records, MO 13/5/4, Pt 1.
9. Minutes of September 14, 1960, Mountbatten to Minister of Defence, MO 13/1/16, Pt. 1.
10. A statement of the British objections to the deployment of medium range ballistic missiles (MRBMs) under SACEUR's operational control is in D(60)31 of July 8, 1960.
11. Cabinet Office Records, Gen 570/2nd Meeting, May 30, 1957.
12. Reporting on his discussions with President Eisenhower in Washington, March 1960, Macmillan said "I am grateful to you for expressing your willingness to help us when the time comes by enabling us to purchase supplies of Skybolts without warheads or to acquire in addition or substitution a mobile MRBM system in the light of such decisions as may be reached in the discussions under way on NATO." MOD Records, MO 26/10/7, p. 1.
13. Harold Macmillan, *Pointing the Way: 1959-1961* (New York: Harper & Row, 1972), p. 251.
14. Cabinet Office Records, D(60) 10th meeting, October 16-17, 1960.

Air Chief Marshal Sir Denis Smallwood, GBE, KCB, DSO, DFC, FRSA, FRAeS, Royal Air Force, retired, graduated from King Edward VI School, Birmingham, and joined the Royal Air Force in 1938. Subsequently, he served in Fighter Command during World War II, flying Hurricanes from 1940 through 1942. He then served as a Spitfire wing leader from 1943 through 1944. Among his many important post-World War II assignments, Air Chief Marshal Smallwood was the Air Officer Commanding and Commandant of the Royal Air Force College of Air Warfare from 1959 to 1967; Commander, Royal Air Force Guided Missiles Station, Lincs, from 1961 to 1962; Air Officer Commanding Near East Air Force, Commander, British Forces Near East, and Administrator, Sovereign Base Area, Cyprus, from 1969 to 1970; Vice Chief of the Air Staff from 1970 to 1974, Commander in Chief, Royal Air Force Strike Command, from 1974 to 1976, and Commander in Chief, United Kingdom Air Forces, from 1975 to 1976. Air Chief Marshal Smallwood was Aidé-de-Camp to Queen Elizabeth II from 1950 to 1964, and served as President of the Air League from 1981 to 1984.

Cooperation at the Top: A View from a Former Vice Chief of the Air Staff and CINCUKAIR

Air Chief Marshal Sir Denis Smallwood

It is really a great pleasure for me to be back in Washington and, particularly, to see so many old friends again. You can rest assured, Bryce, I shall not overrun my time. I don't have any lozenges. I don't know what difference that would make, but what I'm most concerned about is that damned shepherd's crook you have got there.* I would not like to finish what has been a rather poor public speaking career by being whipped off like they used to do in the old music hall comedies!

I am going to talk about the period when I was Vice Chief of the Royal Air Force and, then, moving on to what became a new appointment called the Commander in Chief, United Kingdom Air Forces (CINCUKAIR) from 1970 to 1976. I was the first to take up the appointment of CINCUKAIR when the command was formed in 1975 as the fourth region in Allied Command Europe, reporting directly to the Supreme Allied Commander Europe (SACEUR). I remember well the investment ceremony which took place at High Wycombe in the United Kingdom with the then SACEUR, General Alexander Haig, conducting the investing proceedings. It so happens that Patrick Murray's and Cecil James's presentations—there was no collusion in this, curiously enough—have dealt with a period of time which lays a good backdrop, to my mind, for the period I am going to talk about. In the process, I propose to interspace what I have to say with a few anecdotes, going back quite a bit in time, in part, for two reasons. One, I think, to "leaven the bread" a bit, and, second, to give you my impressions of the very close relationships which did develop at all levels, but particularly at the top, in about the last ten to twenty years.

But first, by way of a little background, a few memories of the earlier days. My first encounter with the U. S. Air Force, or U.S. Army Air Forces as it was then called, was almost precisely fifty years ago. At that time, I was

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* As already noted, each speaker was limited to twenty-five minutes. General Poe prominently displayed a shepherd's crook from his collection of souvenirs, to humorously emphasize his determination to keep the session on schedule.

commanding a Spitfire wing based in the United Kingdom on the South Coast near Bournemouth. The American Eighth and Ninth Air Forces had moved into the United Kingdom in strength and were beginning to develop their daylight bombing operations in conjunction with those of the RAF Bomber Command at night. At that time, a large percentage of my wing's operations were concerned with providing escort to Eighth Air Force bombing missions, although, regrettably, we did not have the range to escort them all the way to the target. This ability did not appear until later, with the introduction of the long-range P–51 Mustang. An outstanding leader on the American-operated P–51s was a Colonel John C. Meyer. I met him then when he was leading a P–51 wing, and it was significant and a fortunate coincidence that he was later to become the Commander in Chief of SAC and, more to the point, Vice Chief of the USAF at the same time that I was appointed to be Vice Chief of the RAF. It was as a result of our meetings in the early 1970s that the regular, annual Vice Chief to Vice Chief talks began and still continue.

My first meeting with an American Army Air Forces officer took place at my Spitfire base. I had received a telephone call from a colonel commanding a Ninth Air Force fighter wing who said that he would like to drop in to discuss mutual fighter escort tactics. I was waiting on the tarmac to welcome him and, as he taxied, in I was intrigued to see that poking out of his oxygen mask was a large cigar. The oxygen mask in those days had a hinged microphone which could swing open, very convenient for those who wished to smoke whilst in the cockpit. We had a wing leader who smoked a cigarette with a long black ebony cigarette holder poking through his mask. I never took to it myself! I was so impressed with the cigar-smoking colonel that my memory locked on to this incident, and I cannot for the life of me remember what sort of airplane he was flying! But it was a memorable first encounter and very significant to me as it heralded what was to became a long line of increasingly close relationships with the USAF. And now, I find it enormously heartwarming that fifty years later, I should find myself yet again talking on matters of policy and operational cooperation between our two air forces, and, as it happened so many times before, once more in the capital of the United States of America.

Before I get on to the subject in detail, one further anecdote by way of background. In the midsummer of 1977, we held a special ceremony at High Wycombe, which, you will remember, was the wartime headquarters of the Eighth Air Force, quite close to the headquarters of RAF Bomber Command. The ceremony was to mark and perpetuate the memory of the very close cooperation between Eighth Air Force and Bomber Command throughout most of World War II and was held in Wycombe Abbey. Previous to the war, Wycombe Abbey had been, and again is, an upmarket, private girls school. General Russell Dougherty, then Commander in Chief, Strategic Air Command (CINCSAC), flew over, accompanied by those two famous generals who came out of retirement for the event, Ira C. Eaker and Jimmy Doolittle. On our side

was the great Air Chief Marshal Sir Arthur "Bomber" Harris accompanied by myself. The planning for the ceremony had been coordinated with the headmistress, who remarkably and coincidentally was called Miss Lancaster. As our party drove up the drive to the school we noticed the "Stars and Stripes" flying from the main flagpole. This had been no part of our planning, and it transpired that this was the original flag handed over as a memento to the then headmistress by Jimmy Doolittle just prior to him moving Eighth Air Force out to the Pacific in 1945. It had been kept in an airtight tin and brought out for the first time on the day of the ceremony. Not surprisingly, Eaker and Doolittle were pleased and impressed.

To terminate the ceremony, an Avro Lancaster followed by a B–17 Flying Fortress, flew over the school. At that moment, Bert Harris, who had a waspish sense of humour, said to General Eaker, "I think that's in the right order, don't you, Ira?" It was not recorded what General Eaker's response was!

Incidentally, the staff of Headquarters Eighth Air Force were billeted in what had been the girl's dormitories. It was here that took place that well known-story about the consternation of those Americans who upon moving in saw a notice which read, "If you want a mistress during the night, ring the bell."

My main purpose in relating these few anecdotal pieces of background is to show that there is nothing new in Anglo-American air force cooperation, as was clearly shown to those of you who were at the seminar held at the RAF Museum, Hendon, between our two historical associations some few years ago. Cooperation started and built up during the war years, continued and developed during the postwar years, and, in my opinion, is as strong and close now as it has ever been.

I took over as Vice Chief in 1970 and remained in that appointment until I moved to become CINCUKAIR during 1974–1976. Close liaison already existed in many areas. RAF Bomber Command kept in close touch with Strategic Air Command by frequent liaison visits. All nuclear targeting was coordinated by Headquarters SAC. Both SAC and Bomber Command took part in each other's annual bombing competitions. The U.S. Third Air Force was now well settled in the United Kingdom with its headquarters at RAF Mildenhall in East Anglia. The RAF had already gained considerable experience of operating USAF aircraft with a fair-sized front line of B–29s, not to mention the Thor ballistic missile and several hundred F–86s. There was a wide-ranging personnel exchange programme, whereby each of the commands on both sides of the Atlantic had USAF and RAF personnel attached. There was considerable exchange of views at the top between commands and between the Air Force departments in the Pentagon and the Ministry of Defence in London. But there was no formal arrangement for regular interchange at the top, and this is the subject I want to concentrate on for the rest of my talk.

Before I do, however, I must make a particular point related to the Third Air Force. Its existence, following the withdrawal of the Eighth and Ninth Air

Forces, marks one of the of the most remarkable and successful military presences by a foreign power in a foreign land. In those elapsed fifty years, there has been a continuous and formidable presence of American Air Force people in the United Kingdom. I have no idea of the total number of Americans who have served there, but it must run into millions. All that time, and I was closely connected with these activities, I can think of no major incident of poor or unseemly behaviour by that multitude of men and, indeed, women. It is a most remarkable piece of history which, in my opinion, has no parallel and ought to be officially written up. Perhaps it already has been or somebody is about to do it. I can only say that, if you look into some areas of British military occupation overseas, they do not bear such close scrutiny!

The idea of regular Vice Chief to Vice Chief talks had already been mooted, and as a first step, I was invited by General John C. Meyer to visit him in the Pentagon, and this I did. I should say *en passant* here that two men who played a considerable part in the development of those talks at that time were the two air attaché—Colonel, later General and Assistant Vice Chief of Staff of the U.S. Air Force, Thomas McInerney, in London, and Air Commodore, later Air Marshal, "Paddy" Harbison, in Washington. During this first visit with General Meyer we had a full-ranging discussion on most matters of mutual interest. During my recent research into this visit, I could find no record in London of the detail of our discussions. Suffice to say, however, I remember we discussed *inter alia* the continuation and development of exchange postings, the future programme and policy for Third Air Force, participation in the SAC and Bomber Command bombing competitions, nuclear targeting coordination by Headquarters, SAC, and augmentation and allocation of airfields in the United Kingdom for reinforcement by the USAF in an emergency. At the conclusion to this first meeting, we agreed to continue on a regular yearly basis, and the next meeting duly took place in London sometime later.

I want now to say a little bit more on the subjects I just mentioned and to mention one or two others. I would emphasize, however, that what I have to say will not be all-embracing as time and memory will not permit.

Exchange Postings. The exchange posting scheme had already been running for a number of years. At the time of this first meeting, the records show that the RAF and the USAF each had over fifty exchange personnel serving with the other air force. We agreed that this pattern should continue, and it is comforting to know that the exchange programme has continued more or less unchanged up to this day, and only now, for the first time, is consideration being given to a cutback in numbers in the light of present force reductions. We reviewed in the early 1970s the value of this programme and confirmed the benefits that emerged in the knowledge of each other's operational activities.

Third Air Force. The operations of Third Air Force were already closely coordinated with those of the RAF based in the United Kingdom and agreement was reached for even closer cooperation—such matters as participation in

United Kingdom Air Defence operations, during which the USAF wings at RAF Bentwaters and Lakenheath would, in certain circumstances, come under the operational control of the United Kingdom Air Defence operations centre; the Third Air Force participating in antishipping exercises and operations; USAF forces used for offensive support and reconnaissance in U.K. Land Forces exercises; RAF forces rehearsing inflight refuelling with USAF KC–135 tankers; Third Air Force providing electronic warfare support for joint exercises; and many other subjects. This liaison between Third Air Force and the U.K.-based RAF worked well in those days, but it was helped considerably by the formation of RAF Strike Command in 1968, when the four operational commands of Bomber, Fighter, Coastal, and Transport were amalgamated under one headquarters. This new headquarters, based on the old Bomber Command headquarters, later assumed the additional title in 1975, as I have already said, of HQ UKAIR, which with its official NATO connections, even further helped the close liaison with Third Air Force.

SAC and RAF Bombing Competitions. It was agreed that considerable benefit was obtained by both sides from this yearly interchange. The RAF, in particular, obtained valuable experience in competing against SAC but initially not with great success, in terms of coming out on top. It was not until 1975 that the RAF won SAC's coveted Mather Trophy for the first time. I will have more to say about this in a moment when I review some of the matters of mutual importance which transpired later when I was CINCUKAIR.

Nuclear Targeting. This was an area which had been well developed into very close cooperation, particularly between Strategic Air Command and Bomber Command in the days when General Curtis LeMay and Air Marshal Sir Kenneth Cross were respectively Commanders in Chief. There was already an RAF representation at Headquarters SAC for this purpose, and it was agreed to maintain this representation and strengthen it. It is encouraging to note that this arrangement has continued right through, relatively unchanged, to this day.

Augmentation and Forward Airfield Allocation. Detailed planning during this period between our respective staffs produced a precise plan of allocation of airfields in the United Kingdom for USAF reinforcement during an emergency. It was a subject of considerable importance and continued to be developed and strengthened during the four years that I was Vice Chief. Such was its importance that it was considered from time to time at Chiefs and Joint Chiefs of Staff level. This emphasized the point that, although the mainstream of joint planning and discussion was conducted at Vice Chief level, the respective Chiefs kept in close touch from time to time. Thus, the two Chiefs for whom I served, Air Marshals Sir John Grandy and Sir Denis Spotswood, were often in communication with their opposite numbers in Washington, at that time, Generals John Ryan, George Brown, and David Jones. The latter, for example, paid several visits to the United Kingdom to consolidate some of the planning on the augmentation subject.

And so, the Vice Chief to Vice Chief regular meetings continued on a regular basis, alternating between Washington and London. John Meyer retired in 1972, to be followed by General Horace Wade, and then General Richard Ellis. These changes made no difference to the momentum of the talks, and they have continued right up to this day, with the USAF team still being led by the USAF Vice Chief, now General Michael P.C. Carns, and the RAF team by CinC Strike, as the RAF Vice Chief appointment was disbanded some few years ago. I understand that the next meeting is due to take place in the United Kingdom in the near future.

Before I leave the subject of cooperation during my time as Vice Chief, there are one or two other points I would like to make. In 1970, the USAF started what came to be known as the NATO Air Chiefs tour. This was an annual two-week tour round important military installations in the United States. Although the party included all the Chiefs of Air Staff—and sometimes the Vice Chiefs—and senior air commanders in NATO, it provided an excellent and informal opportunity to have private and informal discussions with one's USAF counterparts, sometimes with a touch of "*in vino veritas*"! I went on most of these tours from 1970 to 1976, as in the later years CINCUKAIR was included on the list. Furthermore, CINCUKAIR joined SACEUR for regular monthly meetings with the agenda producing valuable background to current RAF affairs, but as the Chief of Staff, Supreme Headquarters Allied Powers Europe, who was always a USAF four-star general—in my day, General Russell Dougherty, followed by General Louis T. Seith—it provided a regular and excellent opportunity for an exchange of views on air force matters. Again, all of these areas of cooperation continue in the present day.

In 1974, I took up the appointment of CinC Strike, which was soon to become jointly-hatted, as I have already explained, as CINCUKAIR. I said I would talk a little further about the SAC Bombing competition and the fact that the RAF won the coveted Mather Trophy for the first time in 1975. In view of this unique event—as it then was, we won it again later—I flew over to Barksdale Air Force Base in a VC–10 to be met by my old friend who was then CINCSAC. Understandably, he looked none too pleased with the fact that, for the first time, the Mather Trophy had slipped out of SAC's grasp. Nevertheless, as always, I was made very welcome. The awards ceremony was held in one of the massive hangers at Barksdale, and immense trouble had been devoted to converting the interior into what might almost be described as a Roman ampitheatre. I remember that when I was being taken over to view the premises by a "bird colonel" responsible for the arrangements, I noticed a large cross over the door to the main entrance. On asking the colonel what this was for, the colonel replied, "Well sir, everyone I have shown round this hanger so far on seeing the magnificence of the setting has involuntarily muttered, 'Jesus Christ!'" He was right! This particular SAC Bombing Competition was also notable by the fact that it was the first time—I think I am right in saying

this—that the F–111s of Tactical Air Command had taken part. It enabled me to meet General Robert Dixon, then commander of TAC, with whom I struck up a close friendship. But more about that later. TAC, curiously enough, did not do very well in this competition and at a senior USAF luncheon hosted by Russ Dougherty—many of the former commanders of SAC were there including Curt LeMay; I was the only foreigner present—he decided to play a small practical joke on Bob Dixon by presenting Bob, at an appropriate moment, with an antique crock jerrypot that he had stored under the luncheon table. However, the tenor of the luncheon turned out be unsuitable for this informal presentation. The senior members were not pleased with the USAF performance, and I remember Russ decided to give up the idea. He kicked the jerrypot well out of sight, under the table where it disappeared to the sound rather like a ship's bell. Altogether a memorable occasion and one which I shall never forget.

During my time as CinC Strike, I paid several visits to Headquarters SAC and to Headquarters TAC and on the last occasion, flew the F–15 Eagle. General Dougherty came over to the awards ceremony held at RAF Waddington in the United Kingdom for the 1975 Strike Command Bomb Competition when he was able to achieve his revenge, as SAC won. I also had a memorable visit from General Dixon, particularly in relation to the planning that was then proceeding, strongly supported and supervised by Bob himself, for the development of what became known as "Red Flag." This was an area of the Nevada desert devoted to simulating in the most realistic fashion the combat conditions likely to be experienced against the Soviet Union. The program had been originally conceived and set up after the Vietnam War, but the RAF did not take part in these exercises until 1977. The fact that they were able to do so at that time was due very much to the influence and cooperation of General Dixon. Since then, Vulcans, Buccaneers, Jaguars, Tornados, and RAF C–130s have all participated. The pattern developed into Strike Command being allocated two Red Flag periods per year, with the aircraft being based at Nellis Air Force Base. I understand that this arrangement still continues, which is excellent, for Red Flag provides, to my mind, the finest combat training to be found anywhere in the Western World.

During his last visit to Strike Command, after an official programme I asked Bob Dixon if there was anything else he wanted to do. "Yes," he said, "I would like to revisit RAF Benson." Bob had joined the Royal Canadian Air Force before the United States entered World War II and had been posted to the United Kingdom to become a part of the elite photo reconnaissance force flying specialized Spitfires based at Benson. "Sure," I said, "I will lay on an official visit." "No," he said,

> I would like to do this privately. I merely want to show my wife the married quarters I occupied at that time as a bachelor establishment. I have hired a saloon motor car and I could drop in on my way from

> London on a visit I am making to Oxford. As the officers married quarters will be outside the security wire, I could just motor in, show my wife the layout, and then motor on to Oxford.

I took no further action in the matter. Bob duly arrived privately at Benson early one fine summer's morning driving a black sedan. As he realized that the married officers quarters would now be occupied by a family he stopped about one hundred yards from the house and pointed it out to his wife. Inside the house was the young wife of a flight lieutenant who was preparing the children to go to school. Unknown to Bob, or to me for that matter, there had been a false alarm, an Irish Republican Army bomb scare, the night before. The young wife looked out of the window and seeing, as she put it, this "evil black motor car with a man with penetrating blue eyes pointing in a menacing way at her house," she called the police. The next thing that Bob knew, he was surrounded by some six police cars. The first thing I knew about this was when the station commander telephoned me to say that he had a slight problem. "Oh," I asked, "what is it?" "I'm afraid we've arrested General Dixon." It all ended happily, and I think that Bob has dined out on this story many times!

I tell this story, by way of a postscript, as I think it illustrates, perhaps better than anything else, what I have encountered over the last fifty years: the close relationship that existed and still exists between our two services.

The Deployment of Ground-Launched Cruise Missiles To RAF Greenham Common

Lieutenant Colonel Michael A. Kirtland

I appreciate the opportunity to be here today. However, I do feel a little bit like a pair of brown shoes in a room full of tuxedos, next to the other members of this distinguished panel. I would like to talk to you about Greenham Common and the deployment of ground launched-cruise missiles (GLCMs) there. Let me begin by suggesting to you that, simply because opposing commanders decide to take a stand, great military battles have been fought at places that otherwise lacked strategic significance. The little town of Gettysburg comes to mind, as does the Somme, an otherwise unremarkable stream in northern France. In more recent history, a remote spot in the jungle called Khe Sanh was the scene of one of the Vietnam War's major battles because opposing commanders wanted to make a stand. During the Cold War, a high-stakes, albeit mostly nonviolent, confrontation occurred at Greenham Common, a quiet Royal Air Force base near the little town of Newbury, England. What could have been a routine deployment of a new weapon system became much more. The simple movement of pawns in the superpowers' arms control match escalated into a turning point in the Cold War.

The story of the development and deployment of GLCMs is multifaceted. Limits on the length on this paper demand that it focus on a relatively narrow area of the subject: the political nature of development and the opposition to European deployment. Within those confines the paper will be further limited to those areas which directly affected the first of the GLCM bases—RAF Greenham Common. Like so many significant conflicts, the battle to deploy GLCMs was fought at more than one level. At the strategic level, the Soviet Union and North Atlantic Treaty Organization struggled for world, and especially European, political influence. At the same time, at RAF Greenham Common itself, a tactical battle was fought for control of domestic opinion. The two fields of conflict intertwined and the direction of one influenced the direction of the other, but they were both a part of the same struggle. If the domestic front were lost, it would not matter that NATO stood firm in the face of Soviet political rhetoric. On the other hand, if the NATO allies faltered in the face of Soviet pressure to prevent deployment, it would be irrelevant how popular or unpopular deployment was with average citizens. To understand the scale of the conflict over deployment, one must consider the campaign that was waged at both levels.

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It is also important to keep in mind the state of strategic arms negotiations between the United States and the Soviet Union, since, as will be noted, the GLCM was a major factor in that process. Cruise missile technology had not been a major concern in developing the Strategic Arms Limitation Treaty (SALT) I agreement between the United States and the Soviet Union. During SALT I negotiations, Soviet leaders simply did not anticipate the advances the United States had made in cruise missile technology. However, from the beginning of the SALT II talks, the Soviets made cruise missiles a focal point.[1] The Soviets believed that the SALT negotiations had helped them reach parity with the United States in nuclear weapons. They viewed development of theater nuclear forces (TNF) as an attempt by the United States and NATO to reacquire strategic superiority and saw the deployment of GLCM and Pershing II as an attempt to circumvent the SALT II proposed limits and to create a negotiating advantage in the talks.[2]

The GLCM had such an important impact because the American missile technology posed a dangerous threat to the Soviets. The Soviets and Americans had both captured World War II German V–1 technology and investigated its uses after the war. The United States, however, soon abandoned explorations in this area in favor of developing a mix of manned aircraft and ballistic missiles. The Soviet Union, in contrast, pursued cruise missile studies and ultimately deployed a number of ground- and sea-launched versions, although the technology involved in these systems was rudimentary, far below that which U.S. weapons designers were capable of producing. In the mid-1970s, interest in unmanned, subsonic missiles revived in the United States. Advances in solid-state and computer technology enabled U.S. designers to produce and field a sophisticated, highly accurate, relatively inexpensive weapon.

Soviet fear of the GLCM was based on the missile's extremely small size and high degree of accuracy. Only twenty-one feet long and twenty-one inches in diameter, the GLCM could fly a twenty-five hundred-kilometer course at subsonic speed and deliver its nuclear warhead with incredible accuracy. Unlike ballistic missile systems, the farther the GLCM flew along its flight path, the more accurate it became, thanks to its terrain contour matching guidance system.[3] Despite the long flight time to the target, the accuracy of the missile led Soviet leaders to contend that the GLCM was a first-strike weapon system. Soviet Chief of the General Staff, Marshal Nikolai V. Ogarkov, told an audience of senior Soviet military leaders in June 1980 that GLCMs would "disrupt the approximate balance of medium-range nuclear systems that has been created in Europe" and would "create the threat of a surprise suppression of the launches of our strategic nuclear forces."[4] Perceiving a significant threat from GLCMs, the Soviets began to develop a negotiating strategy backed by intensive political and propaganda campaigns that characterized the foreign policy of Yuri Andropov, leader of the Soviet Union from 1982 to 1984. This fixation on preventing deployment of TNF was not based solely on the perceived threat from GLCM. Soviet leaders also saw

an opportunity to create a major schism within the NATO community and to exploit it for their benefit.[5]

Despite its potential value, it must be remembered that the GLCM was a weapon system that the U.S. military had originally opposed. The U.S. Army envisioned Pershing II as a replacement for Pershing I and viewed the GLCM, which might normally have been considered an Army system, as a threat to Pershing II development dollars. U.S. Air Force leaders, for their part, opposed the GLCM as an unmanned system which threatened the limited funding available for manned aircraft. In addition, most Air Force leaders were disinterested in ground-based systems of any kind, and certainly did not want to spend good money on what was nothing more than an arms control bargaining chip. As a result, the Carter administration had to force the GLCM program on the USAF. With each annual budget, the Air Force placed the missile at the bottom of its priority list, knowing that the administration would fund it, sometimes providing more money than the service had requested for the system.[6]

The USAF thus had the system under development when NATO leaders decided they needed a way to counter a new Soviet threat. In 1977 the Soviet Union began deploying mobile SS–20 medium-range ballistic missiles. This new generation of missiles was to replace existing SS–4 and SS–5 missiles. NATO military leaders regarded this deployment as more than simple replacement of older systems, however. They believed it would provide a significant increase in the capability of Soviet TNF because of the numbers deployed, their increased accuracy, and the fact that each carried three warheads. Of most concern, the SS–20's mobility made it extremely difficult to locate, target, and destroy. By the time NATO leaders decided to develop and deploy GLCMs, the Soviets had already fielded approximately 140 SS–20 missiles.[7]

In May 1977, the NATO High Level Group, made up of members from NATO's Nuclear Planning Group, recommended upgrading NATO's theater nuclear systems in response to the SS–20 threat. Publicly, NATO concerns about the theater nuclear balance first surfaced in an October 1977 speech by West German Chancellor Helmut Schmidt to the International Institute for Strategic Studies. Chancellor Schmidt questioned the security of Western Europe given the strategic nuclear parity that had developed between the United States and the Soviet Union. For Schmidt, and other leaders, the question was whether the United States would respond with strategic nuclear weapons to a Soviet attack on Europe, given that such a response would most likely engender a retaliatory attack on the continental United States. Europeans leaders feared the United States would not take such a risk; the United States might trade European security for U.S. strategic nuclear security. The American position was that the nuclear deterrent force of USAF F–111 fighter-bombers and U.S. Navy sea-launched ballistic missiles (SLBMs), both already in place, tied the United States to Europe. The problem was that unrefueled F–111s could not reach deep into the Soviet Union, and SLBMs, by their very nature, could not be seen. British

Secretary of State for Defence Fred Mulley wrote to U.S. Secretary of Defense Harold Brown that the link was insufficient.[8] NATO's concerns about the strength of U.S. resolution, combined with the determination of President Jimmy Carter's administration to respond to the continually growing number of SS–20s deployed by the Soviet Union, led to the American commitment to deploy GLCMs and Pershing IIs. Even then, however, members of the Carter administration helped validate European uncertainty because they could never decide whether the GLCM was really a deployable weapon system or just a bargaining chip in arms control negotiations.[9]

The official NATO response to the continued deployment of SS–20s by the Soviet Union came in December 1979. NATO would follow a "dual-track" strategy. On one track, it would pursue intermediate-range nuclear forces (INF) arms control negotiations with the Soviets in Geneva, Switzerland. At the same time, it would pursue development and deployment of 108 Pershing IIs and 464 GLCMs.[10] Five nations—the United Kingdom, Italy, West Germany, Belgium, and the Netherlands—would host U.S. GLCM units. Actual deployment would occur unless arms control negotiations proved effective.[11]

Soviet reaction to the NATO dual-track announcement was immediate. Overtly, Soviet leaders declared that the decision destroyed the basis for INF negotiations, and they refused to consider further discussions, a position they maintained until July 1980.[12] Covertly, they perceived a tremendous opportunity to achieve theater nuclear superiority and, if the gambit of breaking negotiations was successful, to develop a virtual veto over future NATO deployment decisions.[13] In this effort, Soviet leaders developed a strategy aimed at preventing deployment by breaking the solidarity of NATO through the exploitation of the antinuclear and peace movements in the West. Their efforts to manipulate those movements became so pervasive, an Institute for Foreign Policy Analysis book later concluded, as to have "become the fulcrum of Soviet policy towards NATO."[14] The Soviets had decided that TNF deployment was the point in the Cold War where they would make their stand.

In response, the NATO allies sought to defend the alliance as an effective political and military force despite their domestic political differences. Given the failure of the alliance to act in the face of intense domestic political opposition (partly encouraged by the Soviets) and in the development and deployment of the Enhanced Radiation Weapon—the neutron bomb—the members of NATO realized that if they again failed in TNF deployment, they might never succeed in fielding another major theater weapon system. Coming so closely after the neutron bomb failure, TNF deployment might have been "a make-or-break test of NATO cohesion."[15]

The Soviets would repeatedly break negotiations during the next five years, each time attempting to achieve maximum political benefit before returning to the negotiating table. At the same time, it must be remembered, their own deployment of SS–20s continued at the rate of more than one per week. In fact,

even after Soviet President Leonid Brezhnev announced a unilateral "moratorium" on deployment of SS–20s in March 1982—supposedly to induce a similar moratorium by NATO—the Soviets continued construction on five SS–20 bases in Eastern Europe.[16] The Soviet emphasis was on propaganda to split the West, not on arms control. By the time the first GLCMs reached RAF Greenham Common in November 1883, the Soviets had deployed 378 SS–20s.[17]

To achieve their objectives, Soviet leaders recognized that they had to influence public opinion in Western Europe against deployment. While the antinuclear movements were strongest in countries such as the Netherlands, the Soviets knew that to prevent deployment, they would have to concentrate their efforts in West Germany and in the United Kingdom. Not only would these two countries host the majority of the TNF weapons, but as the two largest European NATO members, their actions would be decisive in determining whether deployment would take place. Since the first missiles were destined for RAF Greenham Common, Soviet leaders sought to use the antinuclear and peace movements in Britain to undermine domestic support for such a deployment. They understood precisely that, while they might aid and encourage domestic unrest, real opposition had to come from local populations. This was the start of the tactical battle. Forces to fight this battle were garnered from a variety of antinuclear groups and other pacifist movements. While Soviet-influenced, these were genuine domestic political groups.

The antinuclear movement in Great Britain dated from the 1950s when Britain first developed its own nuclear retaliatory forces. The first British H-bomb detonation in 1957 led to the formation of an organization known as the Campaign for Nuclear Disarmament (CND). The CND included mainstream British citizens from both the left and the right opposed to nuclear weapons as well as radicals and socialists of all flavors. The movement was closely associated with the Labour Party and in the late 1950s gained such political influence that the Labour Party at its annual conference in 1960 voted to advocate unilateral nuclear disarmament for Great Britain, although it reversed that position the next year.[18] In addition, the CND was endorsed by the Communist Party of Great Britain (CPGB), with which it developed an extremely close relationship.

The CND was a significant political movement in Britain until the signing of the 1963 Nuclear Proliferation Treaty. This agreement, the first of the major nuclear arms treaties, reduced interest in the antinuclear movement and CND membership dwindled to around two thousand individuals. At the same time that membership in CND plummeted, communist influence in the organization grew and by 1963 the CPGB had converted the CND into its main peace front.[19] Ultimately, the association between the CND and the Communist Party became so strong that the top five stated goals of the CND and CPGB were identical. Communist assumption of leading positions within the CND reached its pinnacle when John Cox became chairman in 1971.[20] Ten years later, when CPBG leaders

celebrated their importance in the CND during the Party's 1981 national congress, they were joined by Monsignor Bruce Kent, General Secretary of the CND, who praised the CPGB for keeping the peace movement going during the "lean years." CND officials also had direct ties to other Soviet front organizations in Britain, including the British Peace Assembly and the World Peace Council. Additionally, the Soviet Peace Committee, an organization dedicated to anti-NATO and antinuclear activity in the West, maintained a close relationship with the CND, sending "observers" to the CND annual conferences in 1982 and 1983.[21]

The decision to develop and deploy GLCMs to England breathed new life into an almost moribund organization. By 1980, the membership in CND had risen modestly to approximately three thousand, but, at the time the GLCM was deployed at the end of 1983, participation had surged to some seventy thousand and included a mixed group of citizens dedicated to the peace movement, along with others dissatisfied with society for a wide variety of reasons. Monsignor Kent claimed that 23 percent of CND members were practicing Christians, and available statistics bear him out.[22] At its peak, the organization contained some twenty thousand Quakers and others with antimilitary or pacifist beliefs. In addition to the Quakers, Anglican Church members, including clergy, were also heavily involved. But secular voices were important, too. The Communist Party of Great Britain contributed roughly fifteen thousand individuals to the organization, about 85 percent of the Party's membership.[23]

The Labour Party continued its close association with the CND, as well. Sixty-eight percent of CND members had voted for Labour candidates in the 1979 elections that brought Conservative Party leader Margaret Thatcher to power as Prime Minister. Surprisingly, in retrospect, Labour governments had made most of the pronuclear deployment decisions through the years, including the 1947 decision to develop a British nuclear capability and the determination to deploy U.S. nuclear-armed F–111s in Britain. In fact, the Labour government of Prime Minister James Callaghan had initially supported the deployment of GLCMs to counter the SS–20s. However, radical Labour elements assumed more stature following Callaghan's defeat in 1979 and his resignation as party leader in November 1980, and the party reversed its position. Beginning in 1980, Labour Party annual conferences voted three years in a row against basing U.S. nuclear weapon systems in Great Britain.

Anti-American sentiment added to the anti-GLCM movement. Many British saw the new American leader, President Ronald Reagan, as a dangerous "nuclear cowboy," and his election in 1980 increased fears of unilateral use of nuclear weapons based on British soil. This view reached its zenith after Reagan failed to consult with the European allies prior to the 1983 Grenada invasion, an event that raised anew the issue of how much control Britain had over the release of U.S. nuclear weapons stationed in the United Kingdom. A London *Sunday Times* poll taken immediately after the Grenada invasion showed 73 percent of all

British citizens believed the United States would launch nuclear strikes from the United Kingdom even if the British government objected.[24]

To allay fears of unilateral action by the United States and to increase the involvement of European NATO members in TNF deployment, the United States offered NATO "dual key" control of GLCM missiles. Under the dual-key concept, the United States would control the nuclear warheads on a day-to-day basis, while the weapon systems themselves would be owned and operated by the host nation or in conjunction with the United States. Thus, both nations would have to agree to release the weapons since the warheads and the launchers would be under the control of separate authorities. Ultimately, however, none of the NATO host nations took advantage of this option, because of the additional monetary cost such a system would entail.

In a House of Commons debate on December 20, 1979, Prime Minister Thatcher assured Parliament that the launch decision was a joint matter, and she could ground her assurance in the knowledge that the United States and Great Britain had a long history of cooperation and consultation concerning the deployment and use of nuclear weapons.[25] Beginning with the Attlee-Truman agreement in 1948, and reconfirmed in the 1952 Churchill-Truman agreement, both nations understood that U.S. leaders would consult with British leaders prior to authorizing the release of nuclear weapons. The procedure was formalized in the 1962 Athens Guidelines, which required consultation with host nations for release of nuclear weapons in NATO, and was further refined in 1968 when the NATO Nuclear Planning Group reemphasized the consultation requirement in NATO nuclear release procedures.[26] Despite public perception of a problem, government-to-government and military-to-military procedures were thus firmly in place. In the case of the British, as with most of the other host nations, the financial burden of purchasing their portions of the weapons system was simply not worth the cost when compared to any perceived increase in nuclear control. In any event, in the case of British-based GLCMs, RAF Regiment personnel would be a major part of the GLCM flights when they left their base and deployed to launch positions in the field, giving additional assurances of British involvement in the launch process.[27]

RAF Greenham Common was the first GLCM base and, as a result, it became the leading and most important target of the anti-GLCM campaign. Greenham Common was the test case. If antinuclear activists could prevent deployment, NATO would be weakened and deployment elsewhere would be difficult, if not unlikely. On the other hand, successful deployment at Greenham Common would emphasize and enhance NATO solidarity and ease later deployments. For the protesters, Greenham Common became a battle they could not afford to lose. For NATO, the United Kingdom, and the United States, deployment on schedule became a firm commitment.

Compounding the difficulty of gaining public support for deployment was the problem of time, complicated by the fixed schedule that established initial

operational capability (IOC) for December 1983, only four years after NATO made the dual-track announcement described above. Because of the importance to NATO of meeting its commitment, Secretary of Defense Caspar Weinberger directed that under no circumstances would the IOC date be allowed to slip.[28] Ensuring the weapon system was delivered on time was the job of the Joint Cruise Missile Program Office (JCMPO). The JCMPO was responsible for both GLCM and the Navy's sea-launched cruise missile (SLCM), and here the problems created by earlier visions of the GLCM as an arms control bargaining chip rather than a deployable weapon system came back to haunt those tasked with preparing for deployment. The JCMPO's difficulties eventually resulted in the removal of the Navy admiral in charge. Among its failures, JCMPO neglected to contract for fifty different pieces of training equipment, seventeen of which were not delivered in time to train the first GLCM crews. Another, and perhaps the most serious deficiency, was in the area of software development for the launch control system where performance problems interfered with launch crew training. Delays in weapon system development and manufacture reduced the time available for the GLCM crews to learn to operate and maintain the system prior to deployment.[29]

Training took place at Davis-Monthan Air Force Base, Arizona, where the USAF activated the 868th Tactical Missile Training Squadron (TMTS) in July 1982. Little time was available to accomplish all the different tasks that lay before that organization, however, and many problems hampered its work. The first class of students entered in February 1983. Squadron morale was high and, despite shortages in instructional materials, limited training equipment, severe time constraints, and requirements for numerous "work arounds," the class graduated on schedule on April 26, 1983, and headed for England.[30]

In the meantime, site activation activities began at RAF Greenham Common in mid-1981 with the arrival of various engineering and support detachments. The GLCM organization at Greenham Common, the 501st Tactical Missile Wing (TMW), was activated on July 1, 1982. The 501st, like the 868 TMTS, struggled with its numerous difficulties in bringing the GLCM to a ready status. At the time the wing was activated, for example, no formal mission statement or organizational directives existed. Headquarters, United States Air Forces in Europe (HQ USAFE), at Ramstein Air Base, West Germany, did provide a rough outline for a mission and organization, but it was rudimentary at best.[31] Accordingly, the 501st put together its own vision of where it needed to go. The wing was to "maintain a capability to destroy or neutralize enemy offensive nuclear aircraft, fixed surface-to-surface missiles, nuclear storage areas, headquarters, command and control centers, and offensive and defensive air forces."[32]

By the time the 501st activated, protests were already old hat. Low-key demonstrations began in August 1981, then expanded. On September 5th, 1981, the first widely publicized event saw twelve women chain themselves to the base

perimeter fence. The protesters had no formal organization at this time, but later identified themselves as the Greenham Common Women's Peace Camp.[33] Early on, these individuals established a semipermanent camp outside the base where they took advantage of confusion over who had jurisdiction over the land on which they camped. Depending on exactly where the women sat, either the Ministry of Transport or the local Newbury District Council was the responsible authority. The result was that whenever eviction notices were served on camp members, they simply shifted positions a few feet, thereby entering a different jurisdiction. In the early days of the peace camp, between twenty and forty women were present at any given time, with that number rising to between two and three hundred on weekends.[34] The peace camp remained an irritant to USAF and RAF personnel who dealt with the protesters throughout the Greenham Common experience. It was especially irritating to American personnel who had to pass the camp every day when going to or leaving work. In general, the atmosphere at Greenham Common was peaceful, but strained by the difficulty in entering the base. Personnel who passed through the gates were left with the impression of entering an armed camp and being locked in.

The official USAF position was that the peace protesters were an internal British political matter in which the United States had no authority. The 501st TMW commander ordered the peace camp placed off limits to his personnel and forbade contact of any kind with the protesters. But the effect on base personnel of the jurisdictional squabble was a perception of lukewarm British government commitment which affected the unit's morale. The perception of the British government as unsupportive of GLCM personnel was furthered on September 11th when the peace camp women sent a letter to the RAF base commander. At a meeting with the commander the next day, the women demanded access to a water supply, phone service, and reduced presence of Ministry of Defence (MOD) police. The base commander gave the women access to a water supply.[35]

Another major problem for morale and American perceptions of the British attitude was the result of failure to impose significant penalties on the protesters following their arrest. Unlike protestors in other situations, these would normally be released shortly after their arrest without formal charges being filed. Unknown to the Air Force personnel at Greenham Common, much of the pressure to drop charges came from the U.S. State Department, against the wishes of military and local British officials who felt that trial and conviction would have a deterrent effect.[36]

The first large-scale demonstration at Greenham Common took place between March 20th and 22nd, 1982, when approximately two thousand demonstrators gathered. The protest was generally peaceful and featured women filling the locks to the base gates with super glue. On the last day of the protest, base employees were brought to work in convoys through a little-used gate. When the protesters realized this, they blockaded that gate and thirty-three were arrested. Subsequently, on May 21, the Newbury District Council issued its first

formal eviction notice, and the camp was dismantled by a bulldozer, with four people arrested. The women, however, simply reestablished the camp twelve yards away on Ministry of Transport property. By the summer of 1982 protest activities had grown more serious and included numerous incidents in which portions of the base fence were destroyed. The reinforcement of MOD police on July 9th saw rocks and bottles thrown, causing $15 thousand in damages and leading to five arrests.[37]

A relatively small number of protestors were active on a day-to-day basis, but the CND proved capable of generating enormous support at planned events. During the protest on December 12 and 13, 1982, marking the third anniversary of the NATO TNF deployment decision, over 15,000 demonstrators encircled the seven-mile perimeter of the base. The protests, and the media coverage, grew more intense as time passed. In March of 1983, the RAF installed concertina wire along the perimeter fence to help discourage the numerous penetrations by the peace camp women. On Easter weekend, forty thousand protesters demonstrated at the base in conjunction with anti-GLCM protests all over Europe, including a demonstration organized by the CND in London attended by an estimated 125,000 people, although the CND claimed 500,000 protesters.

It must be emphasized that the battle at Greenham Common was really a battle for access to the media. As problems at the base increased, the British government developed an active campaign to present public information favorable to the deployment of GLCMs. Nevertheless, most of the publicity coming out of Greenham Common was anti-GLCM. This situation was promoted at least in part by the media, which saw far more value in filming demonstrators than it did in advancing government "propaganda." The peace demonstrators were extremely media conscious and, from time to time, the media was willing to assist the protesters in their publicity efforts. On January 25, 1983, for example, a Canadian television news crew arrived at Greenham Common. When little was seen to be happening, the news crew encouraged the peace camp women to stage a sit-down and block the gate while their cameras recorded the scene. The women were only too happy to oblige.[38]

The Soviet Union and its communist allies devoted a great deal of attention to the protests. A Soviet television crew was present at the September 5, 1981, protest march to Greenham Common. Soviet, East German, and Bulgarian television sent crews to provide coverage of the Women's Peace Camp.[39] Western media were involved as well. When twenty women blocked the base gate at 3:20 a.m. on July 4, 1982, television crews were present from both the American Broadcasting Company and the British Broadcasting Corporation. In addition, a Soviet diplomatic vehicle was spotted observing the protest.[40]

The anti-GLCM protests lost considerable steam after the landslide reelection of Margaret Thatcher in June 1983. In comparison to the Easter weekend protest held by CND in London at which 125,000 were present, a mid-July protest attracted only six thousand demonstrators. Support for GLCM

deployment had grown to be the majority position, according to the *Sunday Times* polls, and the change in political atmosphere took the steam out of anti-GLCM protests.[41] Nevertheless, the CND and the Women's Peace Camp, with the assistance of the media, could still create a circus atmosphere.

On October 21, 1983, Air Force security police at Greenham Common reported that vehicles resembling GLCM launchers and launch control centers had been seen outside the base. Since no GLCM launch vehicles had yet arrived in Britain, base officials were both puzzled and concerned about the appearance of vehicles that were nonexistent outside the United States. As it turned out, Thames Television was producing a segment about the GLCM for their program, "TV Eye" and had produced several mock-up vehicles. When approached, the production company assured British officials that the vehicles were for their use, and that Thames had nothing to do with the CND. Despite these assertions, however, Thames turned over the mock-ups, which had cost some $34 thousand to build, to the CND after filming the segment. The CND later used the mock-ups in an anti-GLCM demonstration in London.[42]

Complicity between the media and the CND peaked in 1983 when a Ministry of Defence employee leaked the classified delivery schedule for the GLCM missiles and launchers to *The Guardian*. The newspaper timed release of the information to coincide with the large-scale anti-GLCM demonstration at which the mock-ups of the GLCM launcher and launch control center were used.

When actual delivery of missiles and launch vehicles began in November 1983, the activity of the protesters was almost anticlimactic. Despite the leaked schedule, only a hundred or so protesters were present at the base. When these objectors realized what was happening, they attempted to storm the base fence, but were repelled by police, who arrested twenty-seven people. The next day only one person was arrested. Despite the arrival of the British news media, there were no incidents on the third day of deliveries. That condition changed on November 4th, when perhaps the most dramatic incident of the deployment occurred. The GLCM missiles, vehicles, and other equipment were delivered by C–5A Galaxy cargo aircraft. On the 4th, a lone British male eluded the security police, got on the base, and immediately tried to ram his car into one of the giant aircraft sitting on the parking apron. USAF security police rammed his vehicle, instead, preventing it from reaching the aircraft. When the protester was arrested, the inside of his vehicle was found to be full of CND materials.[43]

The aircraft-ramming incident seemed to revitalize the demonstrators, who intensified their efforts to stop deployment. The next day, some two hundred protesters were present at the base, and by November 9th, the group included five Labour Members of Parliament (MPs), accompanied by between thirty and forty members of the news media. On the 15th, the Secretary of State for Defence formally announced the arrival of the missiles at RAF Greenham Common, causing a further increase in protest activity.[44] A sense of urgency had developed among the protesters, who seemed to realize that the time had come for a last

stand to halt deployment. On New Year's Day 1984, the Women's Peace Camp announced a protest action to the BBC and, while the television cameras rolled, attempted to bring down the base gate. The following day, CND members resumed this effort when they tried to crash a car into the gate. Neither of these actions was successful. As the situation seemed to become more desperate, the peace campers determined to take drastic action. Rumors circulated that the protesters intended to shoot one of their own protesters and claim that U.S. military personnel did the shooting. While these rumors seem farfetched, shortly thereafter, a Labour MP did claim that USAF security police had shot at a British subject, and on January 20, the London *Daily Mail* seconded this with a report that a female protester had been "shot at." No such incident took place, of course.[45]

For the personnel assigned to Greenham Common, life had continued at a hectic pace, but not because of the protests. Getting the wing "mission-ready" was a time-consuming task. Training activities were conducted regularly, both onbase and offbase at British Army training areas. Throughout the fall, USAFE and NATO inspectors conducted various phases of an Initial Nuclear Surety Inspection (INSI). The wing had to accept its nuclear weapons and attain IOC. Construction units completed the GLCM Alert and Maintenance Area and turned it over to the wing on October 13. The final phase of the INSI was conducted between December 3rd and 9th. On December 23rd, the 501st TMW wing commander informed HQ USAFE that his wing was mission-ready, one week ahead of schedule. On December 30th, the Commander in Chief, U.S. European Command, declared that the 501st had attained IOC.[46] The GLCM had been deployed.

Meanwhile, outside the gates, the constant harassing tactics of the demonstrators took its toll on British police, who for a time had become less interested in dealing with the demonstrators. When the CND held a "Halloween Party" on November 29, 1983, for example, the Thames Valley Police refused to arrest women who interfered with the repairs being made to breaks in the base perimeter fence.[47] The successful deployment, however, seemed to put some fight back into the authorities. A new magistrate was brought in to deal with the protesters. This time he had the authority to jail protesters who had not paid earlier fines, and he increased the fines on those who had been repeatedly arrested. Some protesters were even sent to jail.

The Soviets did not let successful deployment end their attempt to influence the situation, either. On November 23, 1983, Soviet leaders discontinued the INF talks in Geneva, announced they were lifting the "moratorium" on SS–20 deployment, and focused all their attention on a last-ditch effort to defeat TNF deployment.[48] But the European governments had decided that the United States should not make concessions to lure the Soviets back to the negotiating table. Soviet diplomatic and political protests simply did not have the impact they once did. Soviet Foreign Minister Andrei Gromyko made a strongly worded, anti-

American speech before the Conference on Disarmament in Europe, in January 1984, denouncing the United States for the breakdown of INF negotiations.[49] The senior American negotiator at the INF talks simply commented that the Soviets would resume talks "as soon as they have squeezed every imaginable psychological advantage they think they can get from their withdrawal from Geneva."[50] The Soviet leaders at first insisted that the United States had to withdraw all INF forces before the negotiations could continue. By October 1984, however, they had adjusted to the situation and resumed negotiations.

After the deployment of GLCM to RAF Greenham Common, the other deployments went much more smoothly, although not without continuing protests on a smaller scale than seen in Britain. The stand the Soviets had taken failed. The NATO alliance was able to withstand extreme pressure from the Soviet Union and from Soviet-influenced protests on the domestic front. Senator Charles Percy (R-Indiana) later summarized what had taken place:

> In 1983, the strength and cohesion of the North Atlantic Alliance was severely tested by events related to the negotiation and deployment of intermediate-range nuclear forces (INF). NATO faced successive challenges in maintaining a united front throughout the demanding final stage of the negotiations and, when negotiations failed, in proceeding with the initial INF deployments despite Soviet blandishments.[51]

NATO members recognized the significance the battle to deploy the GLCM and Pershing II held for the future of the NATO Alliance. The election of conservative governments in the United States and Britain, combined with other domestic political factors, decreased the influence of the protests on the general population. The left-wing politics and sometimes outrageous actions of the protesters had also turned off public support.

Successful deployment of the GLCM proved to be a culminating point in the Cold War. It had not "defeated" the Soviet Union and the Warsaw Pact, but it did place them in an "end-game" situation. The events that unfolded in the following years played out the TNF deployment. The success of NATO in holding firm against Soviet pressures resulted in an arms control treaty which, for the first time, banned an entire class of nuclear weapons between the two superpowers. The Soviets, having gambled so much on their ability to defeat TNF deployment and break up the Western Alliance, were never again able to significantly influence the direction that NATO took.

Notes

1. Robert J. Art and Stephen E. Ockenden, "The Domestic Politics of Cruise Missile Development, 1970-1980," in Richard K. Betts, ed., *Cruise Missiles: Technology, Strategy, Politics* (Washington, D.C.: The Brookings Institution, 1981), p. 394. The SALT I Treaty, signed in May 1972, limited "strategic" nuclear systems, including ICBMs and SLBMs, by freezing the number of deployable launchers for a period of five years. In addition, the treaty limited anti-ballistic missile coverage to one geographical site per country, thereby avoiding an arms race in ABM technology. The SALT II Treaty, signed in June 1979, again covered strategic level nuclear systems. It limited the number of ICBM launchers and long-range bombers, as well as the number of warheads. A separate protocol that expired in 1981, limited the number of air launched cruise missiles that could be carried on any aircraft, banned multiple warheads on cruise missiles, and prohibited deployment of GLCMs with a range of over six hundred kilometers until after December 31, 1981. This last provision had little impact, since the United States no intention (or ability) to deploy cruise missiles before this date. The SALT II Treaty was never ratified by the U.S. Senate, because of the December 1979 Soviet invasion of Afghanistan.
2. Raymond L. Garthoff, "Soviet Perspectives," in *ibid.*, pp. 341-44. Theater nuclear forces refers to both the GLCM and to Pershing II, a U.S. Army ballistic missile designed to replace existing Pershing I ballistic missiles previously deployed to the Federal Republic of Germany. While TNF refers to both missiles, for the purposes of this paper only the GLCM, by far the more controversial of the two weapon systems, is addressed. The West German army also operated a short-range version of the Pershing I, but those missiles were not a consideration in the events discussed in this paper.
3. During the development of GLCM, critics attacked claims of accuracy, reliability, and survivability for the weapon system. The faith of those involved in development was confirmed during the Persian Gulf War when the sea-launched version of the missile proved its ability to penetrate enemy air defenses undetected and hit targets with considerable accuracy.
4. Quoted in *ibid.*, p. 345.
5. James E. Dougherty, "Strategy, Politics, and Ethical Feelings: A Perspective of the Peace Movement," in James E. Dougherty and Robert L. Pfaltzgraff, Jr., eds., *Shattering Europe's Defense Consensus: the Antinuclear Protest Movement and the Future of NATO* (Washington, D.C.: Pergamon-Brassey, 1985), p. 1.
6. Art and Ockenden, "Domestic Politics of Cruise Missile Development," pp. 360, 405.
7. John Cartwright, MP, and Julian Critchley, MP, *Cruise, Pershing and SS-20, The Search for Consensus: Nuclear Weapons in Europe* (London: Brassey's Defence Publishers, 1985), pp. 22-23. This book is a commercial reprint of the Eighth Report of the North Atlantic Assembly's Special Committee on Nuclear Weapons in Europe.
8. Gregory F. Treverton, "NATO Alliance Politics," in Betts, ed., *Cruise Missiles*, p. 424.
9. This indecision had significant impact on the development of GLCMs. Funds were repeatedly cut for what should have been normal research and development activities, such as human factors analysis. The result was notable in ways that were very real to crews who would later man the system. The lack of work space, scarcity of chairs that fit inside the launch control center, and late development of training systems for both operations and maintenance personnel were among the problems.
10. The total of 108 for Pershing IIs was determined based on a one-for-one replacement with existing Pershing Is. For GLCM, 464 is simply a multiple of sixteen, the number of missiles in a GLCM flight.
11. NATO "'Dual-Track' Decision," Communiqué of the Special Meeting of the NATO Foreign and Defence Ministers, Brussels, Dec 12, 1979, in Cartwright and Critchley, *Cruise, Pershing, and SS-20*. The deployment called for six flights at RAF Greenham Common, United Kingdom, in 1983; seven flights at Comiso Air Station, Italy, in 1984; three flights at Florennes Air Base, Belgium, in 1985; six flights at Weuscheim Air Base, Federal Republic of Germany, in 1986; three flights at Woensdrecht Air Base, The Netherlands, in

1987; and four flights at RAF Molesworth, United Kingdom, also in 1987.
12. Ron Huisken, "The History of Modern Cruise Missiles," in Betts, ed., *Cruise Missiles*, p. 98.
13. Jacquelyn K. Davis, Charles M. Perry, and Robert L. Pfaltzgraff, Jr., *The INF Controversy: Lessons for NATO Modernization and Transatlantic Relations* (Cambridge, Mass.: Institute for Foreign Policy Analysis, 1989), p. 4.
14. *Ibid.*, p. 2.
15. Treverton, "NATO Alliance Politics," p. 432. The Enhanced Radiation Weapon was designed to kill enemy personnel with little physical destruction, thereby making use of the weapon on European soil more palatable. As in the case of TNF deployment, in 1977-1978 NATO planned to deploy the ERW if the Soviets refused to restrain development of other nuclear systems. As with TNF, the Soviets mounted an intense political and propaganda effort to create Western European opposition to deployment of the ERW. This effort was successful, and NATO officials decided that the political cost of deploying such a weapon was too great. Soviet leaders hoped to achieve the same success against TNF deployment. See Sherri L. Wasserman, *The Neutron Bomb Controversy: A Study in Alliance Politics* (New York: Praeger, 1983).
16. U.S. Congress, Senate, Committee on Foreign Relations, *Second Interim Report on Nuclear Weapons in Europe*, 98th Cong., 1st sess., 1983, p. 12.
17. Cartwright and Critchley, *Cruise, Pershing, and SS-20*, p. 22.
18. Thomas M. Cynkin, "The British Antinuclear Movement: Precedents, Program, and Prospects," in Dougherty and Pfaltzgraff, eds., *Shattering Europe's Defense Consensus*, pp. 34-36.
19. Background paper, 3AF/Public Affairs, subj: The Campaign for Nuclear Disarmament, Mar 1, 1982, atch. to History, 501st Tactical Missile Wing (TMW). USAF official histories are maintained in the archives of the Air Force Historical Research Agency, Maxwell AFB, Alabama.
20. Cynkin, "British Antinuclear Movement," pp. 39-40. Those goals were the: 1) abandonment of Britain's strategic nuclear force; 2) closure of NATO bases in the United Kingdom; 3) diversion of funding from defense to social services; 4) redeployment of workers from military production to other domestic activities; and 5) termination of British arms sales. It might be noted that only the United States had "NATO" bases in the United Kingdom.
21. Clive Rose, *Campaigns Against Western Defence* (New York: St. Martin's Press, 1985), pp. 139-40. In December 1981, Monsignor Kent visited East Berlin where he made anti-GLCM broadcasts.
22. *Ibid.*, p. 148.
23. Cynkin, "British Antinuclear Movement," p. 37.
24. Simon Duke, *U.S. Defence Bases in the United Kingdom: A Matter for Joint Decision?* (New York: St. Martin's Press, 1987), p. 177.
25. *Ibid.*, p. 175.
26. Cartwright and Critchley, *Cruise, Pershing, and SS-20*, p. 18.
27. The RAF Regiment performs the same functions as the USAF security police and U.S. Army forces assigned overseas for the purpose of air base defense, including physical security and air defense efforts. The U.S. agreement with the United Kingdom called for one-half of each GLCM flight's security forces, or about thirty-three personnel, to be from the RAF Regiment. Under this arrangement, either a USAF or RAF Regiment officer could command a GLCM flight deployed to the field.
28. History, 836th Air Division (AD), Oct-Dec 1981, p. 50.
29. History, 836 AD, Jan 1-Mar 31, 1982, pp. 24, 29-30.
30. History, 836 AD, Jan 1-Jun 30, 1983, p. 16.
31. History, 501 TMW, Jul 1982-Mar 1983, p. 5.
32. Greenham Common Pamphlet 23-1, subj: Organization and Functions Chartbook, Jan 12, 1983, p. 1, atch. to *ibid.*
33. Rose, *Campaigns Against Western Defence*, p. 149. Formally, the Greenham Common

Women's Peace Camp and the CND were separate organizations. Many of the women of the Peace Camp, however, were members of the CND, and both organizations had ties to the CPGB, although neither was a "front" organization. The Peace Camp was a radical feminist organization that took great pains to separate itself from organizations with male leadership. Its members saw nuclear weapons and large military budgets as symbolic of male-dominated politics and oppression of women. The Peace Camp and CND, did coordinate protest activities while the CPGB provided financial and moral support.

34. History, 501 TMW, Jul 1982-Mar 1983, pp. 121, 123.
35. *Ibid.*, pp. 121, 124.
36. History, 501 TMW, Jul 1-Sep 30, 1983, p. 97.
37. History, 501 TMW, Jul 1982-Mar 1983, p. 126.
38. *Ibid.*, p. 129.
39. Background paper, HQ Third Air Force, pp. 1-2, atch. to *ibid.*
40. History, 501 TMW, Jul 1-Sep 30 1983, p. 90.
41. Cartwright and Critchley, *Cruise, Pershing, and SS-20*, p. 118.
42. Security Police Blotter Entry, 501 TMW, Oct 21, 1983, atch. to History, 501 TMW; "Phoney Missile Launchers Visit NATO Air Base," *Stars and Stripes* (European Edition), Oct 23, 1983; "Cruise Mock-Up Given to CND," *The Mail on Sunday*, Oct 22, 1983.
43. History, 501 TMW, Oct 1-Dec 31, 1983, p. 86.
44. *Ibid.*, p. 87.
45. Gordon Greig, "Greenham Girl 'Shot At,'" *Daily Mail*, Jan 20, 1984.
46. History, 501 TMW, Oct 1-Dec 31, 1983, Chronology.
47. *Ibid.*, p. 89.
48. U.S. Congress, Senate, Committee on Foreign Relations, *Post-Deployment Nuclear Arms Control in Europe*, 98th Cong., 2nd sess., 1984, pp. 1, 11.
49. Cartwright and Critchley, *Cruise, Pershing, and SS-20*, p. 77.
50. Quoted in *ibid.*, p. 75.
51. U.S. Congress, Senate, Committee on Foreign Relations, *Post-Deployment Nuclear Arms Control in Europe*, 98th Cong., 2nd sess., 1984, III.

Questions and Answers

Patrick Murray: I have two questions relating to the introduction of U.S. nuclear weapons, so I will just answer both of them in the same way. One question concerns the introduction of nuclear weapons into the United Kingdom on a provisional basis and then on a more permanent basis. When and where did this take place? Which agreement covered it? What was the procedure with Strategic Air Command, 7th Air Division, Third Air Force, and United States Air Forces in Europe? Which depot and squadrons were involved? When were the operational bombs brought to the United Kingdom, etc.?

This is a very difficult question to answer. The official position, even today, regarding nuclear weapons is, "The United States Air Force neither affirms nor denies the presence of nuclear weapons in the U.K." When did it exactly occur, and what agreements permitted this? It is still extremely difficult to pinpoint with absolute accuracy the day nuclear weapons were brought to the U.K. In the Third Air Force historical archives, about the best answer to this particular question comes from the diary of General Leon Johnson, who kept a fairly good diary during those years In July of 1950, there is an entry which states that the Prime Minister had been informed about the U.S. request to bring nuclear weapons into the United Kingdom. The answer came back that, yes, the Prime Minister did agree to this and that he fully understood all the various ramifications of bringing these units into the United Kingdom. Now, at this particular time, the weapons appear to have been sent without their fissionable material. So, the bomb itself was there, but the explosive components were not. They were retained in the United States. So, when did nuclear weapons first come to the U.K.? The guess is about 1950. That, again, is a guess, and about the best answer I can give.

The second question I have concerns the participation of B–29 groups in a British defense exercise, I believe in 1948. I mentioned that exercise as Operation Dagger. The question is, How does a strategic bomber participate in a defense exercise, how did they envision the use of B–29s, and in what circumstances and by whom would they have been released?

There are many possible scenarios. In this particular event, Operation Dagger, I do not have any specifics as to the U.S. bomber activities; but there are any number of air defense scenarios in which bombers could be used either as an aggressor force or as a defensive force. I cannot give you a specific answer regarding Operation Dagger. The deployment of B–29s made it possible for the day fighter squadrons in the U.K. to undertake defensive exercises involving fighters versus many bombers in the early 1950s, which enabled us to perfect

tactics, particularly attacks against the equivalent of a Soviet TU–4 Bull. These exercises also helped the B–29 crews in the task of penetrating the Soviet Union. Early on, in some of these exercises, it was stated that depending on the type of tactics used, it was almost impossible to defend British cities from a very determined Soviet attack. It was extremely disconcerting when they came across some of these moments, and it did require some considerable restructuring of defensive strategies.

Cecil James: There are three interrelated questions here, but just to lighten the occasion a little bit, I was present at a press conference which Duncan Sandys held to announce the deployment of Thor in the United Kingdom. It was a big international conference, and it was of great significance internationally because this really was the first overt response to that nasty shock to all of us in the West, the Sputnik launch in October 1957. This press conference would be sometime in 1958, and Sandys asked those who wanted to ask a question to say what newspaper they represented. He had made it quite clear that the deployment of Thor would be in the eastern half of the U.K. Thor was a bit short of range, so the further east you could put them, the better. And one correspondent got up, and in a very heavy sort of *mittle Europa* accent, said, "Is not the deployment of these missiles in the eastern half of England an outward and open provocation to the Soviet Union?" Now this is one of those "have you stopped beating your wife" sort of questions. Duncan said, "What paper do you represent?" And the correspondent gave the name of a Warsaw newspaper. And Duncan said, "It is *convenient* to put them there!"

Anyway, the first question is, to what extent was the Sandys' 1957 White Paper an extension of the 1952 British chiefs of staff global strategy paper and what individual input did he introduce into strategic thinking during this period? I think that the answer is, yes, it was an extension of that thinking and I shall be referring to that global strategy paper in response to a further question here. I think the individual input was not so much on Sandys' part, as I tried to get over to you. Sandys comes into office in January 1957 really as the hatchet man for a policy which has already begun to emerge, and that policy was one which did involve a much greater reliance on strategic deterrence. So, I think the answer directly to the question is that he didn't introduce anything more, but he did apply it with a degree of political will that was quite extraordinary. The second part of this question is, Did the cancellation of Blue Streak require Duncan Sandys to leave office to retain credibility of the deterrent or were other factors responsible? I don't know why Macmillan moved Duncan Sandys from Minister of Defence at the time that he did, which was late 1959. I think that he fully wanted him out of the way; it made it easier if he was out of the way to cancel Blue Streak. But I don't think that had any effect upon the policy of strategic deterrence, and it may we well be that Duncan, himself, had gotten rather tired of the job and wanted a change. He'd had a very hard time, and I don't think one should see too much significance in that particular change in his appointment.

The second question is, Sandys appears to have anticipated the Eisenhower/Dulles view of nuclear war having superseded conventional war. Was there a close relationship between the American and British approach to national defense? I think that, if I may say so, the right word is not "supersede." It simply made global war much less likely. The British chiefs of staff as early as 1949, even before the global strategy paper, had taken the view—and I think this was the word they used—that the atomic bomb had "outlawed" global war. I think that what they were getting at there was not necessarily that general war wouldn't happen, it was rather that they thought it very unlikely, and, if it did, it would be so catastrophic that long, drawn-out conflicts like World War I and World War II just would not be within human capacity. We'd all be too involved in burying our dead and trying to keep something going. In that sense, I think, it was felt that the whole strategic situation had been absolutely revolutionized, as I said in my talk, not so much by Hiroshima, by atomic weapons, as by thermonuclear weapons.

It is a quite extraordinary thing, when you think about it, isn't it, that we have somehow on each side so played the game that, even still to this day we have got far more nuclear weapons than make any kind of sense at all. And the reason that we have got them has got nothing really to do with military superiority. If they are used, you are never going to destroy so many of the other side that you won't get some of them back. The game is not a military game, gentlemen, is it? It is a political game. Anyway, there is always a difference of opinion on this kind of thing, obviously. But, I think it is quite true that there was a very similar view of the strategic picture between on the British side, Macmillan and Sandys, and on this side, Eisenhower and Dulles. Dulles at one stage of the British preparations for a change in the NATO strategic directive agreed with the British view that nobody, even the United States, could possibly have two kits, one for effective strategic deterrence and another set of kit to fight a set-piece global war with conventional weapons. And that was taken by General Al Gruenther—who rather resented that statement—across to Washington where he really sorted John Foster Dulles out and got Dulles to agree that you mustn't let the British take the logic of nuclear deterrence so far as to gravely weaken the conventional element of deterrence. I think we've got to accept, haven't we, that you cannot rely only on strategic nuclear deterrence. There has to be a conventional component as well. The great question is, what is the size and shape and deployment of the conventional component?

And I think that leads quite naturally, to the last question here, which is, what was Sandys' and official British reaction to the Kennedy Administration's decision to void the British-sponsored trip wire strategy and go for "flexible response?" Well, the classroom answer to the first part of that question is that Sandys was out of the picture, anyway, when flexible response formally takes the place of trip wire. And, for the life of me, I can't remember when that was. It was quite well into the 1960s, am I not right? Can anybody comment on that point?

I think I have got 1967 in mind. Something like that. Sandys is, as I say, really out of the picture; the Torys are out of the picture politically by 1964, anyway; from then on in it's Labour. You've got flexible response, the culmination of a process that begins under the Kennedy administration, in which you do tend to change the balance between the conventional and the nuclear, the point being that, through a greater emphasis on the conventional, you raise the nuclear threshold. Right? Agreed? Good! But it still does raise this question, did we ever get that balance right? And you could argue till the cows come home on that one.

Air Marshal Sir Denis Smallwood: The question is, you mentioned U.S./U.K. intelligence programs. Was the U–2 program a U.S./U.K. program with British pilots? The answer to that is, yes, but I will elaborate a little bit. At the time, it was held to be a matter of the highest security and very few people, certainly on the U.K. side, knew about it. We had four pilots for many years—they rotated, of course—based at Edwards AFB. From time to time, if I remember correctly, the U–2s would move forward into Western Europe, particularly into Cyprus, and they would operate from there. I don't think—again, I am relying entirely on my memory here—that the RAF pilots ever actually conducted an operational sortie. The purpose of this bilateral agreement was that if the chips seemed to be down and one really needed to have a very wide-ranging reconnaissance program using the U–2s, then the RAF pilots would be used. As far as the situation in Whitehall was concerned, as I have said, very few people were privy to this. The program on the RAF side was run by the Assistant Chief of Air Staff, Operations in the Ministry of Defence. It was a subject that came up occasionally during the vice chief to vice chief talks. It was certainly a subject talked about between the respective chiefs at that level, and, of course, the Central Intelligence Agency and the Joint Intelligence Committee in London were involved. In London, it was certainly known to the Defence Committee at Cabinet level.

My memory of this illustrates a small point I mentioned in my talk: how valuable the NATO air chief tours were; how one could in certain circumstances discuss bilateral matters secretly with one's USAF colleagues. On one of the visits, we visited Edwards AFB, California, and I was able to peel off from the international pattern there and visit the RAF pilots who were over on the far side of the field and talk about the current situation. In summary, it was, of course, predominantly a USAF program, but we did participate fully, although never, to my knowledge, on an operational sortie.

Lieutenant Colonel Michael A. Kirtland: The question is, what was the U.S. State Department's rationale for discouraging legal actions against individuals engaged in illegal acts at Greenham Common? It may be difficult to give an authoritative answer, but I think it boils down to State Department concerns at the time. I think it goes a little deeper, though, to a basic difference in how military people and diplomatic people deal with conflict, whether that conflict is an armed force or simply a group of ladies cutting holes in the base fence.

In those days, the State Department was very concerned about making sure that GLCM activities had a very low profile. The State Department would ask us do things that didn't necessarily seem to make sense from a military perspective. Let me give you an example that doesn't have to do with Greenham Common, but really points out how the State Department felt about things. We had been briefing for a number of years which five NATO countries would host GLCMs and the names of the six bases in those five countries, including the fact that there would be a GLCM base at Wueshheim, Germany, just down the road from Hahn Air Base. We had been giving these briefings for two or three years not only to military people, but to the American press and to the international news media, as well. And yet, one day we got a message from the State Department that said that from here on out any references to the base in Germany would be classified and we couldn't even use the word "Wueshheim." So the 868th Tactical Missile Training Squadron—two hundred some people—spent an entire day going through every single piece of paper in the squadron attempting to find any pieces that had Wueshheim written on them and stamping them as classified.

From our perspective, it was absolutely ludicrous. Even if we could have classified the base name from them on out—which we obviously could not—the cat was out of the bag at that point as to where the missiles were going. All it did, in terms of the USAF, was cause problems. We had people at that point who were getting ready to be shipped to Germany. All of a sudden we had to stamp classified all over their household goods and baggage, and all over their orders. For a long time we had a problem with movers who would refuse to take the shipments because, they said, "You've given me this place"—we came up with a code name for where the stuff was going, and that was what would be stamped on the orders—and the movers would say, "There is no such place." And we would say, "That's right." And they'd say, "Well I'm not taking it." And we would say, "You've got to, because the contract says you have to."

This same sort of concern over keeping a low profile was present in Britain, as well, and because the anti-GLCM activity was higher there, it was even more intense. The State Department felt that any action against the protesters would simply create martyrs for the anti-GLCM cause and they didn't want to do that. In hindsight, it wasn't, perhaps, the best course to take. After the deployment took place, the British government and the local governments decided they would, in fact, take stronger action and they put magistrates into the area with authority to jail the protestors, to fine the protestors, and it did have a significant effect on the activity that took place. Not that this step ended protest activity; it certainly didn't. But, for instance, the camps decreased in size as a result of the changes, and the activities that they would undertake declined, except on those special occasions that I referred to where the protesters would already have notified the news media that something was going to happen. For the most part, they sat outside the base gate and shot the breeze all day rather than attempting significant political activity.

Luncheon Address

Air Vice Marshal Ron Dick, CB, FRAeS, Royal Air Force, retired, entered the Royal Air Force College in 1950 and received his commission in July 1952. He then began a varied and highly successful flying career flying Meteor 8 day fighters with No. 64 Squadron. During subsequent assignments, he flew Provosts and Vampires, became a flying instructor, an examiner, and an exchange flight commander with the United States Air Force. In 1955/1956, he won both the Clarkson and Wright Jubilee individual aerobatic trophies. Later, Air Marshal Dick was flight commander on a nuclear strike squadron and commanded a Vulcan squadron and a Buccaneer wing. During the latter part of his career, he served as Air Attaché and Defence Attaché at the British Embassy in Washington, D.C. Her Majesty the Queen created Air Vice Marshal Dick Companion of the Most Noble Order of the Bath early in 1988. Following his retirement, Air Vice Marshal Dick became a Smithsonian International Fellow at the National Air and Space Museum from 1988 to 1991. He now writes and lectures on military and aviation history, is a member of the board of trustees of the Confederate Air Force, and is a visiting lecturer at the Air University at Maxwell Air Force Base, Alabama.

Luncheon Address

Air Vice Marshal Ron Dick

When the Falkland Crisis began in 1982, I was the British attaché in Washington, and I had been for about eighteen months. But there was more to it than that. In the course of my career, I was fortunate to have been an exchange officer with the U.S. Air Force and to have taken part in a number of exercises in the United States. I was a guide for the Royal College of Defence Studies when they toured North America, and I was also on General Alexander Haig's staff at Supreme Headquarters Allied Powers Europe, so my face was fairly familiar to members of the U.S. military and, particularly, to many in the Pentagon. Even if that had not been the case, I think it is true that U.S. military people are, generally, fairly comfortable with their British counterparts, if for no other reason than they have suffered together in staff colleges or in joint exchange programs.

As I was to find out in 1982, these interservice contacts proved their worth time and time again. There is nothing to equal the sight of a friendly face if you have got a problem or, for that matter, to hear a friendly voice on the other end of the telephone. In my experience, that was particularly true at the very highest level, the commander in chief level, when old friends are able to talk pretty freely because of trans-Atlantic links.

I was, by early 1982, well settled into an extremely pleasant, not too tasking, tour of duty as the friendly neighborhood RAF spy. But that fiddle began to fade a bit on the 19th of March, when some Argentine scrap metal merchants hoisted Argentina's flag on South Georgia, the Falklands dependency some six hundred miles east of the main islands. They were asked to report themselves to the British authorities, they refused, the British government complained to Buenos Aires, the complaint was ignored, and so the rest of the disaster began.*

The initial reaction to all that, both in the United Kingdom and the United States, was to brush it aside in favour of more important things. It was too much like a comic opera, not to be taken seriously. However, the *Junta* in Buenos

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* Constantine Davidoff, an Argentine of Greek extraction, had a contract for dismantling four unused whaling stations on South Georgia. His arrival with forty-one workmen and the Argentine flag in mid-March 1982 precipitated the Falklands War.

Aires had troubles enough without having to endure loss of face, even over a scrap metal merchant and his flag. We now know the South Georgia incident was pretty unfortunate for them, because it was the trigger which started events rolling, even though they had already decided to undertake an operation six months later in the year. This set things in motion much too soon.*

As the international temperature rose, it became apparent that the comic opera was in danger of turning into Hamlet. The tempo of exchanges between Washington and the British Embassy, where I was working, began to quicken. At the political level, the growing crisis was viewed in a very different light on opposite sides of the water.

In London, it was a pretty simple business. The Falklands were British territory and the people on them were British citizens. That is all there was to it. In Washington, it was much more complex. The Falklands might be British, but they were in the American hemisphere and they carried that weight of Victorian colonialism about them which makes Americans uncomfortable. They were also a bone of contention between two nations friendly to the United States. The last thing Washington wanted was to have a fight going on between friends right on its doorstep.

When it became apparent that the Argentines were not going to back down, especially after their fleet was at sea, the trans-Atlantic messages really began to fly. The atmosphere was not, to start with, entirely harmonious. London wanted Washington to lean heavily on its South American friends to stop them from doing anything silly. The State Department duly did that through its ambassador to Buenos Aires, but a message also went to the British Foreign Secretary, Lord Carrington, and it urged caution. Carrington suffered a severe loss of sense of humor through that, and he told the U.S. Embassy in London quite bluntly that an aggressor was loose in the South Atlantic and the United States had better make up its mind which side it was on.

It was not an auspicious beginning. However, the U.S. ambassador's approach in Buenos Aires was rebuffed, so President Ronald Reagan, urged on by Prime Minister Margaret Thatcher, intervened with a personal phone call to General Galtieri, head of the *Junta*, on the evening of the 31st of March. He got nowhere, principally because Galtieri was already being swept along by forces well beyond his control. We did not know at the time that the Argentine invasion force was already committed.

Argentine soldiers went ashore on East Falkland at dawn on the 2nd of April and soon overcame the small Royal Marine detachment, and on the 3rd

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* A military *Junta* led by General Leopoldo Galtieri, Commander in Chief of the army, and including Admiral Jorge Anaya of the navy and Brigadier General Basilio Lami Dozo of the air force ruled Argentina. Considerable evidence suggests that a primary reason for the invasion was the *Junta's* determination to continue in power by distracting the Argentines from the desperate economic conditions of the nation.

of April the same thing happened in South Georgia. That same day, Saturday the 3rd of April, Mrs. Thatcher announced to the House of Commons that a task force would be sent to the South Atlantic.

There now followed a quite extraordinary period during which the United States seemed to us in the British Embassy to be pursuing two different policies: One, public, which originated more or less in the State Department, and the other, which was pursued much more quietly in the Pentagon.

Let me briefly run through the public mode of Anglo-American relations first. It was the principal concern of the State Department that the contenders in the dispute should be kept apart and a negotiated settlement reached. The problem was that the opening positions of the parties were pretty uncompromising. The United Kingdom said there could be no discussions without an Argentine withdrawal. Argentina said there could be no withdrawal without a subsequent guarantee of Argentine sovereignty. To break the impasse, Secretary of State Alexander Haig, set off on—I have to say—an epic of shuttle diplomacy, flying some fourteen thousand miles in twelve days as he pursued the Holy Grail of peaceful solution in London, Buenos Aires, and Washington. It was exhausting, it was exasperating, and despite his quite amazing persistence, he got absolutely nowhere.

Mrs. Thatcher, of course, was implacable. The Argentine forces had to withdraw. The long-term wishes of the Falkland Islanders were paramount. Britain could and would recover the island by force if it came to it. She still believed that the *Junta* would back down rather than fight.

The *Junta* was irrevocably committed. They could not back down and survive. They had also convinced themselves that Britain was a soft-hearted democracy and that the British had no stomach for a fight. Haig told them flatly, several times, that the British would go through with it and that Argentina would lose. Galtieri told him he was wrong, and Admiral Anaya went so far as to call Haig a liar. In the midst of all this gathering gloom, there were lighter moments. Haig kept everybody informed about how things were going as he shuttled backward and forward. Some of the messages were not all that terribly formal. Those that we got to see in the British Embassy indicated he was having some difficulty in damping down his well-known short fuse. Once he went so far as to say that he might be able to make better progress if could ever get to Galtieri when he was sober. Now that problem is actually mentioned in Max Hastings' book.* Another time, Haig's genuine astonishment at the method of government in Buenos Aires. He said it was impossible to see how the system worked, since there appeared to be at least a thousand decision makers. He would get Galtieri, or Nicanor Costa Mendes, who was Foreign Minister of Argentina, or somebody else to commit themselves, and he would think he had

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* See Max Hastings and Simon Jenkins, *The Battle for the Falklands* (London: Michael Joseph, 1983), p. 112.

got something wrapped up, and about an hour later a colonel would arrive on the scene and tell him to forget the whole thing.

Faced with a very real tragedy of a comic opera government, Haig finally folded his tent and went home, where he told the President that armed conflict was inevitable and the United States should get off the fence and back Britain. Later, on the 30th of April, President Reagan did exactly that, though cautiously. He imposed sanctions on Argentina and formally offered material aid to the United Kingdom, thereby regularizing what had been, for some time, an established fact.

I intend to leave aside the dissenting voice also being heard by the President. Jeane Kirkpatrick, you may remember, was U.S. Ambassador to the United Nations at that time, and she believed the United Kingdom was being imperial and that the United States should stand aside. The consequences of backing Britain, she said, would be disastrous for the United States, whose long–term interest lay with South America. She was unmoved, absolutely, by arguments that contrasted America's oldest alliance with the convenient arrangement based on promoting anticommunism in Latin America or contrasted a democratic government with a military dictatorship. Nor did she appear to be impressed by the thought that military aggression was taking place in the American hemisphere and that it might perhaps be a good idea for the United States to disapprove. She held to her views, even after being instructed to vote for a United Nations resolution demanding the withdrawal of the Argentines from the island.

The British Ambassador at this time was Nicholas Henderson, who could have been cast in Hollywood as the classically eccentric Englishman. Haig described him as being "studiously rumpled," and Secretary of Defense Caspar Weinberger said that Nicho, as he was known, "took great delight in violating many of Saville Row's ideas of proper dress."

The Ambassador was remarkable during this crisis. He hurled himself at it, and he seemed to be everywhere at once—in the White House, at the State Department, on the Hill, talking to the press, or appearing on television. He was on at least one, usually several morning news programs every day and was enormously effective in promoting Britain's cause. America heard his aristocratic tones, took one look at his lugubrious face and his uncontrollable hair and his rumpled collar, and it loved him. One serious senator actually interrupted Nicho in full flow on the Hill once and told him that his arguments were indeed powerful, but that was not why the Senate was with him, it was because he was so British. The senator went on to say he was sure it was unlikely that the same strong feeling could have been stirred, for instance, if the conflict in the South Atlantic was between Argentina and Brazil.

Early every morning the Ambassador's staff, including his defence team, met to brief him before he went on television. For me, in particular, that was a challenging experience. Nicho could understand infantry or frigates, stuff like

that, but his conception of air power seemed to have been frozen sometime around the year 1916. He thought that delivering bombs on a target could not possibly be difficult; for instance, putting a hole in the Port Stanley runway. Details like the four thousand miles of open sea between the base at Ascension and the target, the multiple refuelings at night, the enemy radar, surface-to-air missiles, bombing on radar, bomb trajectory, all that stuff, were mere trifles. As far as he was concerned, you pick the target, you place an aircraft above it, you let the bombs go, the job was done. It was almost as if he had a mental image of the pilot leaning out with the proverbial hand-held bomb. For Nicho, aircraft always found, hit, and destroyed their targets. Otherwise, as he said, "What's the good of 'em?" Well, as a result, I spent a good deal of time briefing the Ambassador on the air war and then watching his subsequent television appearances with my fingers crossed.

He got his own back on me one day. It was an afternoon in late May, and the Ambassador really was showing signs of strain. The Argentines at Goose Green has just surrendered,* and the Cable News Network (CNN) asked him for an interview at 10:00 p.m. that night. Nicho visibly sagged, and said, "I really don't think I can." Then he looked across the table at me and said, "You go." My protestations about being a simple military man were brushed aside and I duly arrived at the CNN studio that evening.

The interview was one of those cozy little three-way affairs: Jorge Herrera Vegas, Argentina's man at the United Nations, was in New York, I was in Washington, and the interviewer was in Atlanta. The second half of the program was in the form of a call-in from open phones throughout the United States. I was not happy about the prospect of facing Herrera Vegas. He was a smooth, professional diplomat, who had been doing very well for some time on television. However, the news from Goose Green must have given him a bit of a shock, because he made a serious tactical error right at the beginning. He said that it was his unpleasant duty to report that the British were killing Argentine prisoners of war. He claimed that they were being used to walk ahead of the British over minefields to clear them. He went on to say that he found it grossly unfair of Americans to accuse only the Galtieri government of human rights abuses when it was well known that the British consistently violated human rights. Well, once those cracks had appeared in his composure, his credibility was gone, and I really had not much difficulty holding the moral high ground.

It was very satisfying, and the call-in portion of the program left me with a thoroughly warm glow. The calls came in from all over the United States, and every caller, bar one, was enthusiastically in support of Britain. I left the studio smiling broadly at every American I saw, and, since it was nighttime in Georgetown, I was very lucky to survive unscathed!

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* On May 28, the 2nd Battalion of the Parachute Regiment liberated the small village of Goose Green in the first major land action of the Falklands campaign.

Let me tell you some of the things that were more obviously in the military sphere. I had, of course, been heavily involved in the crisis since the first day. Mrs. Thatcher announced the task force on Saturday, the 3rd of April, and on Monday, I was on my way to the Pentagon in dress blue and gold ropes, appearing very stiff and formal. I presented myself at the entrance to the Joint Chiefs of Staff area trying to looked relaxed, but I have to say that I really was not all that comfortable. As I have said, the political signals at the beginning were ambivalent, and I was not sure of the welcome I was going to get. I really need not have worried. As I walked down the corridors, I was slapped on the back repeatedly and pursued by calls of "Give them hell down there!" or "Go-o-o-o Brits!" Some months later, my Pentagon friends told me that nearly everybody at the time thought we were insane and quite a number thought we were going to lose our shirts, but they cheered anyway.

Well, encouraged by all that enthusiasm, I was ushered in to see the admiral who filled the J–4, Logistics, chair. He sat me down and sent for a cup of coffee and asked what he could do for me. I explained that, as unlikely as it seemed, we were going to have to use Ascension Island* as the mounting base for the operations against the Falklands because we could not get any closer, and Wideawake Air Base, although a United States airfield, was on a British island. We, therefore, felt that the United States would not object if we increased our usage of Wideawake facilities. Assuming that to be the case, I pointed out that the fuel storage capacity at Wideawake had been designed to allow for little more than a weekly C–141 or two to service the U.S. satellite tracking station. We were going to need a good deal more than that.

I asked if the United States would be prepared to help in providing whatever we needed to do the job. The admiral said that of course they wanted to help, and he asked me how much fuel we were going to need. I took a deep breath and told him that we would like an eight million-gallon tanker full of aviation fuel off the settlement of Georgetown within the next seven days. We could not provide one, and we hoped the U.S. military could help us out.

The admiral pulled the screen back on his big plotting board and he pondered over it a bit and made a couple of phone calls and then he said, yes, he thought he could do that. He fingered one—I seem to remember it was going to Guantanamo or somewhere and I expect the U.S. Navy objected strongly shortly thereafter—but anyway, off it went to Ascension.

He said, "How are you going to use and store this fuel?" I said, "Well, I'm afraid it'll have to just lie off Georgetown with lines ashore and be used as a

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* Located roughly five hundred miles south of the equator and one thousand miles off the coast of Africa, the British colony of Ascension Island served as the primary support base for the Task Force. The chief attraction was the airfield, called Wideawake after a local species of bird, built by the United States during World War II and used to support a variety of classified activities.

floating gas station until it's empty." He said, "Fine, is that all?" I said, "Well, I think we'll probably need another tanker like that seven days after the first, and another seven days after that, and so on." His chin dropped, and he said, "You can't use that much fuel!" I said we were going to have a reasonable try, and he said something about making long-term plans and requirements.

The only snag appeared after three weeks, or so, when the admiral told me that the tanker which was then en route to Ascension had broken a shaft and was not going to make it. He found a replacement, but it was going to be late. Well, it rapidly became apparent that we were going to use the fuel we had available and go dry. Wideawake, by the way, at that time was up to four hundred aircraft movements a day. I asked if we could use the U.S. stocks there on the island, small though they were. He agreed, but it was soon obvious that they were going to go as well. Confronted by what seemed to be an absolutely intractable problem, and under the pressure of what was obviously great concern, the admiral produced a chart and showed me the U.S. war stock on Ascension. The war emergency fuel supply proved to be just about the right size to fill the hole. There was a long pause, then he said, "Well, hell, there is a war on after all." So, we got our fuel.

What I did not know when I first visited J–4 was that Secretary Weinberger had, as soon as he had heard of the invasion, told his staff that the Brits were to be given every possible assistance short of engaging in operations and that he would not tolerate any bureaucratic interference with British requests, which were to be given maximum priority. It was, of course, a business arrangement in that the United Kingdom paid for all goods and services, but it was also a pretty marvelous political commitment between friends.

Given that attitude from the man at top, and the normally high level of peacetime cooperation between the U.S. and the U.K. services, it was hardly surprising that the Pentagon was way ahead of the State Department when it came to support. The many civilian officials outside the Pentagon seemed almost alarmed that the military could have preempted them so effectively in aiding a foreign power. Weinberger said that the U.S. help must stop short of operations in the war zone, of course. While that was strictly true in the fact that no U.S. units took part in the conflict, it has to be said that the United States did provide extra aircraft, ships, and men to cover the NATO commitments which the United Kingdom had necessarily left uncovered.

There were, of course, many other instances of close Anglo-American cooperation besides the aviation cooperation. Among the more important were those in the fields of intelligence and communications. Most of the intelligence was of the signals intelligence variety, and it enabled the British task force commander to be given a reasonably accurate indication of the disposition of the Argentines throughout the struggle. If the intelligence was important, the communications were absolutely vital and ranged from allocations of space on satellites to the provision of special radios that allowed easy contact with

intelligence gathering sources. With the war headquarters some eight thousand miles from the action, the commander in chief would have been very poorly placed without those slots on the satellites.

There was an earlier request for AIM–9L Sidewinder missiles. We had them on order, but delivery was not due for months. There was no fuss; our request was quietly brought up to the top of the priority list as soon as I asked. We also bought navigational systems to cope with the long-range missions over the Atlantic. Other weaponry came in the form of Shrike and Harpoon missiles. The Nimrod maritime patrol aircraft, for instance, was qualified to take Harpoon, but that weapon never saw any action. Incidentally, the Nimrod was also fitted with Sidewinders, much to the delight of the pilots, who advertised that they were flying the largest fighter aircraft in the world.

Shrikes were also fitted to the Vulcan and used, unfortunately without too much success, against the Argentine Westinghouse radars outside Port Stanley. At about this time, I was drinking for Queen and Country at some reception in Washington, and the Washington Westinghouse representative took me to one side, and he said, "How are you getting along against the radar? Do you, um, need any specs or drawings?" I was quite shocked! I said, "Aren't you pushing the limits of ethical behavior a bit?" He said, "Hell no, you knock that one out, we'll sell them another one!"

At the time, the Vulcan raids were the longest attack missions ever flown, four thousand miles each way, and they were undertaken with aircraft which were already being withdrawn from service. We had just presented three of them to USAF museums. They were flown into Strategic Air Command headquarters at Offutt AFB and handed over in flying condition. Soon after that, we discovered some of the hard truths about operating an air force which has NATO commitments rather than Imperial ones. We had no aircraft that were really suitable for the vast reaches of the South Atlantic. A host of quick fixes were rushed into service to meet the problem, among them the need to extend the range on, for instance, our maritime patrol aircraft, the Nimrod. Refueling probes were needed in a hurry, and we did not have them. Then somebody had an inspiration, and we got a call in Washington: "The Vulcans we've just given to the U.S. Air Force, they had probes on, didn't they?" "Yes, they did," I said. What followed was very embarrassing. There was a small team of our air technicians who arrived in plain clothes, and they went sneaking around USAF museums unbolting refueling probes. At the end of the war, I got a signal from the Castle Air Force Base Museum in California congratulating us on our success and demanding the immediate return of stolen property!

Forgive me as I now digress even further from the central theme and tell you a story which has absolutely nothing to do with Anglo-American relations, but is worth the telling. In that first week after Mrs. Thatcher had said that the fleet would sail south, I had to go up to the United Nations to chair a meeting of the United Nations Military Staff Committee, the most moribund committee

ever devised by man. Before leaving for New York, I was told that the Buenos Aires newspapers had been headlining a report that a British nuclear submarine had been detected operating off the cost of Argentina. I knew that to be wrong. The nearest was en route from Gibraltar, and it would be at least a week before it got on station. However, it was good news because, after all, if they think it's there, it is as good as having it there, because they are going to be very careful. Back in the United Nations, we dragged ourselves through this awful meeting. I then, afterwards, stopped to speak to my French colleague near the conference room door. The Soviet representative that day happened to be an admiral. He brushed my shoulder on his way out. He did not stop; he did not look at me. But as he went by, floating over his shoulder came: "Are our submarines being of any help?"

Soviet admirals were not the only ones whose behavior was perplexing. One particular thorn in our side was, for most of that war, Admiral Stansfield Turner, U.S. Navy, retired, ex-Central Intelligence Agency, whose daily briefing on morning television we watched with bated breathe. The problem was that he was much too good. His predictions about what the Brits were going to do next were really very close to the truth, and it was possible to imagine the Argentines sitting around taking notes. We never managed to think of a way to restrain the phenomenon of the retired military analyst, but it is something that allies need to be aware of.

In the real war, one problem proved to be that of providing air crews with reasonable living conditions. It soon became obvious that the combinations of a vast increase in flying hours and rough living conditions on Ascension—there were tents on lava with generators lying next to them operating all the time—were exacerbating air crew fatigue and increasing the risk of accidents. I was asked to find some mobile, air-conditioned, soundproof accommodations complete with ablutions and kitchens, if possible. And, as it happened, the United States Air Force had just exercised their collapsible concertina city units in the Middle East and were very pleased with them. I knew that the kits were still on an Air Force base in New Mexico and they had been designed to fit into "X" number of C–141s. I went to the Pentagon and wound up talking to Colonel Michael Ryan, who now is a lieutenant general. Discussion with him revealed that the concertina city was designed for people who thought big, like the USAF. It came in five-hundred-man modules. "Would that do?" I pleaded economy of scale, and asked if I could I have a third of a module. "Well, the problem is, of course, that the second C–141 might have the five hundred-man kitchen in it." And I said, "Well, forget all that. Just let us have a third of a module. I'll take whatever is in it." Mike got on the phone, and a couple of telephone calls later, he put his hand over the mouthpiece and said: "You do want this stuff don't you, because when I put this phone down, it's moving."

I excused myself, roared back to the British Embassy, got on the phone to London, and said the same thing. The chap in the operations room at the time

was a rear admiral who had a terrible reputation for eccentricity. He said, "Good! Don't bother about the kitchens; we don't need any kitchens." I said, "Look, forget it, it is already rolling down the runway and on its way." He responded, "I don't want the kitchens." I put the phone down. I subsequently found out that the kitchen was, indeed, on the second C–141. The chaps in Ascension were very glad to see it; in fact, they were very glad to see the whole thing. It was a boon and a blessing.

My largest acquisition came once it was certain that our efforts on the Falklands would actually be crowned by success. It became apparent that we were going to need to improve the Port Stanley airfield substantially once it was captured. So I went to see the J–3, Operations, people in the Pentagon, General Philip Gast and Rear Admiral Bob Hilton. They were used to my forays by this time, but even they blanched a bit when I said I wanted to buy an airfield. I went into some detail about seven thousand feet of runway, a parallel taxiway, a parking apron, arrestor gear, and so on. For the first and only time in the war, they hesitated. They apologized for not having an immediate answer, and I was asked to come back the next day. They explained that the AM–2 steel matting they had available was allocated as war stocks, and it was owned by the U.S. Marines, and they thought that they might be difficult. Well, when I got back the next morning, Bob Hilton was all smiles. We could have the matting from the Marine stocks and they were prepared to deliver it to Baltimore for shipping. It subsequently became the new Port Stanley airfield and was used as a base for Phantoms, Harriers, and C–130s.

It may seem from all this that the word "cooperation" does not accurately describe what was happening; one-way traffic appears to be rather more accurate. After all, the United States provided invaluable help to the United Kingdom, but, in doing so, attracted much abuse from Latin America at a time when great efforts had been made to further U.S. interests in that part of the world. So what did the United States gain by backing Britain? Well, for one thing, I suppose, you could say the satisfaction of having backed the winner and, once the dust had settled, certainly the realization that the power of the Argentine military *Junta* was gone and democracy had been given a chance to take root. But there were other things, too. There were many lessons learned from that war, both on the political and military fronts. There was a great deal of mutual debriefing after it was all over to make sure that the benefits were shared.

From a personal point-of-view, I really cannot tell you how fortunate I was to be in Washington in 1982. Right from the outset I was given nothing but encouragement and help from the Pentagon. Whenever I appeared in front of somebody with a problem—and nearly all of them were pretty demanding—I was welcomed as a friend. And almost invariably, my request was dealt with, in front of me, and on the telephone. The only obvious exception was the AM–2 matting. I was never asked to sign for anything, nor was I ever asked to put

anything in writing. They listened to my story, they took my word for it, and they acted immediately! Bureaucrats with objections, or paperwork, or whatever, were brushed aside until the followup much later. Much later! It was all very heartwarming, and a hell of a good time to be an ally of the United States.

Session Two

Acquisition

General Robert T. Marsh, U.S. Air Force, retired, was inducted into the U.S. Army Air Forces in 1943 and trained as an aircraft mechanic and aerial gunner on B–17s and B–24s. Subsequently, he received an appointment to the U.S. Military Academy at West Point from which he graduated in 1949. He earned bachelor of science degrees from the University of Michigan in instrumentation engineering and aeronautical engineering in 1956. In July 1950, the general joined the Armed Forces Special Weapons Project as an atomic weapons assembly officer at Sandia Base, New Mexico, and in December 1952, he was assigned to Headquarters, 7th Air Division, at South Ruislip, England. Following graduate school, the general served in a wide variety of research and development offices at Wright-Patterson AFB, Ohio; Los Angeles AFS, California; Andrews AFB, Maryland; and the Pentagon. In May 1877, General Marsh became Commander of Electronic Systems Division, Hanscom AFB, Massachusetts, and in January 1981, he became Commander, Air Force Systems Command.

Introduction

General Robert T. Marsh

I am very pleased to be here with so many distinguished airmen and air power historians and to have the opportunity to rejoin many of my old friends. I have no idea why Bryce Poe asked me to participate this afternoon. I am not a fighter pilot; I am not a bomber pilot; I am not a transport pilot. In fact, I am not a pilot. Also, we are going to talk about the immediate post-war period through the 1950s and slightly into the 1960s, and I think it is perfectly obvious that I cannot give you any mature insights into the happenings of those days. However, I might try to recall for you a few personal impressions of these events you are about to hear. These will be the impressions from someone who was a relatively junior officer at the time.

First, we are going to review the aircraft procurement program of the Royal Air Force during the 1950s and early 1960s, along with the American involvement with that program. During this period, I worked on our missile and space programs almost exclusively and did not track closely the many ongoing aircraft programs. As an outsider, it appeared to me a fairly orderly effort to move ahead on the part of the Royal Air Force with their advanced fighters; and I thought the V-bomber program seemed well managed and under control, as well. I also was very much impressed with British progress in developing vertical and short takeoff and landing capabilities. Was the process as logical and tidy as it appeared? Wait until you hear what it was really like from Robert Jackson, a prolific and first-rate aviation author and defense correspondent for the North of England Newspaper Group.

I happened to be stationed at South Ruislip in England with the 7th Air Division from 1952 through 1954, and it was during that time that the United States provided B–29s to the United Kingdom. Of course, the U.S. Air Force was totally preoccupied with its bomb wings rotating into the various bases in England and worrying about its ability to carry out our war plans. But, even as a young staff officer at that time, I wondered about the role of the Royal Air Force B–29s. Many of us speculated as to what their real mission was and, especially, whether or not they were atomic weapon capable. We have today Dr. William Suit, a historian from the Air Force Materiel Command History Office, who is going to address those questions for us.

Session Two: Acquisition

And finally to Skybolt. I had hoped that General Schriever* would be here this afternoon so we could watch his reaction as this story unfolds. I happened to be have been stationed at the Ballistic Missile Division, one of General Schriever's organizations in the early 1960s, and, by coincidence, I car-pooled with the deputy program manager of Skybolt, a very good friend of mine. We had about an hour and a half trip to Los Angeles International Airport where the organization was located—an hour and a half up in the morning and an hour and a half back at night—so I learned as lot more about Skybolt than I ever wanted to know. I had great respect for this man and his judgement. He surely impressed me that the program was making very good progress against its objectives, and he was absolutely dumbfounded when it was cancelled because of so-called "technical uncertainties." I will also never forget his comments several days later during one of our trips after Skybolt had its 100 percent flight success, an event that took place about two weeks *after* the cancellation was announced! But that is only half of the story. We are fortunate to have Dr. Ronald Landa from the Office of the Secretary of Defense Historical Office to tell us the whole story.

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* From June 1954 through April 1959, then Major General Bernard A. Schriever headed a small group of officers who developed such key aerospace systems as the Thor, Atlas, Titan, and Minuteman missiles and several Air Force launch systems including the man-in-space program. While Commander of Air Force Systems Command, General Schriever vehemently opposed cancellation of Skybolt by Secretary of Defense Robert McNamara and personally authorized the successful test of the missile after its cancellation, thus embarrassing the Department of Defense. See his comments in Jacob Neufeld, ed., *Research and Development in the United States Air Force* (Washington, D.C.: Center for Air Force History, 1993), pp. 77-78. General Schriever attended the morning session of the symposium, but was unable to return in the afternoon.

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Robert Jackson, Aviation author and defence correspondent for the North of England Newspaper Group, has written over fifty books on aviation and military topics including operational histories of the P–51 Mustang, the F–86 Sabre, the Hawker Hunter, and the English Electric Canberra (B–57). Other works include histories of the Soviet Air Force, the U.S. Air Force in Great Britain, the Berlin Airlift, the air war over France in 1940, and the air war over Korea.

RAF Aircraft Procurement, 1955–1965: The American Involvement

Robert Jackson

Ladies and Gentlemen, I should like to speak for a while about some aircraft which the Royal Air Force wanted, but did not get; about other aircraft which the Royal Air Force did not want, but got anyway; and about the odd aircraft which the Royal Air Force wanted, needed, and eventually acquired.

Setting aside earlier RAF acquisitions which came about with the assistance of the U.S. government—the loan of B–29s to Bomber Command, for example, and the supply of Canadair-built F–86 Sabres to equip the squadrons of the Second Tactical Air Force in Germany—the threshold of American involvement in British military research and development was crossed in 1954, with the establishment of the Mutual Weapons Development Team (MWDT) in Paris.

This organization, headed by Colonel Willis "Bill" Chapman, USAF, was set up to examine and encourage promising European military projects which might otherwise have withered and died through lack of funds. In the mid-1950s, the MWDT was concerned with the development of a lightweight strike fighter for the North Atlantic Treaty Organization—an aircraft that eventually emerged as the Fiat G.91—and was collaborating closely with the Bristol Engine Company on development of the Orpheus, the turbojet that was selected to power the lightweight fighter. This early Anglo-American collusion laid a firm foundation for future cooperation which, as we shall see later, was to prove of great importance to both nations.

For the British military aircraft industry, the years 1955 and 1956 marked a time of excitement. The industry had at last thrown off the shackles of wartime policy, which had dictated the development of existing designs rather than the initiation of new ones, and a new range of advanced combat aircraft were coming to fruition. The Vickers Valiant, the first of the so-called V-bombers that would form Britain's strategic nuclear deterrent force, was already in service, and the other two—the Avro Vulcan and Handley Page Victor—would reach the squadrons of RAF Bomber Command by the end of the decade. Already, designs of supersonic successors to these aircraft were on the drawing boards.

Prototypes of a Mach 2 fighter, the English Electric P.1—which was developed into the Lightning interceptor—were flying, and the prototypes of even more advanced fighter and ground attack aircraft were under construction. If all went well, within a few years these aircraft would provide the RAF with a strike and air defence force second to none.

But all did not go well. In April 1957, the Defence White Paper, with its emphasis on missiles in preference to manned combat aircraft, announced the demise of most of these promising projects; the Blue Streak intermediate-range ballistic missile would assure strategic deterrence, and long-range surface-to-air weapons, such as the Bloodhound, would assure the integrity of U.K. airspace. The English Electric Lightning, then at an advanced stage of development, was seen as the last manned fighter that would enter RAF service.

One part of the RAF that could not be replaced by missiles was the Transport Force, the structure of which revolved around the needs of the army, in particular the rapid reinforcement of overseas garrisons following the planned reduction in manpower when National Service ended. The Suez Emergency of 1956 had shown Transport Command's resources to be woefully inadequate, and in 1957, the War Office presented Duncan Sandys, the Secretary of State for Defence, with demands for a new long-range freighter, for tactical transport and for short-range transport, the latter requirement to include helicopters. At this time, the workhorse of Transport Command was the Handley Page Hastings, with three squadrons of Blackburn Beverley aircraft providing a heavy transport force and the Vickers Valetta used for short- and medium-haul work. Far East reinforcement was the task of one jet-equipped squadron, No. 216, with Comet C.2s. Two more squadrons earmarked mainly for Far East reinforcement were due to reequip with twenty Bristol Britannia turboprop-powered transports, but industrial and technical difficulties, coupled with a lack of orders for the civil version, meant that production was very slow. The first Britannia squadron, in fact, did not begin to equip until the summer of 1959.

The most pressing demand was for a new strategic freighter, capable of carrying up to thirteen tons over a range of three thousand miles. This requirement coincided with studies for a Beverley replacement, and one of the types under consideration was the American Lockheed C–130 Hercules. At first, the C–130 was considered by the Air Staff to be too small to meet the strategic requirement and too large for a tactical transport, but the army needed a new aircraft quickly—by 1963 at the latest—which left little time to adapt or develop a British type. A Hercules purchase was the obvious solution to the problem, with the C–133 as a possible alternative. The problem was that these aircraft, being American, did not fit in with the British Government policy of the day, which insisted on buying British equipment. So in 1958, various British alternatives were considered; although, it should be mentioned that the C–130 idea was by no means dead and buried. In 1961, a version powered by Rolls-Royce Tyne engines and designated BAC 222 was proposed jointly by

Lockheed and the British Aircraft Corporation to meet Operational Requirement 351, which was written around a medium-range, short takeoff and landing freighter with a thirty-five thousand-pound payload.

In the event, the strategic freighter requirement, Operational Requirement 323, was decided purely on political and industrial grounds in 1959. Short Brothers of Belfast, Ireland, had been building Britannia components under contract, but production was almost at an end. To haul itself into the future, Short had only one lifeline, the Britannic, a large turboprop-powered freighter which had been under development for some time. If production of the Britannic did not go ahead, a large part of Short's work force would have to be laid off, and in view of the fact that the company was largely Government-owned and subsidized, this could not be allowed to happen. So the Britannic was ordered into production to meet Operational Requirement 323 for the strategic freighter; it would be known as the Belfast C.1 in RAF service.

The Belfast was not the aircraft the Air Staff wanted. For one thing, it was the only RAF aircraft to use the Rolls-Royce Tyne engine, which made little sense in logistic and engineering terms; for another, it would not be in service before 1966, three years after the required date. The Vice Chief of the Air Staff of the day remarked that the aircraft would be obsolete by the time it entered service, and he was right. Proving flights to the Far East showed that, since the aircraft had insufficient performance to clear some of the mountains it encountered on the direct routes, it had to follow roundabout routes, and it took a long time to get there, which defeated the object. The proving flight to Gan, in the Indian Ocean, provoked a caustic signal from the aircraft captain to Headquarters Transport Command; he stated that all was well, and there was no sign of scurvy in the crew!

When the Belfast was ordered, it was envisaged that one of its primary functions would be to transport the Blue Streak long-range ballistic missile, and when that weapon was cancelled early in the 1960s, much of the Belfast's *raison d'etre* disappeared. There was even less use for it after the late 1960s, following Britain's withdrawal from areas east of Suez. The Belfast ultimately equipped only one squadron, and was eventually withdrawn in 1976.

With Operational Requirement 323 met, albeit unsatisfactorily, there remained the question of Operational Requirement 351, the Hastings and Beverley replacement. In 1961, a principal contender for this requirement was the Hawker Siddeley 681, an advanced tactical transport featuring a high wing with moderate sweepback and a high tail surmounting an upswept fuselage equipped with generous loading doors and a loading ramp. It was to be powered either by four Bristol Siddeley Pegasus engines with vectored thrust nozzles—a somewhat ambitious scheme, seen in the light of later developments—or four Rolls-Royce Medway engines fitted with thrust deflectors.

The Hawker Siddeley 681 project drifted on for a long time with no firm decision made on its future, and gradually the projected first flight target of

August 1967 and in-service date of 1968 receded. One stumbling block was range, and at one point consideration was given to the Lockheed C–141 as an alternative, but this ran into the brick wall of emphasis on all-British designs. In the end, the aircraft, still at mock-up stage, fell victim in February 1965 to the axe wielded by the newly elected Labour Government. With that government's intention to withdraw from commitments east of Suez as soon as possible and concentrate the RAF's main resources within the framework of the North Atlantic Treaty Organization, range was no longer a key issue. With the demise of the 681 project, the RAF's tactical transport requirement was met by the C–130 Hercules, nearly ten years after this aircraft had first been considered. Sixty-six were ordered, the first entering service in July 1967, and a happy choice it proved to be. As one newly converted RAF Hercules pilot put it, "Route flying Hercs after the more staid aircraft is rather like the transition from sail to steam must have been."

In the helicopter field, there had long been a strong American bias, for the RAF had been operating the Westland Whirlwind, the license-built version of the Sikorsky S–55, since the mid-1950s. It is of interest to note that the RAF and Royal Navy were both using helicopters in the tactical transport role in Malaya before the U.S. Army adopted a similar procedure in Korea. By the end of the decade, operations in Malaya and elsewhere had revealed an urgent need for a twin-rotor tactical transport helicopter with a high payload capacity. The army favoured the Boeing-Vertol Chinook; instead, again mainly for political reasons, the choice fell on the Westland Belvedere, a military version of the Bristol Type 173. The Belvedere was a disaster. Its cramped cabin made it completely unsuitable as a troop transport, it had an airframe life of only sixteen hundred hours, and it never met its operational requirements. Fortunately, its in-service career, which began in 1961, was short-lived; from 1964 on, it was replaced by the Westland Wessex, a license-built version of the Sikorsky S–58 with British turboshaft engines. As a matter of record, the RAF's medium-lift helicopter force did eventually equip with the CH–47 Chinook, but not until 1981. The subsequent performance of that type, particularly during the Falklands Campaign—where the sole Chinook operating with the Task Force performed Herculean tasks—surely indicated that the type would have been the correct choice twenty years earlier.

Having examined the tribulations of the RAF's transport force in the early 1960s, let us go back a few years and look at the beginnings of mutual Anglo-American interests in combat aircraft.

During the early 1950s, a French engineer named Michel Wibault—whose company had built a range of commercial aircraft in the 1930s—had been working on the concept of vertical takeoff and its associated problems and had come up with a possible solution. His idea envisaged a turbojet engine using vectored thrust, with rotating nozzles that directed exhaust gases either vertically downwards or horizontally aft. Having failed to arouse French interest

in the concept, and seeking funds to develop his theme, in 1956 he approached Colonel Bill Chapman at the Paris office of the Mutual Weapons Development Team. At this time, the MWDT was already working with Bristol Siddeley on the Orpheus engine to power NATO's lightweight fighter, so Chapman approached Dr. Stanley Hooker, Bristol's Technical Director, and sought his views on the Wibault project. Initially, Hooker was intersted, but—mindful of the MWDT's support for the Orpheus programme—he asked one of his project engineers, Gordon Lewis, to investigate the possibilities. After preliminary studies, Wibault and Lewis applied for a joint patent covering the design of a vectored-thrust engine known as the BE.52 in January 1957; this was further developed into the BE.53 Pegasus I, which was based on the Orpheus.

In the summer of 1957, details of the proposed engine were passed to Sir Sydney Camm, Hawker Aircraft's Chief Designer, who authorized Ralph Hooper, one of his senior project designers, to examine the project. Hooper, impressed by the apparent simplicity of the idea, went to work on the design—at this stage little more than a thumbnail sketch—of an aircraft to fit around the engine, and in June 1957 it was allotted the project number P.1127. The first P.1127 brochure, depicting a single-seat ground attack/reconnaissance aircraft, was shown to Colonel Chapman of MWDT when he visited the Farnborough Air Show in September 1957. His reaction was generally favourable, although he pointed out that, to meet NATO requirements, the aircraft's estimated combat radius would have to be doubled.

It was not only Chapman's reaction that was encouraging. At that year's annual Anglo-American Aeronautical Conference, a paper presented by Mr. M. Q. McKinney described the work already done in America on vertical and short take-off aircraft, from which it emerged how U.S. interest in the field was expanding. The 1958 Conference, which was to be held in the United States in July, was to be attended by Mr. E. T. Jones, the Deputy Controller (Overseas Affairs) at the Ministry of Supply, and the Hawker management went to great lengths to brief him on the P.1127's potential beforehand.

In the meantime, a redesigned P.1127, more compatible with NATO requirements, had been presented to the MWDT, and it met with an enthusiastic reception. In June 1958 the MWDT agreed to pay 75 percent of the development costs of the Pegasus engine, and in September, aviation pioneer, Major Alexander de Seversky, adviser to the USAF Chief of Staff, underpinned the undisguised American enthusiasm for the project by recommending bypassing a Fiat G.91 replacement with an aircraft possibly based on the P.1127.

The enthusiasm, unfortunately, was not reflected at this stage in the attitude of the U.K. government. Available research funds were being eaten up by other projects, and none were available for allocation to the P.1127 airframe development programme. As a result, Hawker Aircraft had to proceed with P.1127 development purely on the basis of a private venture while the Air Staff set about drafting an operational requirement to cover the concept. This

emerged in April 1959 as Operational Requirement 345, and Specification ER.204D was issued to cover the P.1127, but it was not until October 1959 that Hawker received a preliminary contract and a niggardly £75 thousand to enable further design work to be carried out, and not until June 1960 did the Company receive a contract for the building of two prototypes.

The prototype P.1127 made its first tethered hovering flight in October 1960, and began conventional flight trials the following May. Shortly afterwards, a government contract was placed for a further four aircraft, later absorbed by a tripartite agreement between the Federal Republic of Germany, the United States, and the United Kingdom. Under this agreement, the three nations purchased nine more aircraft for a joint vertical/short take off and landing (V/STOL) evaluation programme, which was undertaken at RAF West Raynham from May to November 1965. The P.1127 was now known as the Kestrel FGA.1.

Meanwhile, a rather unfortunate red herring had floundered across the path of V/STOL development in the United Kingdom. In 1960, Hawker, seeing little prospect at that time for a P.1127 production order, turned its attention to proposals for a more advanced V/STOL aircraft that would more adequately suit the NATO requirement, then emerging in draft form. The new Hawker design, the P.1150, was to be powered by an advanced version of the Pegasus vectored-thrust engine using a new type of exhaust boost known as plenum chamber burning (PCB), which involved the burning of fuel in oxygen-rich air and at higher pressures than in most reheat systems. However, when NATO Basic Military Requirement (NBMR) No. 3 was issued in 1961, it called for a larger and more powerful V/STOL design capable of supersonic speed at altitude, so the P.1150 was replaced by a new design, the P.1154. It was to be powered by a new engine, the Bristol Siddeley BS.100, again using PCB.

Problems began to emerge at an early stage, and they had nothing to do with the design of the aircraft. First of all, mainly because of France's reluctance to participate in a joint venture to bring NBMR No. 3 to fruition, NATO withdrew the entire requirement. In mid-1962 the Air Staff and the Admiralty attempted to draft a joint requirement for a combat aircraft based on the P.1154, but this was doomed from the outset. The RAF wanted a single-seat low-level strike aircraft with a secondary intercept capability, while the Royal Navy needed a two-seat all-weather interceptor for aircraft carrier operations with low-level strike as a secondary requirement. The two were directly opposed to one another, and late in 1963 the Royal Navy opted out of the P.1154 programme and ordered the McDonnell F–4 Phantom instead. The RAF pursued the P.1154 project alone, until it was cancelled by the Labour Government in January 1965.

It was a Conservative Government, though, which in February 1964 announced the intention to buy the F–4; 130 Phantoms were to be acquired to replace the Sea Vixen as the standard fleet defence aircraft, but this order was

later reduced to 52. In Royal Navy service the aircraft was to be designated F–4K Phantom FG.1.

In February 1962, McDonnell had proposed to the U.S. forces a Phantom powered by Rolls-Royce Spey turbofan engines, and in November 1965, to appease the British aircraft industry, the then Minister of Aviation, Roy Jenkins, announced that the Spey was to power the British Phantoms. Before that, in May 1965, the Phantom had also been ordered for the Royal Air Force; at this stage it was anticipated that the total British procurement would be some 290 aircraft. The RAF Phantom, designated F–4M, was to replace the Canberra and the Hunter in the reconnaissance and strike roles.

The decision to acquire the Phantom for the RAF came as a direct result of an unfortunate episode in the story of British military aviation, and one which caused a good deal of bitterness in both the industry and the RAF. I have already mentioned that the P.1127 V/STOL project had to proceed as a private venture because government funds were channelled into other projects. One of these was Operational Requirement 339, calling for an advanced tactical strike and reconnaissance aircraft to replace the Canberra. Various designs were tendered, and that submitted by the Vickers/English Electric consortium, soon to become the British Aircraft Corporation, was accepted in January 1959. The name of the new aircraft was TSR–2.

The development of TSR–2 was somewhat protracted and its research and development costs escalated, partly because of some early technical problems—mainly associated with the Olympus engine chosen for it—but largely because every phase of its development was under the control of a separate government committee. As we all know, if you ask a committee to design a horse, the end product will probably be a camel.

The TSR–2, however, was no camel. By February 1965 two prototypes were flying and work was progressing on a third, together with twenty production aircraft, five of which were partly complete. Flight testing had already indicated that when TSR–2 entered service, the RAF would have the most advanced and capable aircraft of its kind in the world.

It was not to be. Early in 1965, as we have seen, a newly installed Labour Government cancelled two key projects, the Hawker Siddeley 681 tactical transport and the P.1154 supersonic V/STOL aircraft. TSR–2 was kept going for a while so that comparisons might be made between it and the General Dynamics F–111. At that time, Prime Minister Harold Wilson, acting on faulty advice from people who had launched what amounted to a smear campaign against TSR–2, believed that some £300 million might be saved by buying the American aircraft. His Cabinet thought so too, and the final nail in TSR–2's coffin was hammered home on April 6, 1965, when Chancellor of the Exchequer James Callaghan, in his Budget speech, announced that the project was to be cancelled forthwith. The assassination was to be complete; no trace of the project was to survive.

Session Two: Acquisition

On February 1, 1966, Defence Minister Denis Healey announced that the U.K. government was to buy fifty General Dynamics F–111s to carry out the task for which TSR–2 had been intended. The 1966 Defence White Paper, issued later that month, stated that the F–111 would bridge the gap until the advent of an Anglo-French variable-geometry aircraft, then under joint study.

In 1967, however, these aspirations suffered two blows in swift succession. First, the French government announced that it was pulling out of the variable-geometry project on the grounds of cost; second, the British government realized that the planned purchase of fifty F–111s could not possibly be supported because of escalating costs. In January 1968, by which time the first nineteen F–111K aircraft for Britain were taking shape on the General Dynamics assembly line, the British order was cancelled. The excuse given was that, with the progressive withdrawal of British forces from the Far East and the Arabian Gulf by 1971, there would no longer be a need for a long-range tactical strike and reconnaissance aircraft.

The cost to the United Kingdom of the cancellation was £50 million, but, Prime Minister Harold Wilson explained, by not buying the F–111 the country was actually saving an estimated £400 million. As aviation writer Bill Gunston pointed out in his book on the F–111, it was a pity that Britain could not go on forever ordering aircraft and then cancelling them. By saving £300 million in cancelling TSR–2 and then saving another £400 million in cancelling the F–111, the nation seemed to be on to a good thing.

As things turned out, the only beneficiary in this sorry affair was the SAC, which received forty-eight aircraft of the British order completed to FB–111A standards. The episode did, however, help to push Britain along the road of European collaboration which led eventually to the Tornado.

It will be obvious by now that the RAF's acquisition of American aircraft in the 1960s came about as a result of accident rather than design, and of the machinations of governments whose policies were poles apart. On the one hand there was a government determined to cling to the vestiges of the Empire in an attempt to maintain Britain's previous standing in the world; on the other, there was a government determined to dismantle what remained of the Empire as fast as possible, a task it accomplished with great efficiency. The overall effect was to create chaotic conditions for both the British aviation industry and the RAF. The RAF, luckily, recovered; the industry never did.

But the picture was not entirely one of gloom. There was, so to speak, a jewel in the crown, an aircraft, which in the opinion of many, represented the finest fruit of Anglo-American cooperation. It traced its ancestry back to the Sopwith Camel of 1916, and when Sir Tom Sopwith—who literally lived through a century of aviation—first saw this aircraft demonstrated, he remarked, "Now I've seen everything." It was, of course, the Harrier, born of the P.1127 and Kestrel programmes of the early 1960s and still the subject of ongoing development by McDonnell Douglas and British Aerospace.

In April 1982, the armed forces of Argentina invaded the Falkland Islands. To use an expression popular at the time, "the Empire struck back," after George Lucas's film, and in a matter of weeks, the Falklands had been restored to the Crown. Without the Harrier and its naval version, the Sea Harrier, that mission would have been impossible to fulfill. And without the funding, the encouragement and the enthusiasm generated in the early years by far-sighted people in the United States of America, it is probable that the Harrier would never have seen the light of day.

Dr. William Suit, Historian, Air Force Materiel Command History Office, Wright-Patterson AFB, Ohio, received his Ph.D. in history from Kent State University, Ohio, in 1988 and joined the Office of History at Air Force Materiel Command later that year. Among his publications is the "Logistics of Air Power Projection" in *Airpower History*, and he has presented papers on "USAF All-Wing Aircraft" at the Society of Historians of Technology annual convention and "The Role of Air Force Systems Command and Air Force Logistics Command in operations Desert Shield/Desert Storm," at the Center for Air Force History Symposium on the Gulf War in April 1993. Currently, Dr. Suit is completing a monograph study on "The Road to Stealth: N–1M to the B–2A."

The Transfer of B–29s to the Royal Air Force Under the Military Defense Assistance Program*

William W. Suit

Immediately following World War II, both the United Kingdom and the United States anticipated a well-deserved respite from global confrontation and war. Accordingly, the two nations drastically cut back their expansive wartime military establishments and reduced new military hardware procurement. Washington and London both viewed their existing arsenals as adequate for defensive needs, requiring only minimal upgrading in the immediate future. With their common foes vanquished, each nation could safely modernize its forces at a measured pace. However, between 1945 and 1949, an increasingly hostile Soviet Union acquired jet aircraft, long-range bombers, and atomic weapons, thus forcing the U.K. to accelerate its military reequipment plans. Without comparable aircraft and weapons with which to strike back at the Union of Soviet Socialist Republics in kind, the RAF Bomber Command was temporarily rendered only marginally useful as a strategic air arm. The U.K. had to look to its own resources to develop atomic weapons, but Bomber Command acquired eighty-seven American Boeing B–29 Superfortresses for use as interim long-range bombers until the command received the British-produced jet bombers that would form the core of the jet-age RAF strategic striking force. Though only a minor early episode in a long series of post-World War II Anglo-American collaborative efforts, the transfer of the B–29s serves as an excellent example of how the two countries aided one another as they adjusted to their new world roles.[1]

In August 1945, three major powers stood intact amid the ruin: the Soviet Union, the U.K., and the U.S. Continental Europe was ravaged, Japan had been absolutely defeated, and China seethed with civil war. The war had wrought many changes made apparent only with time. The United States emerged considerably more powerful militarily and economically *vis-à-vis* the U.K. or the U.S.S.R. than was recognized at the time. Brutally savaged by Nazi Germany, the Soviet Union suffered far worse than its leaders dared to admit. Nevertheless, the Soviets pressed on with expensive military modernization. At

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the same time, the U.K., the world's second economic power, enjoyed no stay from adversity. As the leader of a fading empire teeming with unrest and nearly bankrupted by two world wars, the U.K. faced imminent decline in wealth, military power, and worldwide political influence. Adapting to the changed world, Britain simultaneously rebuilt its economy and transformed itself from leader of an empire to first among equals in the British Commonwealth of Nations.[2]

The combination of fiscal austerity and the emergence of the Soviet Union as a military threat placed RAF Bomber Command in a bind. In 1946, confident that World War II had exhausted the world's capacity for major armed conflict into the immediate future, the Labour government adopted the Ten-Year Rule, as had been done following World War I, which stated that the government assumed no major war would occur in the next decade. Atomic energy research continued unabated, but under the umbrella of the Ten-Year Rule, the Ministry of Defence slowed military equipment research and acquisition. The decline in defense expenditure produced a greater impact on the RAF, and Bomber Command in particular, than on the Royal Navy or the British Army because rapid advances in aeronautical technology rendered the aircraft on hand obsolete far more quickly than ships or tanks. For the same reason, procurement costs of aircraft accelerated far more rapidly than those of ground or sea armaments. The Exchequer did provide enough money to begin reequipping Fighter Command with jet-powered Meteors and Vampires, but Bomber Command, as the logical choice to perform Britain's future atomic warfare role, faced a more lengthy reequipment process.[3]

The propeller-driven Avro Lincoln served as the standard post-war RAF bomber until replaced by Washingtons and Canberras in the early 1950s. Basically an improved model of the World War II workhorse Lancaster, the Lincoln fared poorly when compared to contemporary American bombers and was certainly inadequate for use against the Soviet Union. Lacking a pressurized cabin, the Lincoln could attain a top speed of 290 mph, a service ceiling of 22,000 feet, and a range of 2,250 miles with a fourteen thousand-pound bomb load. By comparison, the U.S. Air Force B–29B, with a pressurized cabin, could reach a top speed of 354 mph, a service ceiling of 35,900 ft, and a range of 3,960 miles carrying a ten thousand-pound bomb load. The Boeing bomber could carry up to twenty thousand pounds of bombs on shorter missions.[4]

As the world leaders in jet engine research and production, the British recognized that the Lincoln's replacement would have to be a jet aircraft, and thus made no effort to develop an advanced propeller-driven bomber similar to the USAF's B–36 or B–50. In 1945, as a first step toward creating a jet bomber force, the British Air Staff issued specification B.3/45 for a light twin-jet bomber to replace the DeHavilland Mosquito. From this program emerged the very successful English Electric Canberra light bomber, which entered service

in 1952. In 1946, the Air Staff issued specification B.35/46 for a high-performance, special-weapons-capable four-engine jet bomber to serve as a follow-on for the Lincoln. This specification led to the creation of the V-Bomber program which ultimately produced the swept-wing Vickers-Armstrong Valiant, the crescent-wing Handley Page Victor, and the delta-wing Avro Vulcan. The Defence Ministry did not expect these bombers to begin entering service until 1955. Attempting to fill the gap between the time the Lincolns became hopelessly obsolete and the new V-Bombers entered service, the Air Staff issued specification B.14/46 for a less sophisticated interim bomber, the ill-fated Short S.A.4 Sperrin, which was expected to enter production in the late 1940s or the very early 1950s.[5]

The RAF quickly realized that the Short S.A.4 would be rendered obsolete soon after it entered service. The Air Staff therefore decided to lessen the performance requirements for one of the V-Bombers, and issued specification B.9/48 in 1948 for the Vickers-Armstrong Valiant, an aircraft more advanced than the Sperrin but not as sophisticated as the Victor or Vulcan. Thus, in 1948 the financially strained U.K. found its Ministry of Defence and aircraft industry committed to the development of five jet bombers. Mindful of its experience with the Stirling, Halifax, and Manchester bomber development prior to World War II, the RAF balked at channeling all effort into one four-engine bomber design for fear it might make the wrong choice. Fortunately, the establishment of the Mutual Defense Assistance Program by the U.S. Congress in 1949 provided the RAF the opportunity to bypass production of the expensive Sperrin and acquire admittedly less capable, but "free," B–29s for use as an interim bomber.[6]

The possibility of the United States providing large-scale military assistance to the Western Union was first broached during the Anglo-American-Canadian security talks held during the spring of 1948. As preparations progressed for the establishment of the North Atlantic Treaty Organization, plans for the creation of a comprehensive military aid program developed as well. All parties agreed that for the aid program to be more palatable to the American public and less provocative to the Soviet Union (primarily a French concern), the recipient countries should formally request assistance from the U.S., rather than have the Americans independently offer military aid. In this way, the U.S. would be portrayed internationally and domestically as coming to the assistance of friends, rather than unilaterally embarking on a program of military expansion. In March 1949, after the Truman administration received indications of bipartisan support in Congress, U.S. Ambassador to the U.K. Lewis Douglas initiated informal discussions on the implementation of the proposed program. The Mutual Defense Assistance Program, commonly referred to as the Military Assistance Program, as envisioned by the Americans, would meet the overall needs of the Western Union and those of other key allies. Accordingly, the U.S. State Department encouraged the Western Union

countries to draw up a list of military hardware needed by the various member countries within the context of the Union's requirements and the individual members' capacity for military production. On March 16, 1949, a Western Union consultative committee presented a preliminary request for aid to the U.S. State Department. In early April, the NATO charter member states signed the North Atlantic Treaty, and the Truman Administration announced the Western Union request for assistance. However, the fate of the Military Assistance Program rested with Congress. Acting as a conduit, Ambassador Douglas informed Secretary of State Dean Acheson of British concern over impending congressional action on the program. Douglas wrote that the British were not concerned about the amount of dollars eventually appropriated "if the dollars bear no direct relation to [the] real value of the equipment."[7]

The previous month in the House of Commons, Secretary of State for Air Arthur Henderson had hinted what "real value" meant in British terms. While explaining the RAF reequipment program, Henderson outlined the financial, time, and technical constraints imposed on bomber development. He noted that production quantities of the twin-jet bomber (Canberra) had been ordered and that work progressed on the advanced bomber program. Notably, he did not mention the interim bomber. Apparently, satisfactory progress on the Canberra and Valiant, coupled with the prospect of acquiring B–29s from the U.S., mitigated the need to produce the Sperrin. The S.A.4 program continued as a research project and Short eventually built two test aircraft, but B–29s and Canberras filled the interim bomber role.[8]

Congress began hearings on the Military Assistance Program in the summer of 1949. Throughout these and subsequent hearings key, committee members expressed serious misgivings about providing military aid to the U.K. Surprisingly, the British requested what appeared to be a modest amount of equipment: seventy B–29s, which as surplus stock were valued at $7.5 million. This sum represented less than that of any other country's request except for Luxembourg.[9] Given the extent of sniping at the U.K. in Congress, it appeared that the British request might be held up. During an early August hearing, Congresswoman Helen Gahagan Douglas (D-California) expressed concern about Argentina purchasing British Land Rovers instead of American Jeeps and Congressman John Vorys (R-Ohio) questioned the licensed production of British-designed jet fighters in French factories. Vorys complained, "We cannot be pouring arms into Europe and having any of them selling any of that stuff to create dollars or anything else. . . . we had an awful lot of talk about the jet planes that Britain sold to the Russians."[10] The following week, Senator Brien McMahon (D-Connecticut) suggested that the U.S. should use the Military Assistance Program as a means of encouraging the North Atlantic Treaty signatories to persuade the U.K. to give up its atomic energy program.[11] Senator Arthur Vandenberg (R-Michigan) sounded a similar note the next day when he stated that because the U.K. had requested military aid, it was "inconsistent for

the British to spend two, three, or four hundred million dollars on atomic energy."[12]

Congressional exasperation with the U.K. soon tempered as a string of events drove home the realization that the world was an unpredictably dangerous place and the U.S. should help its key, but troubled, ally. In rapid succession between August and October 1949, the U.K., with the largest and most stable economy in Europe, devalued the pound; the Soviet Union detonated its first atomic weapon; and the communists triumphed in China. In the midst of these events Congress moved quickly, and on October 6, President Truman signed into law the Mutual Defense Assistance Act of 1949, which authorized the dissemination of $1.45 billion in equipment and cash. The RAF received the first Superfortress the following March and the eighty-seventh in June 1952.[13]

On March 21, 1950, speaking for the Labour government during debate over the 1950–1951 Air Estimates, Secretary of State for Air Henderson explained that "these aircraft [B–29s] will be absorbed into the front line strength of Bomber Command, and will obviously greatly increase the effective striking power of our bomber force."[14] He added:

> As I explained to the House last year, we have concentrated our efforts on a long term development of advanced four-engined jet bombers [the V-bombers], capable of speeds, heights and ranges far greater than those which have been attained with our piston-engined bombers. Although good progress is being made in developing these types, we are still in a transitional period. The B–29 and the Canberra will, therefore, as they become available in large numbers, constitute the main equipment of our bomber striking force until such time as the advanced types to which I referred begin to come off production.[15]

Some members of Parliament, while grateful for the assistance, expressed dismay with the Defence Ministry's temporary inability to equip the RAF's long-range bomber units with domestically produced aircraft. Summing up this frustration, Conservative MP John Profumo asked, "What are the long-term implications of this aerial Americanization?"[16] Comparing the RAF's heavy bombers to the Royal Navy's capital ships as a tool of power projection, he argued that the RAF "must not be put in a situation in the future where it relies on a foreign Power however friendly it may be, to provide replacements, spares, and possibly ammunition."[17] Expressing fears about foreign policy complications, Profumo warned that "the time may come... when we may wish to act on our own, and to use our own initiative in starting action. And when action has been started, we want to know that our Chiefs of Staff can give orders without the 'by your leave' of any foreign country."[18] A more pragmatic Conservative MP, Harold Macmillan, harbored some qualms about accepting

American aircraft, but anticipated receiving more advanced U.S. bombers if the B–29s proved inadequate.[19]

The first four B–29s, renamed Washingtons by the RAF, arrived at RAF Marham, Norfolk, on March 22, 1950, amid great fanfare.[20] These bombers represented only a token shipment. The greater task of preparing the follow-on aircraft and shipping the initial spares and support equipment required much more time and effort. The outbreak of the Korean War and subsequent U.S. mobilization added urgency to the program, but also complicated its execution. Initial plans called for seventy aircraft to be withdrawn from storage, refurbished, and flown to England by March 1, 1951. In addition to overhauling the aircraft's mechanical systems, the USAF depots and contractors also installed and safety equipment, Norden bomb sights with C–1 autopilots, gun laying radars and fire control computers, and new Wright R–3350–57M engines. These new fuel-injected engines replaced carburetor-equipped engines, thus raising the combat ceiling of the aircraft to over thirty-six thousand feet. An additional 124 bombers were to be delivered over the following year, but this quantity eventually fell to 17. Poor planning, contractor labor difficulties, bad weather at the contractor's (Curtiss-Wright) Columbus, Ohio, facility, and competing USAF demands for B–29s caused the delivery schedule to fall behind. These delays temporarily left Bomber Command with two squadrons short of aircraft and two squadrons trained but without aircraft. By the summer of 1951, the shifting of part of the workload to a second contractor (Grand Central Aircraft Company, Tucson, Arizona) and to the USAF's Warner Robins and San Antonio Air Materiel Area depots put the deliveries back on schedule.[21]

Providing support equipment and initial spares proved as difficult as meeting delivery schedules. The U.S. agreed to supply everything immediately necessary to support the bombers. However, under terms of the Mutual Defense Assistance Act, recipient countries were to provide sustaining support for the equipment provided. The USAF was not supposed to be a source of sustainment stocks. Initially the USAF provided flyaway kits (similar to present day air-transportable War Readiness Spares Kits), which included spares and repair equipment adequate for limited operations. These proved insufficient to keep the bombers airworthy. To alleviate this shortcoming and allow the RAF time to establish spares and supplies sources, the USAF substantially increased initial logistics support, shipping bulk quantities of ground handling equipment, test equipment, overhaul equipment, tools, and spares to the U.K. Also, until the RAF became self-sufficient, the USAF made its B–29 support facilities at RAF Burtonwood available for Washington maintenance. After adding in the cost of logistics support, the transfer of B–29s to the RAF became the single most expensive program (approximately $84 million) managed under the Mutual Defense Assistance Program during fiscal year 1950.[22]

A USAF Military Assistance Advisory Group B–29 training detachment trained RAF flight crews, who then formed the nucleus of the RAF Washington

Conversion Unit, which in turn trained additional RAF Washington flight crews, and USAF B–29 maintenance specialists trained RAF maintenance personnel. When these RAF maintenance personnel became proficient with the B–29, they instructed additional British crews. Due to the complexity of the aircraft and the expected short duration the aircraft would serve with Bomber Command, Washington squadrons adopted *in toto* USAF training, maintenance, and administrative procedures, right down to the reproduction of USAF spares order forms. As agreed to under provisions of the Mutual Defense Assistance Program, the RAF established independent B–29 support capabilities, relying on RAF maintenance units (the 22nd MU, 23rd MU, 53rd MU and 58th MU) and a contractor (Scottish Aviation) for routine maintenance and depot-level support and the Bristol Aeroplane Company for engine overhaul. By July 1952, the Washington Conversion Unit had completed its instructional mission, whereupon the RAF redesignated the unit No. 35 Squadron.[23]

The RAF assigned almost all Washingtons to eight medium bomber squadrons within Bomber Command's No. 3 Group. These bomber squadrons included Nos. 15, 44, 57, and 149 at RAF Coningsby and Nos. 35, 90, 115, and 207 at RAF Marham. The Supply Ministry received three of the B–29s for use by Vickers Armstrong Ltd. as test aircraft, and No. 192 Special Duties Squadron operated four RB–29s from RAF Watton until 1958 in an electronic intelligence and electronic countermeasures capacity.[24]

Though deciding what mission the Washingtons would assume ultimately rested with the Ministry of Defence, the USAF preferred that strategic bombing be left to the Strategic Air Command. Indeed, since the end of World War II, the U.S. and U.K. had not engaged in any formal detailed joint strategic bombing planning. The RAF did not know what targets SAC would attack in the event of war and the Americans could only speculate on the progress the British were making with their atomic weapons program.[25] The creation of NATO prodded the Americans into recognizing the inevitability of joint planning. As General Omar Bradley, Chief of Staff, U.S. Army, noted in testimony before the Senate in August 1949:

> at the present time we are the ones that are capable of carrying out strategic bombing, with possibly some assistance from other nations. But as the Atlantic Pact becomes operative and the organization functions, then very specific spheres of influence and function would be probably determined by the Atlantic Pact Council and Defense Council.[26]

With the U.S. Navy and the U.S. Air Force locked in a bitter fight over strategic (atomic warfare, long-range bombers vs. aircraft carriers) roles and missions, the Navy—apparently afraid to endorse a strategic role for any air force—wanted to limit the RAF's Washingtons specifically to a tactical role.

In a memorandum to the Joint Chiefs of Staff, Vice Admiral Arthur D. Struble, Deputy Chief of Naval Operations and Naval Deputy on the Joint Chiefs of Staff, stated that he approved the transfer of B–29s to the United Kingdom "subject to such employment for tactical purposes."[27]

Bomber Command entertained different designs. With its Lincolns and Lancasters capable of reaching very few strategic targets in the Soviet Union, Bomber Command was *de facto* limited to tactical operations. Acquisition of the B–29s restored the RAF's strategic bombing capabilities, and Bomber Command made clear it intended to regain a strategic role. The RAF could not launch a city-busting bombing campaign against Russia with eight squadrons of conventionally armed B–29s, but Bomber Command's Washingtons could attack the Soviet Union's strategic bomber bases. Speaking at the USAF Air War College in 1948, Air Vice Marshal T. M. Williams declared that "the primary role of an Air Force is the strategic offensive," and that "if we are to be effective in the early stages of the next war, we want a bigger and better Bomber Command than we had at the beginning of the last war."[28] Writing in the July 1950 issue of *Flight*, Air Marshal Sir Hugh P. Lloyd noted, "With the advent of air power as the dominant factor in war, its effects can be felt immediately by the people. . . . Hence, it is vital that we should be capable of immediate reprisal—a reprisal so devastating in its results as to deter any enemy."[29] Acquisition of the B–29s was a first step toward reacquiring that capability.[30]

The U.K. engaged in several military operations during the period the RAF operated B–29s. In the early 1950s, the RAF participated in the campaign against communist insurgents in Malaya and Royal Navy aircraft fought in Korea, but no Washington squadrons engaged in these combat operations. Between August 1950 and March 1953 the RAF's B–29s did participate in seven joint exercises, most often taking the role of enemy bombers attacking various British cities. The exercises showed that piston-engine bombers stood a poor chance of reaching a target guarded by radar warning systems and jet-powered night fighters. Jet fighters handily engaged most Washingtons and Lincolns, but the swift jet-propelled Canberras usually avoided interception. However, Britain contained a much denser air defense system than did the vast Soviet Union. Therefore, the propeller-driven bombers probably would have fared better against Soviet defenses. Still, the facts could not be ignored: though lacking the Washingtons' range and bomb–load capacity, Canberras clearly were much more survivable. When English Electric began manufacturing the light bombers in quantity, the RAF reequipped Washington and Lincoln squadrons with Canberras.[31]

Bomber Command also was anxious to reequip its Washington squadrons with Canberras because the B–29s proved to be very difficult to maintain. Though the RAF was to establish its own sources of supply, the USAF continued to be the primary source of critical spares. The Americans had kept seventy-one B–29s as war reserve materiel for Bomber Command and, as noted,

provided large amounts of initial and supplementary spares and equipment support. Unfortunately, the Korean War broke out and the USAF quickly depleted many B–29 spares stocks. The war reserve B–29s were cannibalized for parts, but Bomber Command's maintenance squadrons and Bristol Aeroplane still suffered from a lack of critical spares. Without an adequate supply of replacement parts, Bristol was forced to reassemble the Wright 3350 engines using worn components that should have been replaced. As a result, the number of hours between required overhauls fell to 60 hours for engines overhauled by Bristol, compared to 260 hours for engines overhauled by American contractors for the USAF. Not surprisingly, Bomber Command's B–29s never met anticipated aircraft utilization rates.[32]

Bomber Command returned most of the Washingtons to the U.S. between July 1953 and July 1954. About a dozen had been scrapped in the U.K. or destroyed in mishaps. One of the three Ministry of Supply Washingtons was destroyed in a ground collision in 1955 while the other two concluded several years of flight test work in Australia and were scrapped in 1957. The four 192 Squadron special operations Washingtons remained in service until 1958 when they were broken up and their useable components salvaged.[33]

The transfer of the B–29s to the RAF and the question of their use as atomic weapons' carriers provided the springboard for ranging speculation. In 1946 the United States unceremoniously ended joint Anglo-American-Canadian atomic energy research, causing the U.K. to embark on an expensive independent atomic energy program. The British program progressed satisfactorily and on October 3, 1952, the U.K. detonated an atomic device on Australia's Monte Bello Island. Theoretically, the British nuclear reactor at Windscale could have produced enough fissionable material for thirty bombs by the end of 1952. However, John Simpson, a learned expert on the British atomic energy program, estimated the stockpile of Blue Danube atomic bombs to be a much more modest total of one device as of 1952 and between four and seven as of late 1954.[34] The first Valiant did not enter service until mid-1954, the number of in-service Valiants did not reach squadron strength until the following year, and Canberras could not carry the multiton Blue Danubes. Therefore, during these first years, the Washington was the only RAF aircraft capable of delivering the few British bombs to targets in the Soviet Union.[35] Pronouncements and writings of various public officials added credence to the speculation regarding the aircraft's atomic role. For example, in the spring of 1953, RAF Air Marshal Sir John Slessor wrote: "Today I believe the Pax Atlantica depends as surely, and probably more permanently, on Anglo-American air-power, of which the decisive expression is the long-range atomic bomber. . . . It is the great deterrent. . . . This is, in fact, the place of the bomber in British policy."[36] During a March 1950 session in the House of Commons, Conservative MP P. B. Lucas expressed misgivings that the B–29 might be obsolete, but on a positive note added that "above all it has the capacity to carry the atom bomb."[37]

Not surprisingly, historians disagree on whether the RAF's B–29s played an atomic role. Margaret Gowing states that "the British received American B–29 (Washington) bombers, but these did not carry atomic bombs."[38] Peter Malone, while discussing the atomic-capable USAF B–29s stationed in England, noted that "there is no evidence the RAF's Washingtons were similarly modified."[39] C. J. Bartlett takes a position similar to Gowing's, concluding the RAF used the B–29s only to train future Valiant bomber crews.[40] R. N. Rosecrance concludes, "British acquisition of B–29s under MDAP, then, is probably largely to be explained by British needs for the period 1952 through 1954 when U.K. bombs would begin to be available."[41] John Baylis is of the opinion that "quite apart from the information on atomic energy from 1958 onwards, the United States also contributed to the British delivery systems throughout the 1950s. American B–29s had filled the gap until the V-bomber force was ready."[42] Michael A. Fopp remarked that "on occasions, large covered objects were wheeled out on bomb trollies, under heavy guard, from ordnance stores at Washington bases. These same objects were quietly removed when the Washingtons were dispensed with and taken away by U.S. Air Force aircraft."[43] None of the authors who promote the view that the RAF used the Washingtons in an atomic role offer concrete evidence to support their assertions.

As yet, the RAF has not indicated that its B–29s played any role in the U.K. atomic weapons program. If the U.K. did possess atomic weapons prior to the acquisition of operational Valiant bombers, the RAF would have been wise to have modified some Washingtons for their use and to have trained flight crews for atomic warfare. But, as Margaret Gowing notes:

> one of the strangest elements in this story [the British atomic energy program] is that although the Chiefs of Staff visualized atomic bombs as part of the air striking force, they did not, except briefly in 1946, invest the development of the aircraft to deliver them with the same overriding almost mystical, priority.[44]

Though logic appears to suggest an atomic role for the Washington, no crisis erupted during 1953 or early 1954 that would have required the RAF to place its atomic bombers, if the U.K. possessed any bombs at the time, on alert and actually load the devices into aircraft. The issue is, therefore, relegated to the realm of "what if," and would carry no significance, except for the fact that modifying the Washingtons for atomic warfare would have violated the U.S. Atomic Energy Act of 1946.[45]

By the early 1950s, the B–29 was fast becoming obsolete. However, the RAF, the USAF, and their common adversary still found them useful. Indeed, through 1953 the B–29 was still the USAF's primary medium bomber and a Russian reverse-engineered copy of the Superfortress, the Tupolev TU–4, served as the Soviet Air Force's long-range bomber through the mid-1950s.[46]

As noted, the RAF never intended the Washingtons to fill its long-term need for a strategic bomber. The B–29s were intended only to bridge the gap until domestically produced jet bombers became available, and they served this purpose well. Acquisition of the aircraft enabled Bomber Command to maintain a strategic bombing capacity, saved the British taxpayer tens of millions of pounds, and allowed the engineering and production capacity that would have been consumed by further Sperrin production to be applied to other endeavors. Later, other American military aircraft also entered service with the RAF. As the economies of scale allowed the U.S. to develop sophisticated weapon systems at a lower unit cost than could be achieved in Europe, the RAF and Royal Navy purchased select American aircraft, such as the McDonnell Douglas F–4 and the Lockheed C–130. Of course, the British aerospace industry continued to produce sophisticated aircraft, and the U.S. armed forces purchased licensed-manufactured British-designed aircraft, notably the English Electric Canberra (Martin Aircraft, USAF designation B–57) and the BAe Harrier (McDonnell Douglas, U.S. Navy/Marine Crops designation AV–8).

Undoubtedly, the most significant pooling of resources between the U.S. and U.K. involved atomic energy technology. Collaboration in this arena made the Anglo-American special relationship truly special. As the world of missiles and hydrogen bombs arrived, the cost of developing and maintaining a credible British nuclear deterrent made collaboration with the U.S. almost imperative. Reversing the restrictions of the McMahon Act, the U.S. and the U.K. agreed on June 15, 1955, to a new limited sharing of atomic energy information. The two nations followed up this agreement in early 1958 with an exchange of notes that restored Anglo-American atomic cooperation to the level achieved during World War II. American scientists assisted in the development of the first British nuclear-powered submarine and contributed to the design of the nuclear-armed Blue Steel air-to-surface missile carried on the Victor and Vulcan bombers. In the 1960s, the U.S. supplied Britain with technology required to construct nuclear submarines capable of carrying U.S.-provided, though British-armed, Polaris missiles. President John F. Kennedy offered the same package to France, but French President Charles DeGaulle rejected the offer. The Royal Navy is currently replacing its Polaris submarines with larger submarines capable of carrying U.S.-designed and manufactured Trident missiles armed with multiple British warheads. The closeness of Anglo-American military collaboration remains unparalleled. However, given the demise of the Soviet Union and Warsaw Pact it remains to be seen if this special relationship will continue on such a close basis.[47]

Anglo-American military collaboration has allowed the U.K. to maintain a post-World War II military capacity exceeded only by the U.S. and Russia. This has been accomplished even though, during the same period, the U.K. slipped from the status of global economic giant to that of the sixth largest industrial power. Tied together by bonds of history and mutual self-interest, the

U.S. and the U.K. shared many post-World War II triumphs, such as the Berlin Airlift and the Gulf War, and weathered diplomatic strains, such as those brought on by differences over the Suez Crisis and the Vietnam War. Of overriding importance, however, during the 1950s and 1960s, Western defense rested overwhelmingly with the U.S. and the U.K.—in particular with the ability of SAC and Bomber Command bombers to reach deep into the Soviet Union. Until supplanted by intercontinental ballistic missiles in the mid-1960s, strategic bombers held the U.S.S.R. at bay. In the long line of Anglo-American air power agreements and arrangements, the loan of the B–29s to the RAF serves as an excellent example of how the two countries regularly aided one another in this mission.

Notes

1. Peter M. Bowers, *Boeing Aircraft Since 1916* (New York: Aero Publishers Inc, 1972); Michael A. Fopp, *The Washington File* (Tonbridge, Kent: Air Britain and the British Aviation Archaeological Society, 1983). The United Kingdom received a total of 87 B-29 variants, 83 B-29 and B-29A bombers and four RB-29 reconnaissance aircraft. Both books provide the RAF and U.S. Air Force serial numbers for the B-29s transferred to the RAF. Though lacking in some respects, Fopp's monograph is the only published work that examines British acquisition and use of the Washingtons.
2. The relative decline of British power is described in David Dilks, ed., *Retreat From Power*, 2 vols., (London: Macmillan, 1981), and C.J. Bartlett, *The Long Retreat: A Short History of British Defence Policy, 1945-70* (London: The Macmillan Press, Ltd., 1972). For a study of the interrelationship between Britain's economic performance and defense expenditure see Malcolm Chalmers, *Paying for Defence: Military Spending and British Decline* (London: Pluto Press, 1985).
3. The state of the RAF at the close of World War II is described in Leonard Bridgman, ed., *Jane's All the World's Aircraft 1945-6* (London: Sampson Low, Marston & Company, Ltd, 1946), pp. 6a-30a. The state of the RAF in 1950, prior to the beginning of the Korean War, is described in Air Marshal Sir Basil Embry, *et al.*, "The Commands of the Royal Air Force," *Flight*, Jul 6, 1950, pp. 21-34, 58-64. The adoption of the Ten Year Rule and its impact on the RAF's reequipment program is discussed in M. H. Le Bas, "The Royal Air Force, A Gallant Force Re-equips for the Jet-Atomic Age," *Air University Quarterly Review* 8 (Summer, 1955), pp. 34-35.
4. Leonard Bridgman, ed., *Jane's All the World's Aircraft, 1948* (New York: The MacMillan Company, 1948), pp. 34c-35c (The Avro 694 Lincoln); U.S. Air Force Aircraft Characteristics Summary, Air Materiel Command, May 1948, Bomber B-29B.
5. Leonard Bridgman, ed., *Jane's All the World's Aircraft 1951-52* (New York: The McGraw-Hill Book Company, Inc., 1952), pp. 50c-51c (The English Electric A.1 Canberra); C.H. Barnes, *Shorts Aircraft Since 1900* (Fallbrook, Calif.: Aero Publishers, Inc., 1967), pp. 424-27; Alfred Goldberg, "The Military Origins of the British Nuclear Deterrent," *International Affairs* 40 (Oct, 1964), pp. 600-602. In March 1949, Secretary of State for Air Arthur Henderson explained to Parliament the Government's reasoning for bypassing development of improved propeller bombers and instead concentrating on long-range development of jet bombers. See Great Britain, Parliament, *Hansard's Parliamentary Debates* (Commons), 5th series, vol. 462 (1949), col. 1931.
6. Barnes, *Shorts Aircraft*, p. 427; Goldberg, "Military Origins of the British Nuclear Deterrent," pp. 602-08; Leonard Bridgman, ed., *Jane's All The World's Aircraft 1954-55* (New York: McGraw Hill Book Company, Inc., 1955), p. 48 (Vulcan), pp. 67-70 (Canberra),

pp. 77-78 (Victor), pp. 101-02 (Valiant). In 1939 the RAF had three long-range bombers under development, the Manchester III, Stirling, and Halifax. When the war broke out all three were rushed into production. However, initial experience indicated that the two-engine Manchester I (from which the Manchester III and later the Lancaster and Lincoln were derived) and the slow, low-flying Stirling were inferior to the Halifax. Fine tuning the basic Manchester design produced the RAF's best World War II bomber. Had the RAF been forced to choose one bomber in 1939 the Lancaster might never have been produced. For RAF concerns regarding this point, see Air Vice-Marshal W. M. Yool, in H.G. Thursfield, ed., *Brassey's Annual 1953* (New York: MacMillan Company, 1953), pp 331-32.

7. Dispatch, Douglas to Secretary of State, Apr 26, 1949, U.S. Department of State, *Foreign Relations of the United States: Diplomatic Papers* (hereafter referred to as *FRUS*), 1949, 4, pp. 295-96. Also see Dispatch, Douglas to Secretary of State, Mar 2, 1949, *FRUS*, 1949, 4, pp. 136-39; Dispatch, Douglas to Secretary of State, Mar 16, 1949, *FRUS*, 1949, 4, pp. 229-33; and Extract, Minutes of the First Meeting of the European Correlation Committee, London, Mar 25, 1949, *FRUS*, 1949, 4, pp. 245-48. For a comprehensive analysis of the establishment of the Military Assistance Program with particular emphasis on NATO see Lawrence S. Kaplan, *A Community of Interests: NATO and the Military Assistance Program, 1948-1951* (Washington, DC: Office of the Secretary of Defense Historical Office, Government Printing Office, 1980). Contemporary views of the program are presented in Stanley L. Scott (Maj Gen U.S. Army), "Mutual Defense Assistance Program," *Military Engineer*, XLII (Nov-Dec 1950), pp. 429-32; and "U.S.: World Arsenal? How Mr. Truman's Arms Plan Would Work," *U.S. News & World Report*, Aug 5, 1949, pp. 13-15. West Germany and Italy joined the Brussels Treaty Organization in 1954 and the expanded organization adopted the official name Western European Union.

8. *Hansard's Parliamentary Debates* (Commons), 5th ser., vol. 462, col. 1931-33, Mar 15, 1949; Barnes, *Shorts Aircraft*, p. 427; Goldberg, "Military Origins of the British Nuclear Deterrent," p. 608.

9. For examples of surprised reactions to the British requests by Senator Claude Pepper and Representative John Kee, see U.S., Congress, Senate, Committee on Foreign Relations and Committee on Armed Services, *Military Assistance Program: 1949. Joint Hearings Held in Executive Session before the Committee on Foreign Relations and the Committee on Armed Services on S.2388*, Aug 11, 1949, 81st Cong., 1st sess., 1949, p. 159; and U.S., Congress, House, Committee on International Relations, *Mutual Defense Assistance Act of 1949, Hearings Held in Executive Session before the House Committee on Foreign Affairs on H.R. 5748 and H.R. 5895*, 81st Cong., 1st sess., Aug 4, 1949, p. 96.

10. U.S., *Executive Session before the House Committee on Foreign Affairs, on H.R. 5748 and H.R. 5895*, Aug 4, 1949, p. 119. The U.K. never sold jet planes to the Russians. They did lease a number of jet engines to the Russians soon after the war, purportedly for testing. Much to the embarrassment of the British, what seems to have been tested was the Soviet ability to dismantle and reverse engineer the engines.

11. U.S., Senate, *Joint Hearings Held in Executive Session on S.2388*, Aug 10, 1949, p. 98.

12. U.S., Senate, *Joint Hearings Held in Executive Session on S.2388*, Aug 11, 1949, p. 160.

13. The reasoning and clarification of intent for the joint Committee on Foreign Relations' and Committee on Armed Services' endorsement of the Mutual Defense Act of 1949 is contained in *U.S. Code Congressional Service, 2, pp. 1073-End, 81st Congress, First Session, 1949, Legislative History, Executive Orders, Etc.*, Senate Report No. 1068, Sept 13, 1949, pp. 1991-2039.

14. *Hansard's Parliamentary Debates* (Commons), 5th ser., vol. 472, col. 1767, Mar 21, 1950.

15. *Ibid.*, col. 1768.

16. *Ibid.*, col. 1816.

17. *Ibid.*, col. 1818.

18. *Ibid.*

19. *Ibid.*, col. 1798.

20. All Bomber Command Washingtons were either B-29 or B-29A models, though

considerably upgraded.
21. Maurer Maurer, AMC Hist Study No. 240, "History of USAF Activities in Support of the Mutual Defense Assistance Program, Part I - To 1 July 1950," Historical Office, Air Materiel Command, Wright-Patterson AFB, Apr 1951, pp. 37-40; Maurer Maurer, AMC Hist Study No. 241, "History of USAF Activities in Support of the Mutual Defense Assistance Program, Part II - 1 July to 31 December 1950," Historical Office, AMC, WPAFB, Nov 1951, pp. 76-79; Maurer Maurer, AMC Hist Study No. 242, "History of USAF Activities in Support of the Mutual Defense Assistance Program, Part III - 1 January to 30 June 1951," Historical Office, AMC, WPAFB, May 1952, pp. 139-43; Standard Aircraft Characteristics, B-29 Superfortress (Four R-3350-57 or -57A), prep by Air Materiel Command, Jul 11, 1952; Technical Instructions, Serial No: TI 3010-3, subj: Rehabilitation of B-29 Aircraft for Mutual Defense Assistance Program; "Superforts with Roundels," *Flight*, Mar 30, 1950, pp. 302-303. All unpublished documents cited are held in the HQ Air Force Materiel Command, Command History Office Archives, Wright-Patterson AFB, Ohio, as original documents or in the form of photocopy reproductions.
22. Maurer, "History of USAF Activities in Support of the Mutual Defense Assistance Program, Part I," pp. 35-40; *Hansard's Parliamentary Debates* (Commons), 5th ser., vol. 472, col. 1768, Mar 21, 1950; Message 162029Z, HQ USAF to COMGENAMC, WPAFB, May 18, 1950, subj: Questions Asked HQ USAF by MAAG UK.
23. History of the Military Assistance Advisory Group United Kingdom B-29 Training Detachment, Period Covered Mar 13, 1950 to May 31, 1950, HQ USAF B-29 Training Detachment, Jun 5, 1950, pp. 1-6; Historical Data For Military Assistance Advisory Group United Kingdom, prep by Chief, Administrative Section, MAAG UK, *circa* Jul 1950, pp. 9-14; Fopp, *The Washington File*, pp. 6-9.
24. Fopp, *The Washington File*, pp. 6-17; Philip J.R. Moyes, *Bomber Squadrons of the R.A.F. and Their Aircraft* (London: MacDonald, 1964), pp. 33-37, 51-54, 63-65, 85-89, 120-22, 161-63, 174-77, 194-99.
25. Ian Clark and Nicholas J. Wheeler, *The British Origins of Nuclear Strategy 1945-1955* (Oxford: Clarendon Press, 1989), pp. 112-35, makes a convincing case that the U.S. and U.K. did not engage in joint strategic warfare planning, formal or informal, until the early 1950s.
26. U.S., Congress, Senate, *Military Assistance Program: 1949. Joint Hearings Held in Executive before the Committee on Foreign Relations and the Committee on Armed Services on S. 2388*, Aug 10, 1949, 81st Cong., 1st sess., 1949, p. 99.
27. Memorandum for the Joint Chiefs of Staff, prep by Vice Admiral A. D. Struble, subj: Foreign Military Aid Program (JCS 1868/88), Jul 11, 1949, copy held in HQ AFMC/HO Archives. The U.S. armed services battle over roles and missions is examined in Steven Rearden, *History of the Office of the Secretary of Defense*, Vol I, and Alfred Goldberg, ed., *The Formative Years 1947-1950* (Washington, DC: U.S. Government Printing Office, 1984), pp. 385-422.
28. Air Vice Marshal T.M. Williams, "Air Strategy of the Future as Seen by The Royal Air Force," lecture presented at the Air War College, Maxwell Field, Alabama, Apr 1, 1948.
29. Sir Hugh P. Lloyd, "Bomber Command," *Flight*, Jul 6, 1950, p. 25.
30. The ability to attack Soviet bomber bases and Russian cities after the RAF acquired atomic weapons, was of paramount importance to the RAF. Strategic Air Command bombers based in Britain could reach targets in the U.S.S.R. Soviet TU-4s, based in the U.S.S.R., and IL-28 light bombers flying from bases in eastern Europe could reach western Europe and Britain, but not the U.S. Until the Soviets acquired a fleet of intercontinental bombers—the mid-1950s at the earliest—a Soviet surprise attack against the U.S was unfeasible. The Defence Ministry feared that should war occur the Soviets would, therefore, use their atomic weapons against SAC bases in the U.K. and the capital cities of west Europe—in particular, London. Soviet and American capabilities and strategies and their impact on the U.K. atomic weapons and V-bomber programs are discussed in Nicholas J. Wheeler, "British nuclear weapons and Anglo-American relations 1945-54," *International Affairs* 62 (1986), p. 71-86.

31. Fopp, *The Washington File*, pp. 20-22. For a description of British air combat experiences during the this period see Robert Jackson, *The RAF in Action—From Flanders to the Falklands* (Blandford Press: Poole, Dorsett, 1985), pp. 133-47.
32. Maintenance difficulties with the Washingtons are discussed in Air 8/1696, Military Air-U.S. Assistance in the Form of End Items, Mutual Security Act Papers, Appendix B, Maintenance of Washington Aircraft, Public Records Office (PRO), London; Air 8/1696, Conclusions of Air Council Meeting 14(52), Sep 11, 1952, PRO, London, as brought to my attention by Col. Donald A. Walbrecht. Extracts of above on file in HQ AFMC Archives.
33. Fopp, *The Washington File*, pp. 31-32.
34. John Simpson, *The Independent Nuclear State: The United States, Britain and the Military Atom* (New York: St Martin's Press, 1983), pp. 90-95.
35. For a thorough analysis of the early British atomic energy program see Margaret Gowing, *Independence and Deterrence: Britain and Atomic Energy, 1945-52*, 2 vols (New York: St Martin's Press, 1974). Gowing served as the official historian for the U.K. Atomic Energy Agency and her study is the most authoritative published source. Some published memoirs that discuss early Anglo/American/Canadian atomic energy research collaboration include Dean Acheson, *Present at the Creation, My Years at the State Department* (New York: W. W. Norton & Company, Inc., 1969); Clement Attlee, *As It Happened* (London: Heinemann, 1954); Leslie R. Groves, *Now It Can Be Told: The Story of the Manhattan Project* (New York: Harper & Row, 1962); David E. Lilienthal, *The Journals of David E. Lilienthal*, vol 2, *The Atomic Energy Years, 1945-1950* (New York: Harper & Row, 1964); and Harry S. Truman, *Memoirs*, vol 1, *Years of Trial and Hope* (Garden City: Doubleday & Company, 1956).
36. John Slessor, "The Place of the Bomber in British Policy," *International Affairs* 29 (Jul 1953), pp. 304-05. Though Slessor spoke of the V-bombers in this article, in reality the only operational long-range bomber in use by the RAF at the time was the Washington.
37. *Hansard's Parliamentary Debates*, 5th ser., vol. 472, col. 1806, Mar 21, 1950.
38. Gowing, *Policy Making*, p. 235.
39. Peter Malone, *The British Nuclear Deterrent* (New York: St Martin's Press, 1984), p. 8.
40. Bartlett, *The Long Retreat*, p. 53.
41. R.N. Rosecrance, *Defense of the Realm: British Strategy in the Nuclear Epoch* (New York: Columbia University Press, 1968), p. 112.
42. John Baylis, *Anglo-American Defense Relations, 1939-1984*, second ed. (New York: St Martin's Press, 1984), p. 98.
43. Fopp, *Washington Files*, p. 4. It is extremely unlikely that Fopp's uncited "Bird Watcher" or RAF veteran sources observed ordnance crews working with atomic weapons.
44. Gowing, *Policy Making*, p. 234.
45. Atomic Energy Act of 1946 (McMahon Act), *U.S. Code* 38 (1947). Section 106, paragraph 3 of the Act forebade transfer to a foreign power any "model, instrument, appliance, note or information involving or incorporating restricted data." Restricted data was defined as "all data concerning the manufacture or utilization of atomic weapons." A B-29 carrying an atomic bomb would clearly have fallen under the restrictions imposed by the Act.
46. As late as August 1989 the Chinese Peoples Liberation Army Air Force still operated modified versions of the B-29. Presumably these were Chinese copies of the Russian TU-4. See "Chinese Keep Superfortress Flying," *Jane's Defence Weekly*, Aug 19, 1989, p. 283.
47. Britain's acquisition of American atomic weapon delivery systems is briefly discussed in David Reynolds, "A 'Special Relationship'? America, Britain and the international order since the Second World War," *International Affairs* 62 (1986), pp. 10-13.

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The Origins of the Skybolt Controversy In the Eisenhower Administration*

Ronald D. Landa

The controversy over the Department of Defense's 1962 cancellation of the Skybolt missile project defies easy explanation. Skybolt was an ambitious project—a two-stage, solid-fuel ballistic missile with a range of one thousand miles designed for carriage under the wings of both American B–52 and British V-bombers.† In the eyes of Prime Minister Harold Macmillan's government, the project was progressing satisfactorily, giving the Americans little reason to renege on the seemingly firm commitment by President Dwight D. Eisenhower's administration to produce the weapon. After John F. Kennedy became President in 1961, his administration contended that serious doubts about the project's feasibility and cost had always existed and these doubts had been repeatedly communicated to the British. Explanations for the breakdown in communication tend to focus on the period just prior to cancellation.[1] For a full understanding, however, one has to examine the period between 1958 and 1960, when the program began and the confusion originated.

The misunderstanding resulted in part from the multiple levels at which the two countries communicated and the varying appraisals of Skybolt's prospects provided the British. As might be expected, the most optimistic assessments were given by the American contractor, the Douglas Company, and by the U.S. Air Force in their contacts with the Royal Air Force, Air Ministry, and Ministry of Aviation.

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* The views expressed in this paper are the author's own and do not necessarily represent those of the Office of the Secretary of Defense. The paper, which draws heavily on declassified British records at the Public Record Office in London, is an outgrowth of a longer classified study in preparation on Western European defense issues during the Eisenhower administration.

† The name "Skybolt" was not coined until January 1960 when Air Force Chief of Staff General Thomas D. White used it in a public speech and Congressional testimony. For a few months thereafter it was written as two words until the Air Force realized that its policy stipulated single-word nicknames. The weapon was earlier referred to as an advanced air-to-surface missile (AASM) and also as weapon system 138A. From February through June 1960, the overall program was known as system 638A. The missile alone was designated GAM-87A. For the sake of simplicity, "Skybolt" is employed throughout this paper.

The contacts had deep roots. British involvement with Skybolt dated from early 1958 when a joint RAF and USAF task group considered developing a common weapon system to meet both countries' requirements for an air-to-surface missile. Later that year, American companies under Air Force contract successfully tested a prototype air-launched ballistic missile. When the USAF decided in January 1959 to develop this weapon, British requirements were written into the general operational requirement. British officials attended the bidders' presentations, helped evaluate their brochures, and submitted recommendations to the source selection board leading up to the choice in May of the Douglas Company as prime contractor.[2]

At this level, problems were minimal and Skybolt may have been oversold. Occasionally, officials did admit doubts, such as when an Air Force representative suggested that the British thoroughly explore alternatives in the event Skybolt was cancelled or found unsuitable for carriage on V-bombers.[3] But Secretary of the Air Force James H. Douglas, Jr., later recalled that people in his Department generally worked hard to sell the project because "they needed some friends among the civilian talent of the Pentagon. . . . If they made a sale to the British, then nobody would think it was practical to kill Skybolt."[4]

Indeed, the greatest skepticism about Skybolt existed in the Office of the Secretary of Defense (OSD), particularly in the newly created Office of the Director of Defense Research and Engineering (DDR&E). The sharpest critic was DDR&E's Assistant Director for Strategic Weapons, John Rubel, who was responsible for monitoring the project. Not only did Rubel have reservations about various technical features, but he was also annoyed at the Air Force's haste in selecting the contractor. In May 1959, DDR&E withheld weapons systems approval and allocated only $3 million, with another $3 million added in the fall, for the Air Force and the Douglas Company to study the concept further. Rubel spoke of the project's "absurdity," the Air Force's unwillingness "to explain what it was doing," and the "totally unrealistic so-called operational requirements."[5] And DDR&E candidly communicated its concerns to the British, usually through Frederick Brundrett, Chief Scientific Adviser to the Ministry of Defence, and his successor, Solly Zuckerman.[6]

DDR&E was influenced by widespread doubts in the American scientific community about Skybolt's workability, but also misgivings existed among British experts. One considered the Skybolt concept impractical; another thought it might theoretically be possible, but found the claims made for the weapon overstated and predicted that the United States would eventually abandon the program.[7] The decisive recommendation, however, came from a group of American scientists, the Fletcher Committee, which had been established by DDR&E especially to examine Skybolt. The Committee's interim recommendation in October 1959 was to terminate the project, but it later recommended, though equivocally, that the weapon be approved for development. In February 1960, OSD decided to proceed with development, allo-

cating $80 million in fiscal year (FY) 1961 funds on condition that DDR&E continue to monitor the program closely.[8]

To this point there was little that distinguished Skybolt's history from the early phases of many other weapon systems. After the spring of 1960, however, the program took on an essentially political character as higher governmental levels became involved. These included Department of State and Foreign Office officials, Secretary of Defense Thomas S. Gates, Minister of Defence Harold Watkinson, President Eisenhower, and Prime Minister Macmillan.

OSD's decision to proceed with development furnished a timely face-saver for the Macmillan government. It enabled that government to abandon its own costly and much-criticized Blue Streak missile program in the hope that Skybolt would make possible continuance of its independent nuclear deterrent through the end of the decade. By doing so, the Macmillan government acquired a greater stake in Skybolt's success than the American government. Its strained efforts to ensure production of the weapon probably contributed more than any other factor to the subsequent controversy over cancellation.

The chief British tactic was to maximize the utility of a single bargaining chip—the availability of a Scottish port for a U.S. Navy tender and dry dock to service the first of the Polaris nuclear submarines expected to become operational in late 1960. The British responded to an American request for the berthing facilities—the preferred site was the Gare Loch—by first promising that they could be used, then pulling back and dangling the offer in front of American officials, not only to obtain a firmer commitment on Skybolt, but also to acquire either Polaris technology or the submarines for themselves.

They also took advantage of a split between the State and Defense Departments on a key related issue. Defense sought British support for a proposal put forward by Secretary of Defense Gates whereby the North Atlantic Treaty Organization would establish its own medium range ballistic missile (MRBM) force consisting of land-based Polaris missiles under Supreme Allied Commander Europe's control.[9] Neither the Department of State nor the British were keen about the proposal because they feared, among other things, that too many fingers would be placed on the nuclear button. But Defense believed that provision of Skybolt or Polaris to the British on a bilateral basis would seriously undermine the NATO proposal and initially opposed furnishing either to the British.

A series of Anglo-American discussions held in Washington during 1960 tangled Skybolt up with these other issues—the British desire to acquire Polaris, the berthing facilities in Scotland for American Polaris submarines, and the NATO MRBM proposal. During the first of these talks in mid-March, Defense and State representatives stood together in resisting British efforts to acquire Skybolt and Polaris. One British negotiator complained that the Americans were more concerned with the NATO MRBM project. They would "in due course be prepared to satisfy our needs, provided that we supported the MRBM project."[10]

Session Two: Acquisition

British lack of success set the stage for what would prove a primary source of confusion, a meeting between President Eisenhower and Prime Minister Macmillan at Camp David near the end of March and the "gentlemen's agreement" it produced. Prior to the meeting, the State Department, while acknowledging that it remained inappropriate to provide Polaris so long as the NATO project was under consideration, persuaded Defense to relent on Skybolt. The revised position was set out in a memorandum to the President arguing that because Skybolt had no direct connection to the NATO project, it should be offered to Macmillan. The President was advised to say that "if and when" the weapon were produced, the United States would be prepared to sell it unconditionally. Wanted in return were the berthing facilities in Scottish waters. According to the memo, the British during the talks earlier in the month had appeared to be reserving agreement regarding the facilities "until they have obtained satisfaction" on Skybolt, Polaris, or both. But the President was advised to make only an implicit connection between the berthing facilities and Skybolt.[11]

Following a discussion of other issues at Camp David, on the afternoon of March 28, the two leaders took a leisurely drive by themselves to the President's Gettysburg farm and back, during which the Skybolt and Polaris questions were raised.[12] That evening, the British forwarded a draft memorandum representing Macmillan's account of the discussion to the U.S. delegation. In it, Macmillan said how heartened he had been to hear Eisenhower support the decision to abandon Blue Streak and express a willingness to help the British extend the life of their V-bomber force by furnishing either Skybolt or Polaris missiles or perhaps both. The Prime Minister also requested approval of the text of an announcement to be made in Parliament of Blue Streak's cancellation. Nothing was mentioned of the berthing facilities or the NATO project.[13]

The President's advisers felt the memorandum did not square with what he was supposed to have said. A completely new document was prepared and given to the British the next morning representing Eisenhower's understanding of the private conversation. The President's memorandum had three parts: one reiterating American opposition to a bilateral arrangement to provide Polaris, another related to Skybolt, and a third addressed to the berthing question. With regard to Skybolt, the memorandum said that the United States was prepared to sell the missiles to the United Kingdom "in 1965 or thereafter." It also noted that since Skybolt was still in its early stages, "this offer is necessarily dependent on the successful and timely completion of its development program." It concluded with a statement welcoming "the assurance that, in the same spirit of cooperation, the U.K. would be agreeable in principle to making the necessary arrangements for U.S. Polaris tenders in Scottish ports."[14]

The British responded with a slight revision of Macmillan's memo, which, in the view of the American advisers, still did not address the "careful

distinctions" made in the President's. The British therefore came up with a third version, which the Americans agreed to that afternoon, March 29th. This retained reference to the possible acquisition of Polaris missiles, without that missile being specifically named, but tied it in a general way to the NATO MRBM proposal. With American approval of this wording, the two memoranda—the third version of Macmillan's and Eisenhower's original—were exchanged and a "gentlemen's agreement" consummated.[15]

Thus, there was no single agreement or even a formal exchange of notes. The two documents contained different emphases and permitted different interpretations of what had been agreed. This allowed Macmillan to soften the impact of announcing Blue Streak's cancellation in April. The more convincingly he could argue that a technically advanced, cheaper replacement would be available, the easier it would be to justify cancellation. His interpretation, one that has been accepted by many scholars, stressed the definite nature of American willingness to provide Skybolt, while playing down the reservations.[16]

Another set of talks regarding Skybolt took place during Minister of Defence Harold Watkinson's visit to the Pentagon in June 1960. Watkinson had four tasks. First, he was to express British willingness, as indicated in a brief draft memorandum of understanding he brought, to purchase one hundred missiles. This would leave no doubt that the British wanted Skybolt, since Macmillan feared being "straddled between Polaris and Skybolt and getting neither one nor the other." The Prime Minister had considered offering a 10-percent down payment, which, if accepted by the Americans, would "commit them to fulfilling the order even with a new administration." But he was advised that this was not customary and would not be expected.[17]

Second, Watkinson was to secure Secretary of Defense Gates' approval, as the draft memorandum of understanding indicated, to begin negotiation in the near future of a detailed technical and financial agreement regarding Skybolt. Deputy Minister of Defence Richard C. Chilver was fairly certain that "we shall have no difficulty about this, provided the Americans understand that there is no suggestion that we are asking them to pledge themselves to develop Skybolt successfully." The Americans were amenable to signing the memorandum. Their only reservations pertained to the language, which they modified to cover the chance that Skybolt would not be produced. For example, the British draft had indicated that the United States would "ensure" the weapon's compatibility with V-bombers. The Americans changed this to read that they would "make every reasonable effort" to ensure compatibility. The British then added a phrase that the United States also would "make every reasonable effort to ensure the successful and timely completion of Skybolt development." With these changes and a few minor alterations, Gates and Watkinson agreed to the memorandum of understanding. When a member of Watkinson's delegation told Macmillan that it might be difficult to persuade the Americans to negotiate

a more detailed agreement for a weapon that was not yet in three-dimensional form, he "accepted this but thought that some sort of agreement should be reached, even if it was on the basis of 'if the weapon works.'"[18]

Watkinson's third task was more difficult. He was under instructions more or less to disconnect the two key features of the Camp David bargain—Skybolt and the berthing facilities. Watkinson informed Gates that since the Camp David meeting, Macmillan had second thoughts about the berthing facilities because of the probable adverse public and parliamentary reaction. Although he did not specify what had caused the change, it was obviously the impact of the Soviet downing of the American U–2 and the collapse of the Paris summit. According to one account, Gates indicated that "although the Camp David agreement might entitle the U.S. authorities to treat the two transactions as part of one package deal, it was not their intention to do so and they would not die in the last ditch about it." Watkinson later complained that the Americans' "rigid and legalistic outlook had led them to consider that the Skybolt and Gare Loch propositions were closely interrelated." Nevertheless, Macmillan felt that his Defence Minister had been able to disassociate them.[19]

Finally, as a hedge against the cancellation of Skybolt, Watkinson tried, again unsuccessfully, to utilize American interest in the berthing facilities to obtain Polaris submarines. The task of selling the berthing facilities idea would be eased, he said, if the government could show evidence of British participation or partnership in the Polaris program. The Americans interpreted this to mean not only that the Prime Minister's assurance at Camp David regarding the facilities was being set aside, but that some kind of a joint Polaris program had become a new condition for British acceptance of the facilities. The U.S. side resisted the British maneuvering. Defense officials indicated that if a satisfactory arrangement could not be worked out, they would seek facilities elsewhere, perhaps in West Germany. Watkinson reported that "we could not get the Americans to accept a swop" of the berthing facilities for Polaris submarines, although they were willing to consider other cooperative aspects for the facilities.[20]

During the summer, negotiations over the separate understandings about Skybolt and the berthing facilities proceeded almost in tandem. Preliminary discussions began at the Pentagon in July on a British draft of a Skybolt technical and financial agreement. British Embassy officials explained that a detailed agreement was needed because the weapon had taken on a "predominantly political character," and the British were fully relying on it for the maintenance of their independent nuclear deterrent. They acknowledged that the United States was "not committed to develop the Skybolt, but only to make every reasonable effort for this purpose." Defense officials objected to the draft because its substance was "too far-reaching and binding" regarding a weapon that was in "an early stage and still problematical." Its language went farther toward committing the U.S. Government to Skybolt than had the terms of the

Camp David agreement and the Gates-Watkinson memorandum of understanding. The British Joint Services Mission assured London that the Americans were not "getting cool over Skybolt and our share in it. . . . they simply do not like our draft." The Americans produced a revised draft and proposed that it be the basis for formal negotiations to begin in August.[21]

There was talk of postponing the negotiations several weeks to allow participants to go ahead with planned leave or travel, but Watkinson objected. He believed it essential that an agreement be signed before Congress adjourned at the end of August. Otherwise the administration might become preoccupied with the presidential election campaign and the talks could drag on indefinitely. Moreover, Watkinson had already informed the House of Commons that negotiations were underway. It would be embarrassing if the agreement were still unsigned when Parliament reconvened later in the fall. The negotiations began the second week of August at the Pentagon and reached virtual agreement on a text within a few days. Although the Ministry of Defence was unhappy with a few points, it secured Macmillan's approval to have the agreement signed promptly to avoid the risk of having it put off until after the election.[22]

On the other hand, the berthing facility negotiations that began the second week of August at the State Department quickly ran into trouble. The most important point of dispute centered on what the British could say publicly about consulting with the United States on the use of nuclear weapons by British-based American submarines even though operating outside of British territorial waters. The British also insisted on receiving an option to purchase Polaris submarines, which the Americans countered could only be done within the NATO MRBM framework. The Foreign Office had cautioned that "we not scare the Americans off altogether by insisting on too many conditions. We should deplore it if the Americans sent their tender and dry dock elsewhere in Europe." Unlike the Skybolt negotiations, however, the British felt no urgency. "There is in fact no argument in favour of hurry except our desire not to appear to welsh the Americans over their interpretation of the Camp David agreement and of the exchanges between Mr. Watkinson and Mr. Gates. . . ." Watkinson, too, had recommended that the berthing facilities negotiations be kept "in play as long as possible, so that we retain some hold over the Americans on the Skybolt technical agreement."[23]

Given the British dilatoriness, State and Defense decided to link the two sets of talks. The British were informed that the signing of the Skybolt agreement would be delayed until the berthing facilities negotiations were concluded. Both could then be sent to the White House at the same time "to show the President how the Camp David agreement had been implemented." When the British Embassy vehemently protested, State backed off and persuaded Defense to drop the linkage. In agreeing to sign the Skybolt document, the Americans said they had fulfilled their end of the Camp David bargain and they expected the British to do their best to reciprocate on the

berthing facilities. They stressed that "it would be good for our relations as a whole in the defence field if there was not too wide a gap in time between the conclusion of the two arrangements." The British Embassy had the definite impression that the Americans would believe that "we had not acted in entire good faith if we took the one and boggled at the other."[24]

Because of the need to send copies to London for signature, the Skybolt agreement was not finally signed in Washington until September 27. The American commitment was limited, and there was an escape clause. The USAF was only to "make every reasonable effort to ensure the successful and timely completion of Skybolt development." Termination of the project by either party was permitted after consultation with the other. Deputy Secretary of Defense James H. Douglas had belatedly inserted a sentence, which the British accepted, indicating that Skybolt was "purely a Research and Development program, no production having been authorized by higher authority."[25]

Meanwhile, some progress had been made in the facilities negotiations. As a result mainly of direct correspondence between Eisenhower and Macmillan, the Holy Loch had been selected as the site, a compromise between the Gare Loch desired by the United States and a less populated, remote location offered by the British. Moreover, Watkinson now argued that despite the political problems, it would be in the United Kingdom's own interests to agree to the berthing facilities. "On the present time scale," he averred, "it will be a very useful opening gambit for our defence relationships with the new American government, whichever party may form it." In September, a breakthrough occurred when the British withdrew their request for an option to purchase Polaris submarines. Although Macmillan would have preferred better terms, he considered it wiser "to rest upon a gentlemen's agreement than to try to tie the Americans up in a legal option which is in any case unenforceable upon a successor government." Watkinson hoped the Americans would recognize that if Skybolt had to be abandoned, "they would have a moral obligation to help us to overcome, in one way or another, the difficulties this would cause for us. After all, they have got the Holy Loch and we certainly have not got Skybolt for some years yet. This would give us the necessary standing to reopen the Polaris submarine question or take any other action that seemed necessary if Skybolt failed."[26]

By October, however, there was still no agreement on the text of a public statement on consultation. Informed that under the circumstances Defense would prefer to forgo the Holy Loch facilities, the British dropped their insistence on the statement. Nevertheless, Macmillan's public announcement on November 1 of the offer of the facilities included language about consultation that irritated Washington. A Foreign Office study concluded that although the Prime Minister's announcement went farther than had been expected, the Americans "cannot legitimately claim that they have been bounced."[27]

Earlier the British had received disquieting news about Skybolt. Citing formidable technical problems that still had to be solved, the DDR&E's Deputy Director hinted that if development were delayed, Skybolt might be dropped altogether. Confirmation came from a higher source. Deputy Secretary Douglas talked with Watkinson in London, indicating "we might be in real trouble on Skybolt." He did not want to give the impression that Skybolt was about to be cancelled, but costs were turning out to be much higher than anticipated. Watkinson told Macmillan he hoped this did not signify that the Americans were "getting cold feet." Macmillan remarked, "This is bad."[28]

Zuckerman was asked to take up the question directly with Gates during a trip to Washington. What he learned was not encouraging. While the administration recognized Skybolt's political importance for the British, the President and the Joint Chiefs of Staff, according to Zuckerman, viewed it as "no more than a very costly R&D programme in which they had little faith." Macmillan was so concerned that he wrote to Eisenhower inquiring whether there were any plans to scrap Skybolt. He recalled that Blue Streak had been cancelled on the understanding that Skybolt would be available "so long as it proved technically feasible."[29]

Macmillan's message prompted a disagreement between Defense and State as to how the President should respond. An initial draft, in which Defense had a large hand, alluded to some of the project's difficulties. In the view of State's Office of British and North European Affairs (EUR/BNA), however, the draft was inappropriate because it implied that the United States was backing away from Skybolt. This could prove "acutely embarrassing" to Macmillan and might "tie the hands of the next administration." Instead, EUR/BNA prepared for the President a more sanguine reply, indicating that he had "every intention of proceeding with the project."[30]

Zuckerman had been shown the initial draft, but was told that it had been torn up and replaced by one that omitted any mention of difficulties. Even so, Gates asked that Watkinson not "overplay the hand" and that he diminish the "politics" of the issue. The warning apparently had an effect. Watkinson alerted Macmillan to the need for preparing a public response if it leaked out that the Americans might cancel Skybolt. "From the start," Watkinson minuted on November 4, "we have foreseen it as a possibility and, for that reason, you and I have been at pains never to say that we were certain of Skybolt. I have purposely talked in public about other possibilities and shall continue to do so." That day Watkinson publicly suggested that alternatives to Skybolt might be contemplated. Completion was five years away and the weapon was likely to be modified "or indeed never appear at all."[31]

At Macmillan's request, Watkinson prepared a confidential report on the likelihood of Skybolt being terminated, as well as on the cost and availability of alternatives. The report alluded to the American concerns about escalating costs, but pointed out that there was as yet no decision to cancel. An indication

would come when the Eisenhower administration published its budget proposals in mid-December. If release of these proposals stimulated speculation about Skybolt's future, "our position should be that we assume the Americans are going ahead with this project, so far as it is technically feasible, and that we are relying upon them to do so." If there were any hint before this that the project was about to be abandoned, Macmillan planned to make "the strongest possible representations to the United States Administration and to the President personally." That administration, asserted the Prime Minister, had "a heavy moral commitment to us over this."[32]

A decision on Defense's FY 1962 budget submission was made during the first week in December. Gates told Eisenhower that it contained no new money for Skybolt. Instead the previous year's money would be spread out over two years. He explained that there is "considerable technical question as to the feasibility of this system, and although some of these can be solved if enough money is spent, there then arises the question whether this is the most efficient system available."[33]

When Gates traveled to Europe later in the month for the NATO ministerial meeting, his briefing papers highlighted Skybolt's shaky status. He was to stress to the British that the administration could not commit its successor "irrevocably" to continuing the project. This would give the British notice to expect "a possible phasing back or termination . . . which in turn will permit them to recover from their exposed political position on this program by developing, well in advance, alternative solutions."[34]

In London Gates informed Watkinson that the program was being slowed down. This would make it possible to decide in about two years whether to carry it to completion. A disappointed Watkinson expressed concern over Macmillan's reaction, because he knew the Prime Minister viewed Skybolt as part of the bargain for the berthing facilities. Watkinson acknowledged, however, that the British government had "always understood that Skybolt was a research and development project subject to all the usual uncertainties."[35]

The conversation strongly confirmed the doubts, which Watkinson admitted to Macmillan "always existed, whether we shall get Skybolt at all, or in useful time." Watkinson planned to reiterate in Parliament that "we do not rely on Skybolt as a certain and necessary weapon." But he did not want "to throw too much cold water on it, because there is still just a chance of its getting through." He advised the Prime Minister not to raise the issue again because at such a late date the President would not alter his budget. After all, Watkinson pointed out, Eisenhower at Camp David had "never guaranteed success." The President "could answer, with truth, that he has not killed the proposal but left it open to his successor to decide."[36]

The first tender for the Polaris submarines arrived in the Holy Loch at the beginning of 1961 amid a storm of protest. When the Skybolt program was cancelled nearly two years later, the Macmillan government claimed

betrayal—that the United States had broken its part of the bargain. So far as the Eisenhower administration was concerned, however, there is little basis for the charge. The British, especially Prime Minister Macmillan, tried to make more of the arrangement than was there. They certainly knew enough to discount the contractor's and the Air Force's promotion of the weapon. Despite the fact that Eisenhower and the State Department occasionally blunted Defense's warnings, the messages came through clearly, as the high-level reactions in London well reveal. What essentially happened is that the Macmillan government, after painting itself into a corner by abandoning Blue Streak and embracing Skybolt, hoped that provision of the berthing facilities would impose a moral obligation on the United States to join it in the same corner. The foregoing sketch, while omitting many details of the complex negotiations and paying little attention to internal differences within the two governments, suggests that the controversy might have been avoided or at least mitigated if the Americans had gone ahead with locating the berthing facilities in West Germany.

The Skybolt controversy was essentially a legacy of the Suez crisis. Below the surface of the discussions regarding Skybolt lay a current of suspicion—a feeling that the other side might not be acting entirely in good faith. One is struck by American allusions to British duplicity, and British worries about being perceived in this way. On the other hand, fear of being let down by the United States haunted the British. Allegations of American undependability could always be offered as a rationalization for possible failure.

Only a few of the high-level participants from Skybolt's early history—Macmillan and Zuckerman for the British and Rubel for the Americans—were still in office in December 1962 when McNamara broke the news of Skybolt's cancellation to Watkinson's successor, Peter Thorneycroft. Rubel was at that meeting and recalls Thorneycroft responding bitterly that the British had "depended absolutely" on the United States for the weapon. According to Rubel:

> He said it in a way which evoked images of the most dire betrayal, and I remember reflecting at the time on his skill in evoking a sense of guilt, of obligation, on the part of the Americans who had, in fact, done nothing more than cancel a development that should never have been started, to which the British had contributed nothing, for which the Americans had no real military need, and which the British had identified as their "independent deterrent".[37]

Notes

1. Because of the furor over Skybolt's cancellation, President Kennedy asked Harvard University political scientist Richard E. Neustadt to prepare a study of the controversy's origins. Neustadt, who was given access to classified U.S. documents, also conducted interviews with British and American officials. He focused primarily on the years 1961 through 1962 and only briefly sketched developments during the Eisenhower years. His report to the president, "Skybolt and Nassau, American Policy-making and Anglo-American Relations," Nov 15, 1963, has been declassified in full. Much of Neustadt's analysis has appeared in several of his publications, including *Alliance Politics* (New York: Columbia University Press, 1970); a section co-authored with Jay Urwitz in the *Report by the Commission on the Organization of the Government for the Conduct of Foreign Policy*, vol. IV, Appendix K (Jun 1975); and a book co-authored with Ernest R. May, *Thinking in Time: The Uses of History for Decision Makers* (New York: The Free Press, 1986), pp. 108-10, 190-92. Other treatments include Henry Brandon, "Skybolt: The Full Inside Story of How a Missile Nearly Split the West," *Times Weekly Review*, (Dec 8, 1963. pp. 29-32, and Jams A. Dewar, "Britain and the Skybolt Affair," *Aerospace Historian*, vol. 18 (Sep 1971), pp. 129-34.
2. Memo, Air Commodore R.H.E. Emson, Apr 1, 1959, and Ministry of Supply paper, "Interdependence: Strategic Air to Surface Weapon Systems," Apr 1959, attached to Note, Defence Research Policy Committee Joint Secretaries to the Committee, Apr 14, 1959, both in AIR 2/15261, Air Ministry Records, Public Record Office (Hereafter abbreviated as PRO); Memo, Group Captain S.H. Bonser, "Weapon System W.S. 138A--Air Launched Ballistic Missile (Status as of 20th July 1959)," Aug 10, 1959, AVIA 65/1661, Ministry of Aviation Records, PRO.
3. Remarks by Leland P. Mebine, Programming Assistant, Office of the Assistant Secretary of the Air Force (Research and Development), described in letter, Air Commodore H.E. Dicken (British Joint Services Mission, Washington) to Emson, Sep 15, 1959, AIR 2/15262, PRO.
4. Oral history interview, James H. Douglas, Jr., Jun 13-14, 1979, p. 118, Center of Air Force History, Bolling Air Force Base, Washington, D.C.
5. Memo, Rubel, "Skybolt Notes," Apr 17 1964, GAM 87 Skybolt, Box 2, DDR&E Files: Federal Record Center Accession No. 68A1575, Record Group 330 (Records of the Office of the Secretary of Defense), Washington National Records Center, Suitland, Maryland; Draft memo, Rubel for York, May 12, 1959, GAM 87 Skybolt 1959, Box 1, *ibid.*; Memo, Rubel for Director (Office of Review & Services), Jun 29, 1959, *ibid.*; Diary entry for Dec 23, 1959, George B. Kistiakowsky, *A Scientist at the White House: The Private Diary of President Eisenhower's Special Assistant for Science and Technology* (Cambridge: Harvard University Press, 1976), p. 206. Unless otherwise indicated, all subsequent citations to OSD documents are to Record Group 330, Washington National Records Center.
6. For an early expression of caution, see the comments by Deputy Secretary of Defense Donald Quarles and Director of Defense Research and Engineering Herbert York, as described in Brundrett letter to Air Marshal Sir Geoffrey Tuttle, May 1 1959, AIR 2/1526, PRO. See also the record of a meeting between Rubel, Watkinson, Zuckerman, and others, London, May 25, 1960, DEFE 13/195, Private Office Papers of the Minister of Defence, *ibid.*
7. Memo, Rubel, "Skybolt Notes," Apr 17, 1964, GAM 87 Skybolt, Box 2, FRC 68A1575; Comments by Owen Wansbrough-Jones and Robert Cockburn, described in extract from minutes of the Defence Research Policy Committee meeting, Apr 21, 1959, AIR 2/15261, PRO.
8. Memo, York for Rubel, Jul 15, 1959, GAM 87 Skybolt 1959, Box 1, FRC 68A1575; Ltr, Rubel to Fletcher, Jul 22, 1959, Skybolt, Box 4, DDR&E Files: FRC 63A1919. Known

officially as the Ad Hoc Group for Advanced Air-to-Surface Missiles, the Committee took its informal name from its head, Dr. James C. Fletcher, President of Space Electronics Corporation in Glendale, California. The Fletcher Committee met four times. Minutes of the first meeting, held at Glendale, California, August 6-7, 1959, are in GAM 87 Skybolt 1959, Box 1, FRC 68A1575. Minutes of the second meeting held on October 6-7, 1959, also at Glendale, and the third meeting held on December 3-4, 1959, at the Douglas Company in Santa Monica, California, are in Skybolt, Box 4, FRC 63A1919. The committee's interim report of October 20, 1959, recommending discontinuance of the project is in GAM 87 Skybolt 1959, Box 1, FRC 68A1575. The final meeting was held on January 14-15, 1960. Recommendations resulting from this meeting are in the committee's report of Janaury 12, 1960, submitted as an enclosure to Fletcher's letter to York of the same date in GAM 87 Skybolt, Box 2, *ibid.* In a letter to Rubel on January 22, Fletcher indicated that he did not believe that "the tenor of the group's feelings were that a sufficiently large improvement had been made in the technical design and the relaxation of the operational requirements to justify changing the interim recommendations. I felt it more desireable to state that the group had avoided further questions about operational values and comparisons with other weapons. This, I realize, changes significantly the flavor of the final recommendations. . . ." *ibid.*

9. Regarding Gates' MRBM proposal, see Thomas C. Wiegele, "The Origins of the MLF Concept, 1957-1960," *Orbis*, XII (Summer 1968), pp. 479-82, and Keith W. Baum, "Treating the Allies Properly: The Eisenhower Administration, NATO, and the Multilateral Force," *Presidential Studies Quarterly*, vol. 13 (Winter), pp. 89-90.

10. Remarks by Deputy Minister of Defence Richard C. Chilver, record of a meeting between the Minister of Defence and the Chiefs of Staff, Mar 24, 1960, DEFE 13/212, PRO.

11. Memo, Secretary of State Christian A. Herter for Eisenhower, Mar 27, 1960, *Foreign Relations of the United States, 1958-1960*, vol. VII, part 2 (Washington: U.S. Government Printing Office, 1993), pp. 860-61 (Hereafter abbreviated as *FRUS*).

12. Eisenhower and Macmillan left Camp David at 4:25 p.m. and arrived at Gettysburg at 4:58. They visited the residence of John Eisenhower, where the President introduced the Prime Minister to his son's family. They then drove to the President's farm, staying until 5:20. After a brief stop again at his son's residence, they departed for Camp David at 5:46 and arrived at 6:18 p.m. They were together, without their aides being present, for almost two hours. President's Appointment Book, Dwight D. Eisenhower Library, Abilene, Kansas.

13. Memo for files, Foy D. Kohler (Assistant Sec State for European Affairs), Mar 29, 1960, with attached draft memo, Prime Minister for President, undated, 741.5611/3-2960, Decimal Files, State Department (hereafter abbreviated as SD). Written in the margin of the draft memo was: "1st draft. 10:00 p.m. 3/28/60. Camp David from British. FDK." Kohler's memo for the files, without the attached draft, is printed in *FRUS, 1958-1960*, vol. VII, pt. 2, pp. 861-63.

14. Memo for files, Kohler, Mar 29, 1960, with attached memo, "Skybolt and Polaris," Mar 29, 1960, 741.5611/3-2960, Decimal Files, SD. Written in the margin of the attached memo was: "Original initialed by CDD handed to Amb Sir Harold Caccia 10:15 am 3/29/60. FDK". C. Douglas Dillon was Under Secretary of State.

15. Memorandum (written in the margin was: "1st Revision rec'd from British a.m. 3/29. FDK"), and memorandum (initialled by Macmillan), both undated and attached to Memo for files, Kohler, *ibid.* The text of Macmillan's final memo is in tel 687, Washington Embassy to Foreign Office, repeated to UK Delegation to NATO, Mar 29, 1960 (DEFE 13/195, PRO) and is also printed in *FRUS, 1958-1960*, vol. VII, pt. 2, p. 865.

16. Alistair Horne, *Harold Macmillan*, 2 vols. (New York: Viking Press, 1989), II, pp. 275-76; Andrew J. Pierre, *Nuclear Politics: The British Experience with an Independent Strategic Force, 1939-1970* (London: Oxford University Press, 1972), p. 227; Nigel Fisher, *Harold Macmillan: A Biography* (New York: St. Martin's Press, 1982), p. 300; Peter Malone, *The British Nuclear Deterrent* (London: Croom Helm, 1984), p. 15; Lawrence Freedman, *Britain and Nuclear Weapons* (London: Macmillan for the Royal Institute of International Affairs, 1980), pp. 8-9. Macmillan informed Watkinson, who was in Paris along with Gates attending a meeting of NATO defense ministers, that as a result of the talks

with Eisenhower regarding Skybolt and Polaris, he was "fully satisfied that we shall get what we need." Tel 84, Washington Embassy to U.K. NATO Delegation in Paris, Mar 30, 1960, DEFE 13/195, PRO. His diary indicated that by virtue of the exchange of memoranda, the United States would "undertake to let us have either missile through sale or gift." Upon his return to London he asked the Cabinet to rely on the "firm agreement" for Skybolt. He also put more substance into the American comments about Polaris than was intended. He later wrote that although Eisenhower could not give a definite commitment regarding Polaris until the European nations had decided on the MRBM proposal, it was "certain" that Polaris could be obtained, "although at a heavy cost, in one form or another when we might need it." Similarly, in a report to the Queen, the Prime Minister declared that he had received assurances that "we shall be able to obtain either Skybolt or Polaris when we need them." Harold Macmillan, *Pointing the Way, 1959-1961* (New York: Harper & Row, 1972), pp. 252-53.

17. Minute, Macmillan to Watkinson, May 10, 1960, DEFE 13/195, PRO; Record of a mtg betweeen Macmillan and Watkinson, May 20, 1960, PREM 11/3261, *ibid.*; Minute, Watkinson to Macmillan, May 24, 1960, DEFE 13/195, Correspondence and Papers of the Prime Minister's Office, *ibid.*

18. British draft memorandum of understanding on Skybolt, Jun 1, 1960, United States revised draft, Jun 2, 1960, and British revised draft, Jun 3, 1960, all in UK Skybolt-Polaris, Box 1, ISA European Regional Files: FRC 67A4738; Extract from minutes of a meeting at Birch Grove House, Jun 13, 1960, DEFE 13/274, PRO. A copy of the signed memorandum of understanding is in CAB 129/101, Cabinet Conclusions, PRO.

19. Ltr, Zuckerman to Rubel, Jan 21, 1987, OSD Historical Office, The Pentagon, Washington, D.C.; Record of US-UK Talks, Jun 1, 1960, Gates-Watkinson Talks, Box 1, FRC 67A4738; British record of the Gates-Watkinson meeting, Jun 6, 1960, as described in Memo, F.J. Doggett (Ministry of Aviation), "Notes of Discussions with the U.S. Authorities on the Skybolt Agreement," Aug 24, 1960, AVIA 65/1662, PRO; Minute, Watkinson to Macmillan, Jun 7, 1960, PREM 11/2940, PRO; Macmillan, *Pointing the Way*, p. 254.

20. Record of US-UK Talks, Jun 1, 1960, Gates-Watkinson Talks, Box 1, FRC 67A4738; Memo for record, Russell Fessenden (Dir, Office of European Regional Affairs, State), Jun 8, 1960, 711.5611/6-860, Decimal Files, SD; Letter, Robert N. McGill (Acting Dep Dir, Office of European Regional Affairs, State) to Raymond L. Thurston (Counselor of Embassy, Paris), Jun 6, 1960, NATO Strategic Force, Box 18710, NATO Adviser Files, Lot 62D270, SD; Memo, Kohler for Livingston T. Merchant (Und Sec State, Political Affairs), Jun 4, 1960, Sandys Visit 1958-Watkinson Visit 1960, Box 8027, *ibid.*; Minute, Watkinson to Macmillan, Jun 7, 1960, PREM 11/2940, PRO.

21. Memcon, Philip E. Barringer (Office of Asst Sec Defense for International Security Affairs), Jul 8, 1960, Skybolt Agreement, Box 4, FRC 69A1390; Memo, Woodbury W. Willoughby (Office of British and Northern European Affairs, State (EUR/BNA)) for Kohler, Jul 7, 1960, Skybolt, Box 8027, Lot 62D270, SD; Tel 1338, Washington Embassy to Foreign Office, Jul 8, 1960, DEFE 13/195, PRO; Unnumbered tel, British Joint Services Mission to Ministry of Defence, Jul 10, 1960, *ibid.*; Memo for record, C.S. Weaver (Director of Foreign Programs, DDR&E), Jul 21, 1960, Skybolt Agreement, Box 4, FRC 69A1390.

22. Minutes, E.G. Cass (Ministry of Defence) to Chilver, Jul 27, 1960; Chilver to Cass, Jul 28, 1960; and Chilver to D.G.W.L. Haviland (Ministry of Aviation), Jul 28, 1960, all DEFE 13/195, PRO; Memo, Doggett, "Notes of Discussion with the U.S. Authorities on the Skybolt Agreement," Aug 24, 1960, AVIA 65/1662, PRO; Minute, Chilver to Macmillan, Aug 18, 1960, PREM 11/3261, PRO.

23. Tel 453 Saving, Washington Embassy to Foreign Office, Aug 28, 1960, DEFE 13/274, PRO; Tel 3361, Foreign Office to Washington Embassy, Jul 22, 1960, DEFE 13/274, PRO; Minute, Watkinson to Macmillan, Jul 28, 1960, DEFE 13/195, *ibid.*

24. Memo, Doggett, "Notes of Discussion with the U.S. Authorities on the Skybolt Agreement," Aug 24, 1960, AVIA 16/1662, PRO; Tel 453 Saving, Washington Embassy to Foreign Office, Aug 28, 1960, DEFE 13/274, PRO; Tel 1720, Washington Embassy to

Foreign Office, Sep 1, 1960, *ibid.*
25. Minute, L. Williams (A.S./Air B.3) to P.S./Parl. Sec., Sep 13, 1960, and "United States Department of the Air Force and United Kingdom Ministry of Aviation Technical and Financial Agreement Concerning the SKYBOLT," Sep 27, 1960, AVIA 65/1662, PRO.
26. Minute, Watkinson to Macmillan, Aug 29, 1960 [not sent], and extract from minutes of a meeting held in Admiralty House, Aug 31, 1960, DEFE 13/274, PRO; Memo (C. (60) 123), Watkinson and Forien Secretary Home, "Facilities for United States Submarines in Scotland," Sep 13, 1960, CAB 129/102/1, Cabinet Office Meetings, PRO; Record of Cabinet Meeting (C.C. (60) 50th Conclusions), Sep 15, 1960, CAB 128/34, *ibid.*; Minute, Macmillan to Watkinson, Sep 18, 1960, DEFE 13/195, PRO; Extract from minute, Watkinson to Macmillan, undated, *ibid.*
27. Tel 2086, Washington Embassy to Foreign Office, Oct 17, 1960, PREM 11/2941, PRO; Memo, P. E. Ramsbotham (Foreign Office), "Polaris Base Agreement," Nov 2, 1960, *ibid.*
28. Minute, Zuckerman to Watkinson, Sep 22, 1960, *ibid.*; Record of a meeting between Watkinson and Douglas, Oct 21, 1960, and minute, Watkinson to Macmillan, Oct 21, 1960, with Macmillan's handwritten marginal comment, PREM 11/2941, PRO.
29. Solly Zuckerman, *Monkeys, Men, and Missiles: An Autobiography, 1946-88* (New York: W. W. Norton & Co., 1989), p. 240; Msg, Macmillan to Eisenhower, Oct 26, 1960, PREM 11/3261, PRO.
30. Memo, William C. Burdett (EUR/BNA) for Kohler, Oct 28, 1960, 711.5611/10-2860, Decimal Files, SD; Memo, Kohler for Herter, Oct 29, 1960, 741.5611/10-2960, *ibid.*; Msg, Eisenhower to Macmillan, Oct 30, 1960, PREM 11/3261, PRO.
31. Zuckerman, *Monkeys, Men, and Missiles*, p. 241; Memo, Rubel, "Skybolt Notes," Apr 17, 1964, GAM 87 Skybolt, Box 2, FRC 68A1575; Minute, Watkinson to Macmillan, Nov 4, 1960, PREM 11/3261, PRO; *Hansard*, Nov 4, 1960, pp. 597-98.
32. Minute, Macmillan to Watkinson, Nov 16, 1960; Note by Watkinson, "Skybolt," Nov 23, 1960; and Minute, Macmillan to Watkinson, Dec 1, 1960, PREM 11/3261, PRO.
33. Memo of conference with the President, Goodpaster, Dec 5, 1960, Staff Notes, Box 55, DDE Diary Series, DDEL.
34. Memo, Maj. Gen. Frederic H. Miller (Dir, European Region, Int Sec Affairs) for John N. Irwin (Asst Sec Def, Int Sec Affairs), Dec 9, 1960, 092 U.K., Box 38, ISA Files, 1960: FRC 64A2170.
35. Record of Watkinson-Gates meeting, Dec 12, 1960, PREM 11/3261, PRO.
36. Minute, Watkinson to Macmillan, Dec 12, 1960, *ibid.*
37. Quoted in Zuckerman, *Monkeys, Men, and Missiles*, pp. 250-51.

Questions and Answers

Robert Jackson: I have a couple of questions here. One is from someone who wants to know if the Americans put pressure on us to buy their aeroplanes in the period which I was talking about. I have to go back a little bit here. I think that in the 1950s, it was a question of need. For instance, there was a vital need to make Europe and the North Atlantic Treaty Organization strong as far as military aircraft were concerned, and for that reason, we acquired the Canadiar version of the Sabre. Ian Madelin, for example, flew the Sabre in Second Tactical Air Force of the Royal Air Force. So, there was that. For the same reason, the USAF acquired the Canberra, because it needed a tactical jet bomber, and we had it and they didn't, so they got the Canberra. The pressure came after Cecil James's mate, Duncan Sandys, had scrapped all our nice aircraft projects that were going on at the time. And the pressure didn't only come from the United States. It came from British firms, as well. Rolls-Royce, for example, was very keen to have the Rolls-Royce Spey-engined version of the Phantom in RAF service and Royal Navy service. So there was a joint pressure from firms that were in desperation because they had lost out on all sorts of orders because of the 1957 cancellations, and so on. So I think that is the best thing I can do with that.

But, to some extent we shot ourselves in the foot well before Duncan Sandys, because in 1953 we cancelled an aeroplane, which was just about complete in prototype form, called the Hawker P.1083. The P.1083 was, in fact, a super Hunter. It was a transsonic version of the Hunter in the F–100 class, but very much better. Its rate of climb, for example, was very much better than the F–100's, and it would have had a ground attack capability, also. So we would have sold the P.1083 to nations within our sphere of influence, but because we didn't have it, they then went off and bought the F–100 instead. So we lost out very heavily on that, and it wasn't anything to do with the 1957 business. It was the Air Staff who decided to scrap the project because it had an afterburning engine, and the thinking at the time was we didn't really need aeroplanes with afterburning engines. The developed version of the Hunter, the FGA.9, would fulfill both the ground attack and interception roles until the Lightning came along. The Hunter 6, rather, would do the interception bit, and the FGA.9 would be the ground attack aeroplane.

This brings me on to the next question, which I got from Lieutenant General Devol Brett, who wants to know a little more about the P.1 and Lightning business. Now the P.1 was a very advanced aeroplane for its time; it

flew in 1954 and was to be a quantum leap in technology. We were going from subsonic with mildly transsonic in the dive aeroplanes like the Hunter straight to Mach 2-plus with the Lightning. We had no middleman. The USAF, for example, had the F–86 then the F–100 then the F–104. We had nothing like that, nothing in the middle, because of the cancellation of the P.1083. So there is this huge jump. When it came into service, I think in July 1960, it was probably the finest fighter aircraft in the world. It suffered critically from a lack of range, which was cured to some degree by the provision of extra fuel tankage and by flight refueling.

Oh, I should mention, by the way, that the original idea was to have a mixed fighter force composed of the Lightning and an aircraft which was cancelled in the Duncan Sandys period, the Saunders Roe P.177. That was a mixed power plant aeroplane, jet and rocket, designed to get to high altitude as fast as possible. It was based upon the same concept as the Messerchmitt 163 of the Second World War, which some of you who flew B–17s and things might have come across over Europe. But the problem with the P.177, with hindsight—which is a wonderful thing to have—is it had no capability to engage aircraft flying at low level so, therefore, when the whole business went over to low-level operations, it wouldn't have been much use anyway. But that was cancelled, so we were left with the Lightning, which suffered—apart from a lack of range, as I said—from the fact that it wasn't a multirole aeroplane, and it came in at the time when everbody was wanting multirole aeroplanes. We did sell some to the Saudi air force and to the Kuwaitis with limited ground attack capability—with rockets and bombs and things—but they were never really successful.

But the Lightning was a superb fighter for its day. I remember once watching an F–15 doing its business at an air show in the middle to late 1970s, twisting itself into knots doing its air superiority bit, and there was a voice behind me that said, "Ha, we did that in a Lightning thirteen years ago!" And, of course, it was an ex-Lightning pilot. I think that is the best I can do, General Brett, on that point.

I do have another question here, if I can decipher it. Had an aerial refueling capability been considered when looking for a suitable tactical airlift aircraft in the 1960s? Not to my knowledge, is the best I can say. I don't think so. I think that flight refueling really was a product of early 1960s, and it came about really as an effort to extend the V bombers' range—to increase the range and penetration capability of the V force—and it devolved into other areas after that.

Dr. William Suit: I have two questions. The gist of the first question is, Did the British attempt to acquire American B–29s that had been modified for atomic warfare, the so called "silver–plate" B–29s? The answer is, no, the British made no attempt to acquire them. Interestingly enough, when the Americans went to modify the silver–plate aircraft, they found that they did not have a bomb hoist, shackle, and rack system big enough to hold the American

atomic bomb, so they bought British bomb hoists, racks, and shackles that were used for the "grand slam" conventional bomb. So, basically, they had British equipment on board them. They eventually switched over to American-manufactured equipment, but the original B–29s that were atomic capable had British racks and shackles. The only other thing that the silver–plate bombers originally had was a different radio set from that in the regular B–29s. There weren't really that many modifications to them, other than all of the armament was taken off.

The second question is, for how long did the RAF operate the B–29s? The conventional bombers were used until July 1954; that was when the last was returned to the United States. However, No. 192 Squadron operated four B–29s in electronic intelligence and electronic countermeasures capacity until 1958. The questioner also wants to know, where were the B–29s based? They were based at about eight different bases. I do not recall exactly which ones, but if whoever wrote the question wants to know, I do have the information in my briefcase and I can tell you afterwards. Also, a second part of this question asked if the U.S. aircraft were equipped with American or British nuclear bombs. I have read one historian who suggested that the Americans had given atomic bombs to the British some time between 1952 and 1954 to use on these aircraft. There is absolutely no reason to believe that at all. I've never found any evidence, or seen it written down by a official source, only speculation by historians. The question continues, and if so, were they integrated into joint U.S./U.K. planning? I believe that after 1953, the British B–29s were integrated into joint planning with the Western Union nations. As I mentioned, they participated in joint exercises and were flying in France and Germany, so they were flying throughout Western Europe with the French and Belgians and the Americans and the Dutch. So they were integrated, but they weren't integrated for nuclear purposes. And the last part of this multipart question is, what was the eventual disposal of the B–29s. I believe they just sent the planes back. In 1954, they would have gone to Davis-Monthan AFB in Arizona, where they were cut up and used for scrap. By that time the United States had close to two thousand B–29s, the Air Force really had no need for them, and they were cluttering up the desert out in Arizona. They were cut up because they had an awful lot of aluminum in them. I suppose that is what happened to them. You would have to get individual aircraft cards to find out exactly where each plane went.

Dr. Ronald Landa: The first question I'll try to answer, and the second I'll defer; maybe someone else can offer some insight on it. The first question is, what weight would you attach to another complicating factor in the Skybolt saga, namely, that some U.S. interests saw the British request for Skybolt and/or Polaris as a hindrance to U.S. hopes for nonproliferation? McNamara's Ann Arbor speech of June 1962 is collateral evidence. I focused on the Eisenhower period, so I didn't really look too much at the Kennedy years, but early on when

Skybolt was being discussed in 1959 and 1960, there did seem to be some lower level mistrust or uncertainty about allowing the British to have these weapons. I didn't really see that at higher levels, but at some lower levels there did seem to be some of that thinking. It is curious, though, that some of the people, particularly in the State Department, like the Director of State's Policy Planning Staff, Gerard Smith—who became and still is a leading figure in nonproliferation—were strongly supportive of giving Skybolt to the British. He really argued against the Defense Department position, and I think he had the ear of Secretary of State Christian Herter. At the same time, Smith and a number of people who worked with him were strongly backing the MLF proposal as a way to discourage the French and the West Germans from obtaining their own nuclear capabilities. So, I think it is a very mixed picture, and you do have a lot of cross currents within the different agencies. Some of the people at State in the Bureau of European Affairs siding with Defense, and people in Defense taking the State position, so it is not a real clear-cut picture during the Eisenhower years.

The second question, in the light of the fact that a successful testing of Skybolt took place shortly after its cancellation, was any assessment every made as to whether, after all, the system could have been an overall successful project? I am aware that the successful, or partially successful, test did occur. I don't know if any overall assessment was done. Perhaps someone here knows if any *post mortum* or backward look at the project was ever done showing whether it could be successful.

General Robert T. Marsh: I might footnote that last response, in that I have heard General Schriever say that he was chastised severely for having embarrassed the Secretary of Defense staff by approving and conducting a highly successful test of the Skybolt after it had been cancelled.

Banquet Address

General Charles A. Horner, Commander in Chief, North American Aerospace Defense Command, Commander in Chief, United States Space Command, Commander, Air Force Space Command, earned his B.A. degree at the University of Iowa in 1958 and an M.A. in Business Administration from the College of William and Mary in 1972. He receive his pilot wings in November 1959, then flew F–100s for the 492nd Tactical Fighter Squadron, RAF Lakenheath. Subsequently, he transitioned to F–105s. General Horner flew forty-one combat missions over North Vietnam in 1965; in 1967, he returned to Southeast Asia and flew seventy additional missions in F–105s in the Wild Weasel missile suppression role. During his distinguished career, General Horner commanded the 405th Tactical Training Wing, Luke AFB, Arizona (1979 to 1980); the 474th Tactical Fighter Wing, Nellis AFB, Utah (1980 to 1981); 833rd Air Division, Holloman AFB, New Mexico (1981 to 1983); 23rd North American Aerospace Defense Command Region and Tactical Air Command Air Division, and then Air Force Air Defense Weapons Center (1983 to 1985), all at Tyndall AFB, Florida. General Horner became commander of Ninth Air Force and U.S. Central Command Air Forces, Shaw AFB, South Carolina, in 1987. In that position, he was the Joint Force Air Component Commander during Operation Desert Shield/Desert Storm from 1990 to 1991 and a major architect of the air victory during the Gulf War.

Banquet Address

General Charles A. Horner

It is an honor to be here this evening. I would much prefer to give a speech about space, but you would all be asleep in about three minutes and it would last until morning. So I will talk about Desert Storm instead. I believe that Desert Storm is important from an historical standpoint. It could well be a watershed event in military history. It is certainly an example of U.S. Air Force and Royal Air Force cooperation, probably an example unprecedented in combat since World War II and Korea. And so, maybe, this is a good place to talk a little bit about what we saw and did.

In one sense, it is difficult to analyze the history of Desert Storm, because we are too close to it. Some people, Dick Hallion, for example, have done a marvelous job of capturing factually what went on. The war does have to be looked at from a historical standpoint, and I think the only historians who can do it justice will be those sensitive to what air and space are all about, because Desert Storm represented the emergence of air power, not for the first time, but perhaps in the purest sense of the term. Personally, the war reinforced my belief in the importance of history. I have always been fascinated with the subject. Men like Ira Eaker and George Kenney were the folks whom I looked up to and studied while I was in college and in the Air Force.

Fortunately, in the USAF we have a good history program. It is important that the books it prepares and sends out are read and appreciated. When I became CENTAF, I studied the lessons of the past thoroughly. In particular, the desert war as experienced by the British in North Africa during World War II was extremely valuable. Then, when we went over as part of Desert Shield—while we were sitting there in September and October 1990 with very little to do except plan and prepare—the Office of Air Force History sent cases and cases of books. These books covered such appropriate subjects as the Royal Air Force fighting the Iraqis between World War I and World War II and using the RAF to control dissidents during several British campaigns. All of that helped shape what we did. Our two services are blessed by a rich history in aviation, although it is very short.

We also had tremendous historical support during the war. We had historians in the Tactical Air Command Center twenty-four hours a day. They were under CMSgt. John R. Burton and he did a marvelous job. We failed in

one area, however. We could easily have set up television cameras in the Command Center and recorded everything that went on. You would have seen the interaction between the allies; you would have been able to go back and observe the councils of war. I don't think General Schwarzkopf would have allowed this in his headquarters when we went in there for the evening briefings, however, because he was too busy swearing at his staff! But that is another problem the historians will have to solve.

I will talk a little bit and tell some anecdotes that might be "lessons learned." I am not going to pull any punches with this audience. I will say things that you may find disappointing or pretentious. I do this, not because I am right, but because this is how I saw it. This is my viewpoint, and it may provide clues to any of you who want to study this particular conflict and what we did. We vitally need to study this conflict. Much of what we did in Desert Storm was the result of all of the negative lessons we gained during the Vietnam War. During much of the organization of Desert Shield and Desert Storm, I was forearmed, because I used to work with General William M. Momyer, who served as Commander of Seventh Air Force in Vietnam, and then as Commander of Tactical Air Command. Some may not have liked "Spike" Momyer, but I guarantee he knew command arrangements and he often talked about how they worked in North Africa, Korea, and Vietnam. Thus, I was well versed in these kinds of struggles, and I am grateful for that. But even so, no matter how successful Desert Storm may have been, we obviously could have done much better. It is up to the young people to gain the lessons from that conflict. It is going to require absolute honesty and it will generate some controversy that will lead to a few hurt feelings. If you are married, you know that honesty is not a big problem. My wife is honest with me all the time. I don't think I'm that fat and getting bald!

Let me start with strategy. Much of what we did in Desert Storm began after General Schwarzkopf took command of Central Command, and after he visited my headquarters and the Air Component in November 1989. We had been practicing against a potential Soviet attack through Iran, working with airborne forces to block the passes and trying to hold the Russians in such a way that we could protect the oil fields. He sat down and said, "Guys that's a great plan you wrote, but forget it. Stick it on the shelf. We're not going to have a war with the Soviet Union; the Cold War is over." He said that we either have to find a new enemy in the Middle East or we have to fold our tents and dissolve the command. Well, military guys don't like to do that, so we started searching hard.

The other thing he did during this visit was reaffirm that the Ninth Air Force commander would be Air Component Commander for Central Command. That was a bit worrisome for me, because that concept was not totally accepted by everyone, certainly not by the U.S. Marine Corps. It was very good for an Army guy to make that decision. I then asked: "We know who the Sea

Commander is going to be, it's always the naval person. Now you've said that I am going to continue as the Air Commander. Who's going to be the Land Commander?" He thought and said, "I will." Then I told him, "Well, then you better be prepared for me to talk to you in a way you don't want me to talk to you. Then, after we get done with that, you make up your mind, and I'll do whatever the hell you tell me to." He agreed with that, and that was the way we worked throughout the war.

In April 1990, a few months later, we were getting ready for the big CENTCOM exercise, called Internal Look. The written scenario for this exercise was extremely vague: "Country Orange" was going to invade Kuwait and Saudi Arabia from the north! Now we had been forced into this "obscurity" by the State Department, which had been irate to find out that the original scenario identified Iraq as the country invading Kuwait. The Middle East desk officer at State, who had found out about the exercise through a symposium at my headquarters, called up Schwarzkopf and chewed him out. So Schwarzkopf phoned me and tore a very large strip off my posterior. In the final scenario, we changed the name of the invading country from Iraq to Country Orange, and that solved the problem. As it turned out, of course, Iraq did invade Kuwait, and the incoming U.S. ambassador to Kuwait—who could not get into his embassy because of the invasion—happened to be the same desk officer who had called Schwarzkopf on the carpet for suggesting that Iraq would ever invade Kuwait!

While getting ready for Internal Look, I talked to Schwarzkopf about centralized control of air, all air. We talked about how we were going to integrate both ours and that belonging to our Arab allies, because we could not understand how to fight a war without involving at least two other countries—Kuwait and Saudi Arabia.

I talked to him about neutralization of ballistic missiles. That threat did not appear on anybody's radar at the time, but, in fact, two years earlier, the Red Force commander opposing me in another exercise had used medium-range ballistic missiles and drove me up the wall. Every time I would get my air forces marshaled out on the runway, he would plop one of these things full of poison gas on the airfield. Then everybody would have to put on their gas mask, and the exercise and all work would come to a stop. As a result of that experience, I got with General John Yeosock, then head of the Third Army, and we decided to use Patriot missiles to protect airports and ports. At that time, we thought Patriots had an antiballistic missile capability, which they did not have; they acquired it a few months later.

We talked about strategic targets, and, God, I wish I could take that word back, because the words "strategic" and "tactical" are so misleading. They mean anything anybody wants. I was talking about hitting targets other than the enemy army in the field. In our scenario, Internal Look, the enemy army was in the field advancing, so we had to have an exercise to stop the advance, defeat the army, and then allow our troops to go on the offensive. Of course, General

Schwarzkopf's thinking was solely on the battlefield, and I started talking about targeting things like electrical grid systems, transportation networks, oil storage, and refineries to punish the country that was involved in this war. He picked that up later and talked about the "strategic campaign."

Another agenda item was how to get control of the Marine Corps Air. I was just way out in front of him on that subject. I wanted to take control of the Marine Air, but the Marines at the time were dead set against it. However, we had a change of command of the Marine Component to a guy named Walter Boomer, who is now the Deputy Commandant of the Marines. Boomer fully understood the importance of centralizing command and control of the air campaign. With Boomer in our headquarters we never had a problem.

Schwarzkopf and I talked about the U.S. Army carving up air according to corps commanders. I'll be darned, but three nights before the ground war started in February, after the air forces had been fighting for six weeks, one of the Army corps commanders came in and said, "I have to have three hundred sorties of close air support a day." I got up and fell on my sword over that issue. Everyone looked at me and said, "Well, he fell on his sword; isn't that quaint." Then, after one corps commander did it, the other corps commander said, "I'll need three hundred sorties, also!" Next, the Marine Corps field commander said, "I'll need three hundred!" Schwarzkopf, who had learned his lessons well, stopped this fragmentation. He said, "You people don't understand. It's *all my air*, and I'll use it any way I please." That ended the argument, and we maintained a centralized command. But I always wondered what would have happened if Schwarzkopf and I had not had a meeting of minds on the use of air power.

We talked about close air support and how to integrate it with the allies, and that paid off handsomely during Desert Shield. We took pilots from each of the groups and had them work with allied ground forces. The trouble was finding Arabic-speaking fighter pilots. We finally found one guy who had been an instructor at the Air Force Academy and spoke Arabic and we set him up with the Syrians. Our guy was up there eating Syrian food, working with the Syrians, and training them how to use close air support because the only U.S.-built airplanes they had ever seen before had shot at them. The Syrians were very distrustful of Westerners, a legacy of the French, I suppose. At night, they would not let him sleep in the encampment. They put up a big berm, circled their tanks, and pointed the barrels upwards. That was how they camped out every night in the desert on the border. Well, every night they would make this lone American sleep out in the desert with the wild dogs and snakes. One day I was in an F–16 up there flying close air support. I called this guy up one day and said, "I'll give you a little close air support practice." It was then I found out that his call sign was "Why Me?"

We talked about targeting processes, and I can tell you that General Schwarzkopf was briefed on every target we selected. However, we did not

have any kind of a joint targeting board. The Army nominated the targets they wanted to hit. We had an overall plan that Schwarzkopf agreed with in principle that responded to the goals of the war. Every night we would brief him on what we were going to hit two nights later. The only targets he changed were those that the Army had nominated. He would say, "No that's dumb, do this, or do this." I just sat there and took notes.

We talked about B–52s. You know you are dealing with somebody who does not understand air power when the first thing he says is "carpet bombing." You can envision the old Vietnam War arrangement with B–52s bombing the jungle on each side of a road protecting the forces driving down the road. In April I really tried to get the point home to Schwarzkopf that that was not the way to use air power. General William Westmoreland owned our B–52s during Vietnam, and they were often misused. It was not until Linebacker II that we got to use them efficiently. Schwarzkopf often "lusted" after the B–52s, but common sense kept him out.

We also talked about gaining control of the air; it was a *religion* with him. He understood that the first thing we had to do was gain control of the air. You know you have arrived when the U.S. Army tells you that!

Well, we wound down Internal Look, and pretty soon the real world intelligence looked exactly like the exercise intelligence. On August 2, 1990, Iraqi forces invaded Kuwait. Schwarzkopf called me down to his headquarters, and we were in Camp David on Saturday morning, August 4, briefing the Cabinet and the President. I recall two things from that meeting that were historically significant. First, I had never seen so much ignorance in my whole life than that expressed in the questions asked by the Cabinet members. It was amazing! I don't mean that disparagingly, but those guys knew nothing about warfare. In retrospect, I thought it was very useful, because they asked the same kind of questions the press would ask the President later. So, he heard all these dumb questions and he heard the answers that Schwarzkopf and I gave.

The other thing that I recall was that the President was very well prepared. You could tell that the President knew war, because he talked about two subjects, thanks to his experiences in World War II and as a diplomat. The first tip-off had to do with the loss of life. He was absolutely adamant about keeping down the loss of life should war come—not only on the allied side but also on the enemy side. That concept directed all our targeting and all our tactics throughout the war. In retrospect, I am extremely grateful, because I believe that no matter what war we become involved in, we will have to live with these people on the same planet for the rest of eternity. The second tip-off was the role of the other nations. During that meeting, the President would ask Secretary of State James Baker, "Now what does so-and-so think about this?" But he never got a good answer from State. So he finally said to the Secretary of Defense, Dick Cheney, "Dick, I want you to go to Jeddah, talk to the King of Saudi Arabia, and see what he thinks we ought to do, because his nation is the

one most directly impacted. Meanwhile I'll call Margaret Thatcher and Francois Mitterand." The President took care of two of the NATO Allies and wanted us to consult with the King of Saudi Arabia. That is something that would not have occurred to most Americans. We would be sitting there sorting out, "Okay, we need six of these and twelve of those, put them here and do that." Instead, thanks to President Bush's concerns, we left for Saudi Arabia on Sunday, August 5, and arrived on Monday night.

The deployment went rapidly. I think that was a tribute to air power in terms of strategic airlift. We talk about strategic airlift and you read about it, but I think it's like so many things: airlift is taken for granted, and that concerns me. Not that I am for or against the C–17 or anything like that, but I bet too often we don't appreciate sufficiently the mobility aspects of our air power. We zero in on the things that "go boom in the night."

What helped me most during the deployment was the three years that I had been in my job. I had been through some very difficult times with the Saudis during the period when we were escorting the oil tankers up the Persian Gulf. At that time, the Saudis did not want an American headquarters in Riyadh. So in about 1989, I went to Ahmed Behrey, the head of the Saudi Air Force, and made a deal with him. I said I had been ordered to come over here and set up a headquarters, "Now, I want you to let me do that, and I promise in return that the day the escort operation is over with, I will withdraw the headquarters and there will be no record of it and no one will know." He let me do that, although he would have gotten in serious trouble with the king if the word had leaked out. We did it—we established the headquarters there, and when the escort operation, Earnest Will, was completed, I withdrew, put everyone on an airplane, and got them up and out of there. Three months later we were back for real—a real shooting war—and suddenly, no matter what I said, the Saudis said, "Fine." I had been fortunate enough to establish trust. I had kept my word.

Establishing and maintaining the coalition was a tremendous challenge. Of course, any student of history knows that the hardest job is working with allies; the easy part is dealing with the enemy. In Vietnam our attitude was, "All you short people get over here, we're going to save your country." I don't think you'll find that country on the map anymore. Saigon is now called Ho Chi Minh City.

The first principle we established when we got to the Middle East was that we were strangers in the land. The host country was Saudi Arabia, Bahrain, United Arab Emirates, Egypt, and Oman—wherever we had our forces. Our people, all of the coalition, acted that way: We asked!

I can think of only one area where we did something because we could not get a positive answer. There is a room in the basement of Saudi headquarters where they keep records, seemingly every piece of paper the headquarters ever created. The record of anyone who signed out a recreation tent back in 1914 is probably in there. We needed that room because I had to get the joint air

headquarters out of the parking lot where it was operating in tents and get it under cover, because we were going to war. By December I had finally gotten tired of asking the Saudis, because they would say, "Well, let me check with so-and-so." They did that for about three months. I finally went down there with a crow bar and broke the lock, put their records in a temporary building, and then moved indoors. I don't think the Saudi Director of Operations ever forgave me for that one, but he got over it.

The second principle was that all the allies were equal. It did not matter if they were the Americans, British, French, Saudis, Kuwaitis, or from the United Arab Emirates. When everyone sat around the table at night, when we talked about what we were going to do and what needed to be done, every voice was equal and treated equally. I believe the same thing occurred at the national level, because you did not have "blank" calling back to check on the Americans to see what they were doing. You did not have Paris calling the French commander saying watch the Americans or watch the Arabs. We could sit there and discuss things as airmen. We could talk about what made sense from an operational standpoint. The French commander, who had his Jaguars there with x-payload, x-range. and x-capability, would say, "Okay, we will take these targets here, here, and here." The Brits with their Tornados would say, "Okay, we'll take these." So we worked it just the way one would work it with a single force.

I think the reason we did that as airmen was our common origin in the Royal Air Force. All air forces spring from the RAF. All air forces speak English. Even the French spoke English—on the air side—they did not on the ground side.

Our problems were not among the airmen; we never had a single problem among the airmen. The problems were often between airmen and the other services. For example, the senior Canadian for air was a naval officer. He had two destroyers and a squadron of CF–18s. He immediately called his squadron commander and told him he could only fly over Canadian ships. Well, of course, the Canadian air officer came to me and said, "The man's gone bonkers; would you go shoot him?" We got that sorted out. The naval officer and I had a rather difficult conversation, but fortunately I outranked him by two stars. Finally, he said, "Okay, but they can only do air-to-air." Well, CF–18s are ideal for air-to-ground work; the Canadian guy was not cooperating. Fortunately, Mary Collins, their Assistant Secretary of Defense, came over and did a tour. I arranged an invitation to a dinner at the Canadian Embassy and managed to get seated next to her. She asked, "How's it going." "Well," I said, "it's going great, but it is really embarrassing for Canada." "Oh?" she said! The next day the Canadian squadron was on the operational plan—dropping bombs.

The French commander was an army guy who told the French air force units in the coalition that the only place they could fly was over the French army. We had six weeks of air war before the French army even moved out of bivouac. Just after the air campaign began, the French air commander came to

me, and he was almost in tears. I said, "Don't worry about it." We just put them on the schedule, and they flew where they were needed most and could be most effective. The army guy never knew what his air force was doing. He was just bound and determined they could only fly over the French army. He probably thinks now that F–16s are part of the French air force!

The most humorous episode, in some ways, concerned the Italians. The head of the Italian air force was Mario Alpino, a great guy. The night before the war started, early in the evening—the war was going to start at three o'clock in the morning—General Alpino came in and he was literally crying. I asked, "What's the matter Mario?" He said, "My government can't make up its mind whether it's going to be in the war or not. I can't fly until I get the go-ahead." I said, "Mario, we all have governments; don't worry about it." So they flew the second night after the start of the war! The result of their first mission was unfortunate. Mario sent out six airplanes. Five of them could not get on the tanker, and so they came back and landed. The last guy got on the tanker, went to the target, and was shot down. For a while, there was a bitter joke about the highest combat loss rate belonging to the Italian air force: one thousand per one thousand sorties. That was not meant in meanness, but recognition of bravery and tragedy.

Campaign planning was twofold. We had day-to-day planning where we observed whether or not the Iraqis would invade and considered what we would do. That changed every day because we got more forces and more munitions. At the same time, we had the "Black Hole," where the strategic planning people sat, that dealt with the offensive use of air power. The Air Staff in the Pentagon earlier had started pulling together targets for the air campaign. They then brought over their plans and briefed me. The plans were excellent in terms of the counter-air portion of the campaign and in terms of things like nuclear, biological, and chemical targeting. However, they had nothing with respect to the Iraqi army. I kept asking, "What about the Iraqi army?" The response was, "Don't worry about it, they'll surrender." I did not believe that assurance because of my reading of history, and I certainly knew that Schwarzkopf would not buy it. Consequently, we had to create a plan that would take into account the enemy ground forces. That was the origin of the strategic planning cell.

I brought out Brigadier General Buster Glosson, and you know Buster. Some say he has a low IQ, but he is very persuasive. I believe that he would have made an ideal SAC wing commander. We did not want anyone to know what we were doing, because at the time, you will recall, we were attempting to get diplomacy to work. We tried to get the Iraqis to pull out of Kuwait on their own volition, because, quite frankly, none of us wanted to go to war. Ultimately, we failed. Why did I call it the Black Hole? Any time a new guy came into the headquarters and we could spare him, we sent him down to Buster to work on that plan. Well, he would disappear, like he had fallen into one of those black holes in space, because he could not tell anyone what he was doing.

Of course, it was very easy to integrate the RAF guys and the Canadians into the planning cell, because they had all the clearances. The hard part concerned the other allies. For example, the Saudis knew we were planning something, but being very polite, they never asked. Finally, I just started sticking Saudis in there. We had a young prince, a Tornado pilot who had blown out a knee playing soccer. He was grounded for six months, and we put him in there and he was doing all the planning for the Saudi, British, and Italian Tornados. He was sitting there with all this highly classified information around him labeled "Top Secret," or "No Foreign Dissemination," or "Shoot Anybody Who Reads This," and so on. I walked by one night about two o'clock in the morning. He was in there working his heart out, and he saw me looking at him. He said, "I suppose after the war you're gonna have to shoot me!"

We integrated our planning efforts very early and again it was easy, particularly with the British and our NATO allies. But eventually we opened the doors to all members of the coalition: the Baharanians, Saudis, Kuwaitis, everyone had full access and it paid off. Not only did we work well together to establish those links of trust, but everybody knew there was no hidden agenda.

We were blessed by great leadership in this country and in the other allied counties. We were given goals that were militarily achievable: "Get the Iraqis out of Kuwait, and cripple their nuclear, biological, and chemical warfare capability." We were not given the goal of bringing democracy to Iraq. Some critics since then have said that we should have gotten Saddam Hussein. I can tell you that we were glad to stop the killing when we did. When I talk to people now, I point out to them very simply that even though the Iraqis were militarily ineffective, we were still losing people on the battlefield just stepping on mines and unexploded ordnance. There was not one American or allied life that was worth a Saddam Hussein. I believe we did exactly right.

We did some things less well. For example, while we were planning the offensive air campaign, I would have hoped our diplomats were planning the peace terms. However, the hour we declared a cessation of hostile operations against the Iraqis, CENTCOM got a phone call that asked, "Would you go up and negotiate peace?" We said, "Hey, you've got the wrong folks; we kill 'em, we don't tame 'em." We actually had to sit down in a room with a yellow piece of paper, and we just sat around there and said, "Okay, what do we want to tell these guys?" The first point was they had to return all prisoners of war. Second, they had to account for all the missing-in-action. Third, their forces had to withdraw so we did not have people bumping into each other and killing one another. We went through all that. Since then, I have felt that if I am ever involved in a war again, my first order is going to be "Somebody go over to the Secretary of State and have him get his team building *their* campaign plan!"

Much has been written about the phases of the campaign. We had them, but they had no meaning other than the emphasis on where we were going to put our efforts. We were going to put our efforts at gaining control of the air and

trying to get targets like biological weapons storage areas. Then we turned our full attention toward destroying military targets. Some people become fascinated with the briefing charts. Remember, those briefing charts were made to send back to Washington, so they were usable at about the third grade-level.

I was very proud of some things we did. Among them was the tempo of operations. We literally drove the air forces of all the coalition countries into the ground. If we had had to go another sixty days, the pilots would have been exhausted. We would not have been out of munitions, however; our logistics support was magnificent. Saddam Hussein was always convinced we had about three days of munitions available, but he was wrong. When we doubled our forces in November, we took our sixty-day level of munitions down to a thirty-day level, but in two weeks we had gone back to the sixty-day level. We were never even close to running out of munitions, but we did turn Saudi Arabia into a net importer of oil. They had forty tankers in-bound to the country every day bringing in oil. We used everything they produced. If you are going to fight an air war, by all means fight it on top the world's largest supply of oil!

We innovated at every possible chance. We were able to do that because the issue of survival was never in doubt. We knew that we were going to win, but we wanted to win as quickly and as efficiently as possible. So we empowered the captains and majors to make the decisions. We created a plan that had merit, put it out there, and let them all lead. I had three teams. A team would build the air tasking order for the day, two days in the future. Then they would see it through production—where it was typed up and printed—and then briefed to Schwarzkopf and approved. Then, they would go aboard the AWACS the day it was executed. They would know, then, why it was built the way it was. Then, when they changed it, that knowledge added meaning to the change.

The longest time period we had for changing a sortie was with the B–52s, because they used an analogue bombing computer and they were hard to move around the sky. It was three minutes. We could retarget most of our other assets in seconds.

We did things like set up an airfield right on the border, at King Kahlid Military City. I sent the best colonel I knew in the Air Force up there, and told him to build me an air base. He got there on December 15, and on January 17, we were landing airplanes. They would land, would not shut down, but would refuel, rearm, and launch again against the Iraqis. Then come back, land, rearm, launch, and go back again. We were getting five or six sorties a day out of some of those airplanes. We did not want that Vietnam "hit 'em in the nose and see what they say" tempo. We wanted to be unflinching—as vicious as possible—and to get it over with as soon as possible.

One story I will share with you is a tough one for the Brits. They came into the war absolutely convinced about the importance of low-level attack. I had forbidden our people to go to low-level, except for the F–15Es and the F–111s. Our people quickly got the message; on the second night they went to medium

altitude. But I would not let the A–10s and F–16s fly low. They could have disagreed with me over this decision, but they never argued. I finally asked Colonel Ervin "Sandy" Sharpe, Commander of the 354th Tactical Fighter Wing, "You guys love to fly low-level, why don't you want to go low-level?" "Well, we decided we want to stay alive," was the response. The French went low-level the first day and they had three airplanes hit, one seriously. It limped back across the border and landed. They never went low-level again.

The Brits went low-level time and time again. Part of it was their mission; part of it was their weapon systems. I think part of it was their belief in low-level attack nurtured by the NATO war scenario under which they trained. Now I had a problem, because losses worked against us. Casualties are a serious liability in modern war: they get headlines in the press. It just is not the thing to have, and here were the Tornado guys taking horrendous losses. We lost four or five Tornados. I will say this. No one else even approached the RAF in terms of courage. Those guys were going through hell. I tried subtly to get them to back off, and I could not do it. They kept saying, "Give us the tough ones, give us the tough ones, give us the tough ones!" Finally, one night I did not know what to do, and unusual for me, I was trying to be a little bit diplomatic. It was the evening meeting of the air chiefs, and we were all sitting there. Thank God, we had Air Vice Marshal Bill Wratten. I don't know if you know him, he was the senior RAF officer in Riyadh, and he is an absolute master of his profession. I said, "Here we are in the fourth day of the war. Things have been going good, but we've had losses. We need to do whatever we can to avoid that. Why don't we form a tactics board and let it take a look at why we're losing aircraft and determine how to stop the losses." Bill looked over and said, "Yeah, let me head it!" He understood exactly what we needed to do. He sent off the Buccaneers with laser-guided bombs and put laser-guided bombs on the Tornados, and he went out and solved the problem.

We had problems with intelligence. We put tremendous demands on intelligence. In modern war you don't need to know where the factory is; you need to know where the load-bearing wall in the factory is. Film-based reconnaissance was too slow. We had not previously exercised national assets in warfare, so they were unprepared to integrate. It was not a question of wanting to; it was not a question of the attitude of the people. It was simply that units that do not exercise in peacetime are unable to perform in wartime. On the other hand, we received good support from human intelligence sources in Kuwait City. We were on the telephone with the underground there. The only problem was that we had to make sure there were no vendettas going on. Consequently, every target nominated from the Kuwaiti resistance was always cross-checked with another source. In one case, there was one building that looked suspiciously like a biological storage area, because it kept showing up cold on the infrared photography. We put six laser-guided bombs through the roof of that building. Now you will never get an in-flight meal on Kuwaiti Airlines!

We need to look at command and control. We had a fantastic capability with the AWACS anchoring the system, with Rivet Joint, and with the British Nimrods. We integrated and we internetted and we all worked together. But I am sure we can do better.

Ballistic missile defense had to be the major lesson learned for all the countries involved, because ballistic missiles worked. They induced tremendous terror in Israel, Saudi Arabia, and Bahrain. They were significant, and while Patriots could counter them, we were unable to keep them from being launched.

Air support on a rapidly moving battlefield? I think the Air Force is ready to do that. We have got to get the Army up to speed. They had a lot of difficulty in adapting to the rapidly changing battlefield.

Mixed nations flying together: Thank God for NATO and for Red Flag.

Target planning: Again, all the services now are flirting with air power. You cannot believe the "trash" being discussed in the Joint Staff as the Army attempts to regain control. Again, I thank God for the Royal Air Force, which very early in its history realized the importance of independent air power.

Tactics: I believe we can learn whatever we want to with respect to tactics.

How to handle the media? I think we all grew up, including the media. We must never be afraid of the media; we must treat them openly and honestly, and expect them to have integrity.

Friendly fire was a very serious problem, even though the losses were relatively low and the incidents were very low. Nonetheless, modern weapons are so lethal that we cannot afford to make mistakes.

I believe that the political leadership needs to study war as carefully as the military. I don't know how they will do that, because they have such a short time to train. In this case, I think we were all blessed with leaders who had a truly broad view of the world. Certainly in our case, we had leaders who had been in a war. I talk about my two heroes here—George Bush and Dick Cheney—because they trusted us like professionals and permitted us to do our jobs as professionals.

In Vietnam, the first casualty was integrity, because there was such a breakdown between the theater and the national leadership. The theater guys would tell the national leadership whatever they wanted to hear, so the airmen could get on with trying to fight a war the best they could. For the pilots, we would go to North Vietnam, bomb what we thought was right, and then come back and tell the authorities that we hit whatever they wanted to hear. In this war we swore we were not going to do that. If we were put in that position, we were going to resign; we were going to retire. This was never talked about; it was understood.

One day one of my wing commanders called and said, "Boss, we just shot down two Iraqis about twenty to thirty miles inside Iran." I said, "Did you know you were in Iran?" He said, "No, we were chasing them in the heat of battle and it sure felt good at the time, but I wish we hadn't done it now." "Well," I said,

"God bless you, sin no more, and keep flying and keep shooting Iraqis." Then I called Schwarzkopf and said, "We screwed up; we shot down two Iraqis inside Iran. We knew we shouldn't have been there. I'm not going to change any procedures and as far as I'm concerned the crews were innocent, they were doing their job." He said, "Fine." He called General Colin Powell and told him, and Powell told Cheney.

I knew from my experiences in the Pentagon that there would be some "Under Secretary for Sewage Disposal and Married Family Housing" who would say, "We can't have this." He would go to the Secretary of Defense and give him a point paper outlining the crisis that would occur in the year 2010 as a result of this action and would suggest a buffer zone to prevent further offenses. If you look at a map, the distance between Baghdad and the Iranian border is so short that if we had put a buffer zone in there, we might as well have just pulled the troops out and come home. I was in anguish over this incident. Because of some under secretary, I would be told to implement a buffer zone and I was not going to do it. I lined up my arguments, because I knew the word would come and Schwarzkopf would call me in and I would give it my best shot. I was not going to do it, and I was going to have to resign.

But the call never came!

After the war, I asked Secretary Cheney, "Did you every get any pressure in regards to our shooting down the Iraqis over Iran?" He said, "Funny your should mention that. One of my guys came to me and suggested that we needed to do something like a buffer zone, but I told him, 'They'll know how to handle it. They're running the war.'"

We heard the best news on that incident about three days after our pilots shot down the Iraqi aircraft. The Iranians sent word out over their air defense net that if anyone spotted an American airplane in Iran, not to shoot at it, they were just chasing Iraqis!

I thank you for what you do. History is fundamental to the success of our military. It is important that we continue to learn, even though we think we did most things well. Your knowledge, experience, and sense of what is fundamental in modern warfare are indispensable. Thank you for letting me be here today.

Notable Anglo-American Aircraft of the Cold War

A Pictorial

A Famous Airlift to Save a City Brought Them Back

The thousands of American aircraft based in Great Britain during World War II were gone by 1946, and few thought they would ever need to return. When the Soviet Union halted all railway, road, river, and canal traffic into Berlin, however, the U.S. and its allies responded with a round-the-clock airlift composed of aircraft from the United States Air Forces in Europe and the British Air Force of Occupation. The first flight left Weisbaden Air Base on June 26, 1948, and by the time the last Operation Vittles mission took place on September 30, 1949, the Combined Airlift Task Force had delivered 2,326,204 tons of supplies and equipment to the city.

RAF Avro Yorks, here parked at the unloading hangars at RAF Gatow in Berlin, delivered 230,000 tons of supplies, over half the total British airlift effort. *Courtesy, RAF Historical Branch.* (*right*)

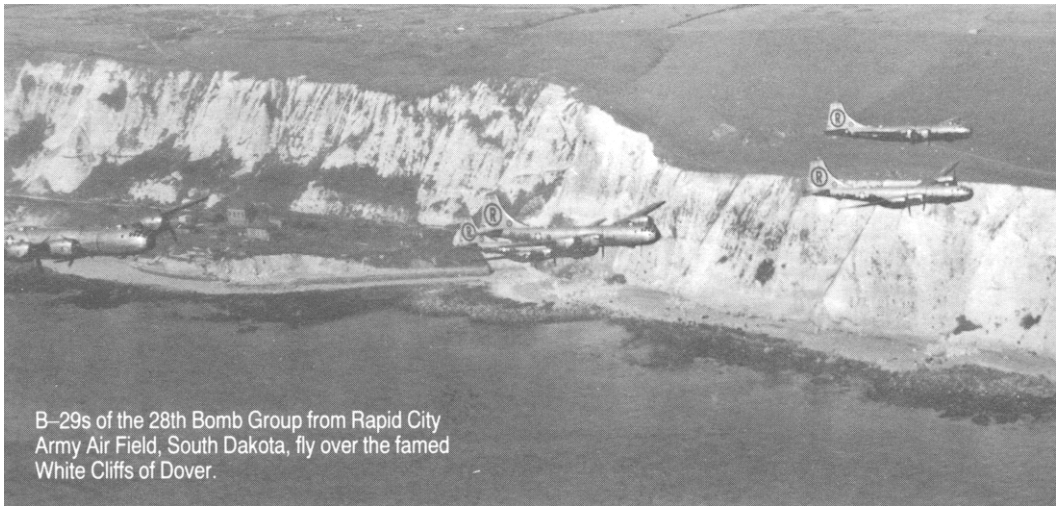
USAFE Douglas C–47 "Gooney Birds" began the airlift. These are unloading supplies at Tempelhof Airport, Berlin. (*below*)

Douglas C–54 Skymasters, the backbone of the Berlin Airlift, operated in all weather conditions.

These C–54 Skymasters are undergoing maintenance at Oberpfaffenhofen Air Force Depot, Germany, on August 17, 1948.

A Temporary Deployment Became a Long-Term Presence

In response to the Soviet threat to Berlin, the USAF temporarily deployed Strategic Air Command B–29 bombers to England and opened a major maintenance depot for airlift aircraft at RAF Burtonwood. The 3rd Air Division (Provisional) was activated on July 16, 1948, at RAF Marham to coordinate USAF activities in the United Kingdom. The USAF presence took on a more permanent cast when the provisional designation was dropped on August 23, and the headquarters moved to South Ruislip near London. The USAF occupied several bases in East Anglia and began a major renovation and construction program.



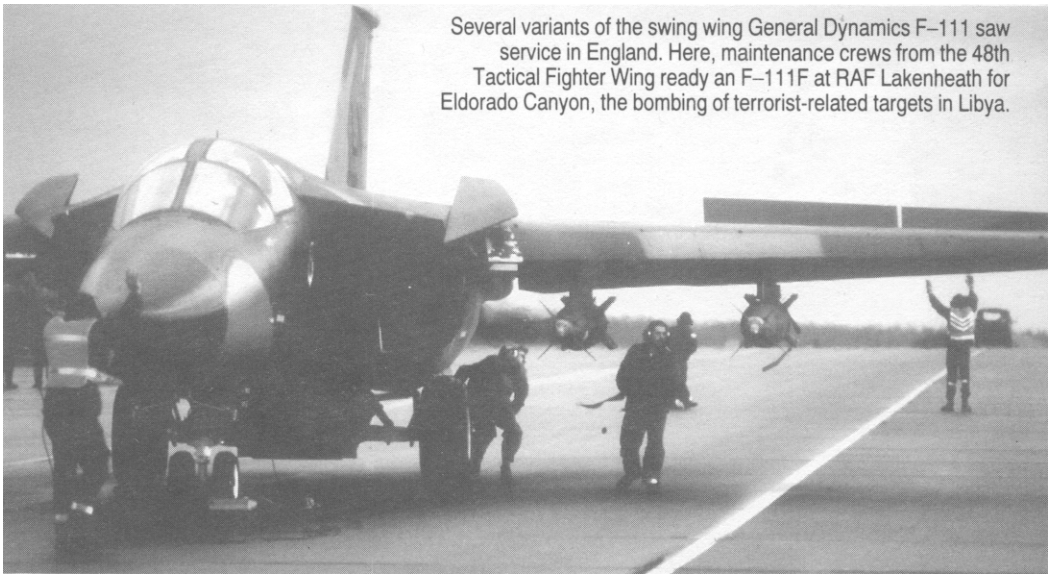
B–29s of the 28th Bomb Group from Rapid City Army Air Field, South Dakota, fly over the famed White Cliffs of Dover.

A formation of 28th Bomb Group B–29s flies over RAF Scampton.

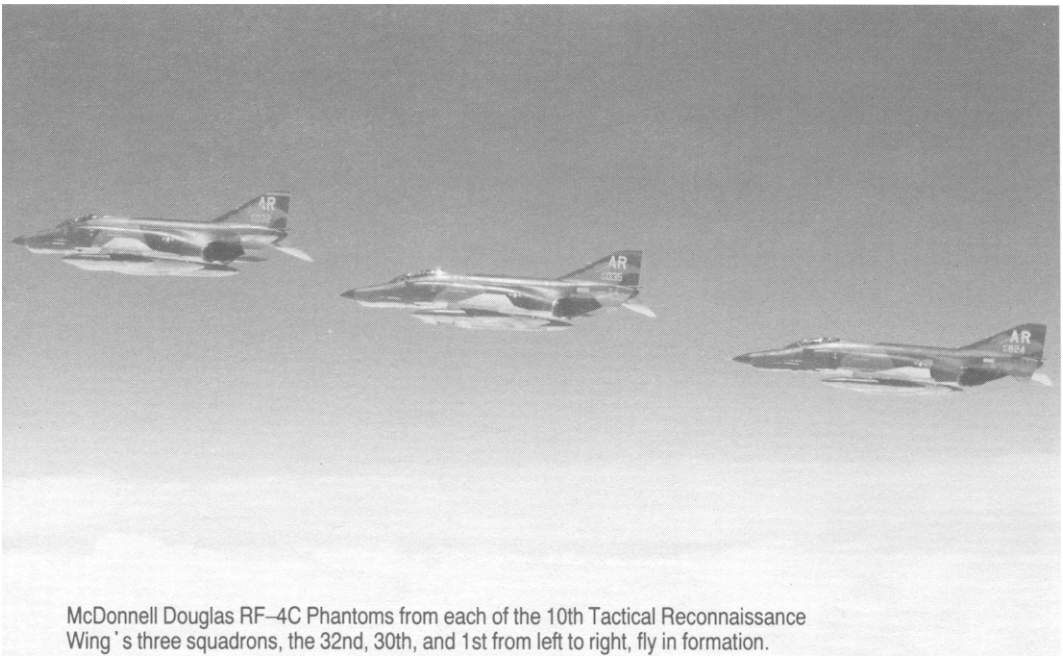
Two North American F–100D Super Sabres of the 48th Tactical Fighter Wing take off from RAF Lakenheath in 1957.

This Douglas B–66B Destroyer medium bomber belonged to the 86th Bomb Squadron, assigned to RAF Alconbury from May 1958 until August 1959, when it moved to RAF Sculthorpe.

The first McDonnell F–101 Voodoos were assigned to the 81st Tactical Fighter Wing, with two squadrons at RAF Bentwaters and one at RAF Woodbridge. This photo is of the reconnaissance version RF–101C from the 66th Tactical Reconnaissance Wing at RAF Upper Heyford in 1969.



Several variants of the swing wing General Dynamics F–111 saw service in England. Here, maintenance crews from the 48th Tactical Fighter Wing ready an F–111F at RAF Lakenheath for Eldorado Canyon, the bombing of terrorist-related targets in Libya.



McDonnell Douglas RF–4C Phantoms from each of the 10th Tactical Reconnaissance Wing's three squadrons, the 32nd, 30th, and 1st from left to right, fly in formation.

Republic A–10A Thunderbolt IIs from the 81st Tactical Fighter Wing over RAF Bentwaters in July 1982 carry four AGM–65B Maverick missiles and one AN/ALQ–119 electronic countermeasures pod.

The USAF Shared Air Space and Defense Responsibility with a Diverse Group of RAF Aircraft

From its beginnings prior to World War I, Great Britain's aviation industry was famed for innovative, high performance military aircraft. British designers enhanced this reputation during the Cold War with a series of distinctive aircraft that contributed significantly to the security of the free world.

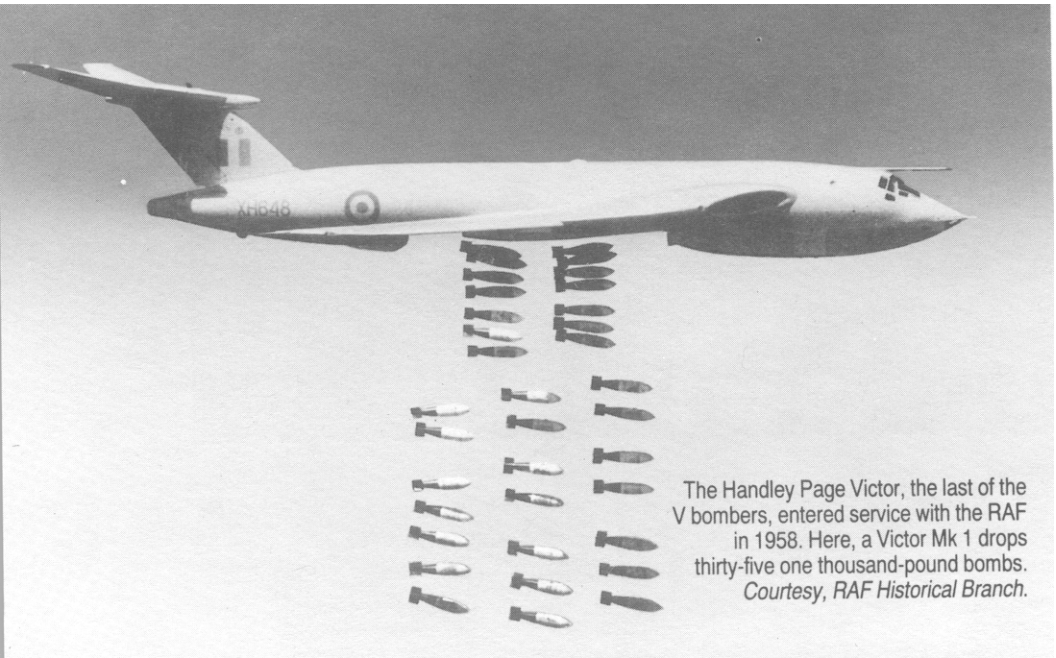
Introduced during World War II, the Gloster Meteor formed the backbone of Fighter Command following the war. The Meteor FR.9 shown here performed low-level reconnaissance for 2nd Tactical Air Force in Germany.

The twin-boom DeHavilland Vampire began service with Fighter Command in 1946 and was the second jet fighter flown by the RAF. The photo shows the FB.5 fighter bomber version of the Vampire introduced in 1949.

The Hawker Hunter, shown here in the two-man trainer variant, was the first swept wing RAF fighter, entering service in 1954. *Courtesy, Robert F. Dorr.*

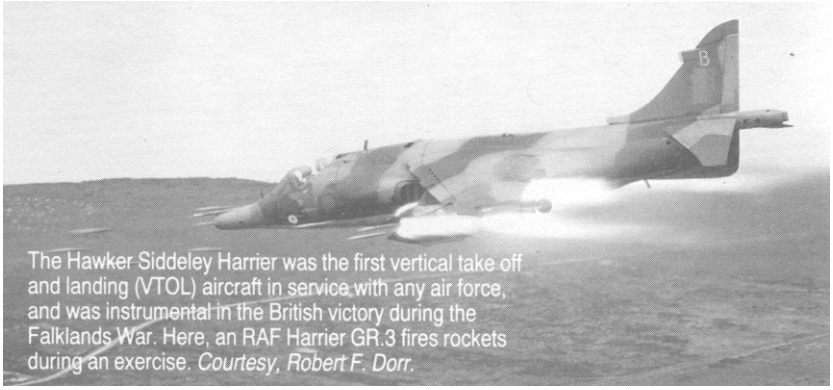
The Vickers Valiant was the first of England's V Class four-engine jet bombers, entering squadron service in 1955. *Courtesy, RAF Historical Branch.*

The most distinctive of England's V bombers, the delta-wing Avro Vulcan joined Bomber Command in 1957. These Vulcans are at RAF Scampton in 1961. *Courtesy, RAF Historical Branch.*



The Handley Page Victor, the last of the V bombers, entered service with the RAF in 1958. Here, a Victor Mk 1 drops thirty-five one thousand-pound bombs. *Courtesy, RAF Historical Branch.*

The English Electric Lightning, the first single-seat RAF fighter to exceed the speed of sound in level flight, entered service with the RAF in December 1959. Shown is a Lightning F.6 of No. 23 Squadron based at RAF Leuchars in the late 1960s. *Courtesy, RAF Air Historical Branch.*

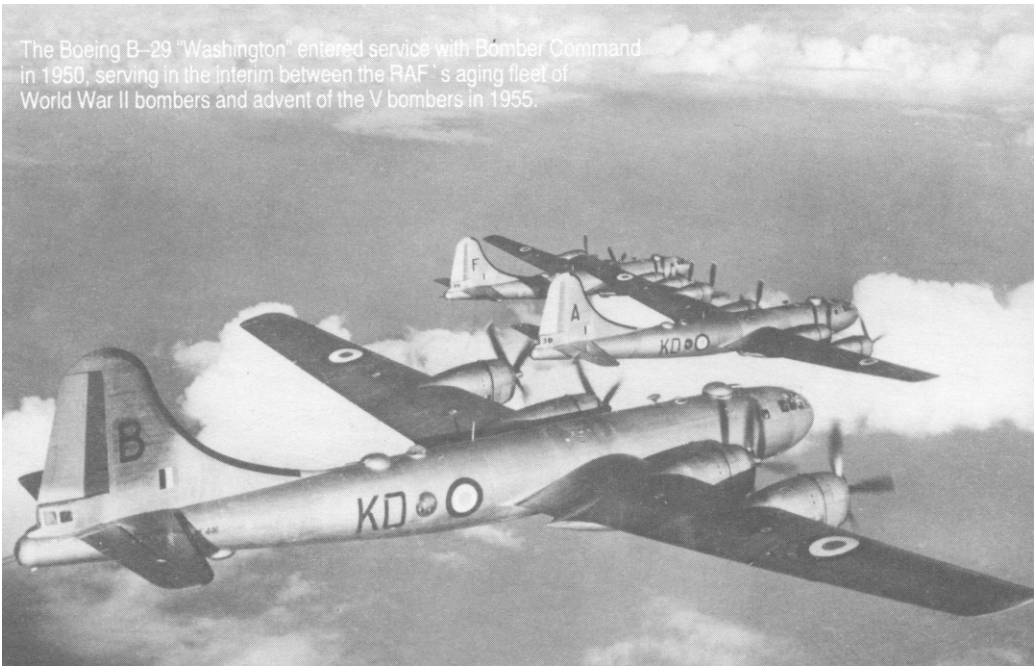


The Hawker Siddeley Harrier was the first vertical take off and landing (VTOL) aircraft in service with any air force, and was instrumental in the British victory during the Falklands War. Here, an RAF Harrier GR.3 fires rockets during an exercise. *Courtesy, Robert F. Dorr.*

The Panavia Tornado fighter bomber, the result of collaboration with other European nations, forms the backbone of the modern RAF. This picture is of a Tornado F.3 of No. 29 Squadron at RAF Coningsby. *Courtesy, Robert F. Dorr.*

Cooperation Included Sharing Technology

The United States and Great Britain saw much to admire in each other's aircraft. Great Britian acquired several U.S. aircraft to meet special needs, and the USAF bought the English Electric Canberra to meet its need for a light tactical jet bomber.



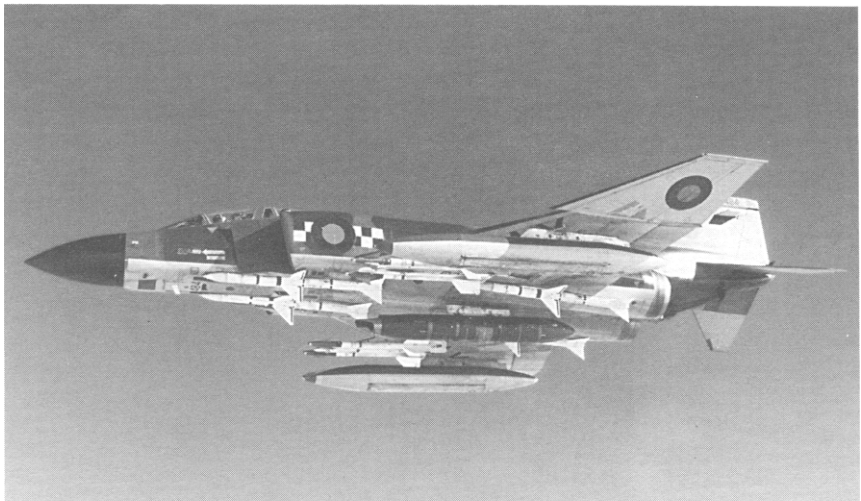
The Boeing B–29 "Washington" entered service with Bomber Command in 1950, serving in the interim between the RAF's aging fleet of World War II bombers and advent of the V bombers in 1955.

Likewise, the North American F–86E Sabre served with Fighter Command until the arrival of swept-wing British aircraft. RAF Sabres Like this Mk 4 from No. 92 Squadron, were built under license by Canadair. *Courtesy, RAF Historical Branch.*

The English Electric Canberra became the Martin B–57, the only non-U.S. design adopted for operational service by the USAF after World War II. *Courtesy, British Aerospace.*

The Martin RB–57D was a special long-range version of the Canberra. This aircraft, belonging to the 7407th Support Group at Rhein Main Air Base, Germany, is returning from a photo mission over the border between West and East Germany in 1965.

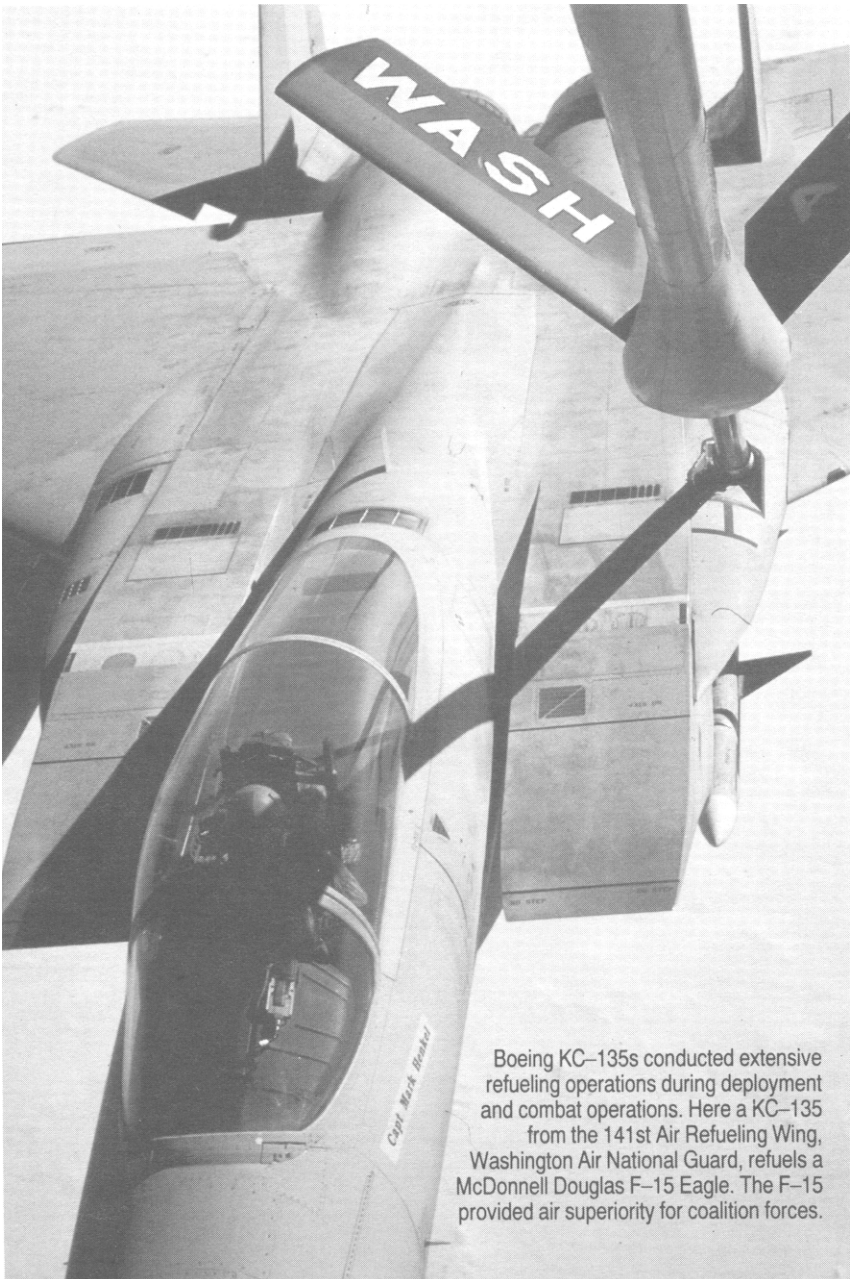
The Lockheed C–130 Hercules entered USAF service in 1956 as its standard medium-range tactical transport. The RAF bought the C–130K to replace the Handley Page Hastings and Blackburn Beverley beginning in December 1966. *Courtesy, Robert F. Dorr.*



The McDonnell Douglas F–4 Phantom II entered service with the U.S. Navy in 1958 and was adopted as the F–4C by the USAF in 1963. The British government bought Phantoms for the RAF and the Royal Navy. This Phantom belongs to No. 43 Squadron at RAF Leuchars. *Courtesy, Robert F. Dorr.*

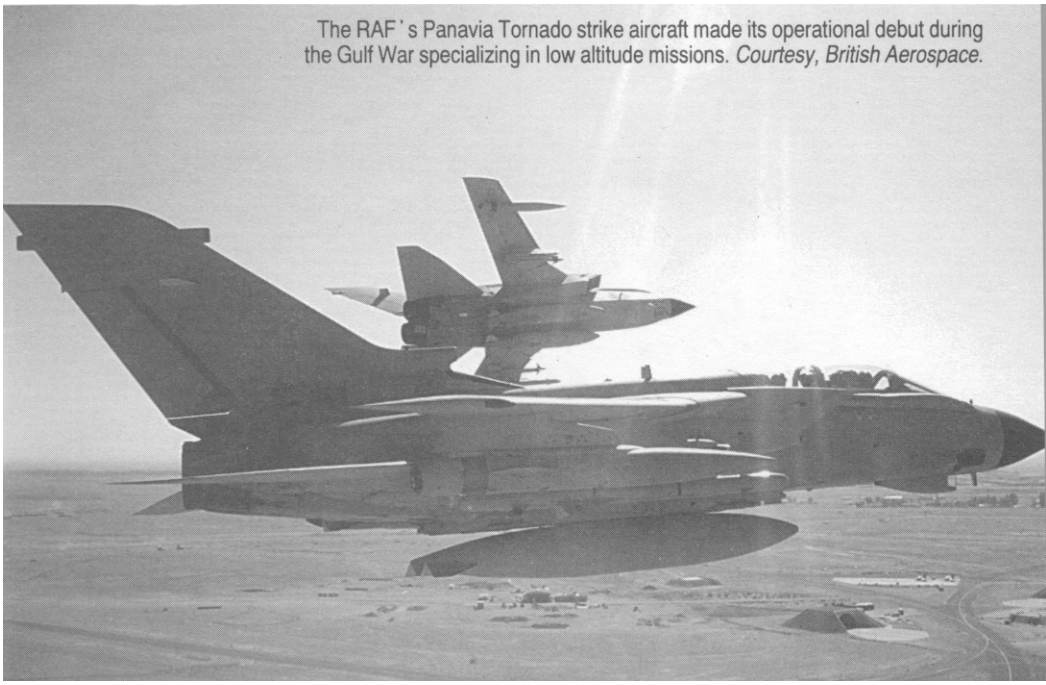
Greatest Joint Combat Effort by the USAF and the RAF Following World War II Came after the Cold War Ended

The Iraqi invasion of Kuwait on August 2, 1990, led to the formation of a powerful international force. The U.S. Air Force committed almost every type of aircraft in its inventory to the coalition air force, while the Royal Air Force contributed a significant proportion of its aerial strength. During Desert Storm, the two air forces worked closely with each other and with the other members of the coalition to achieve victory.

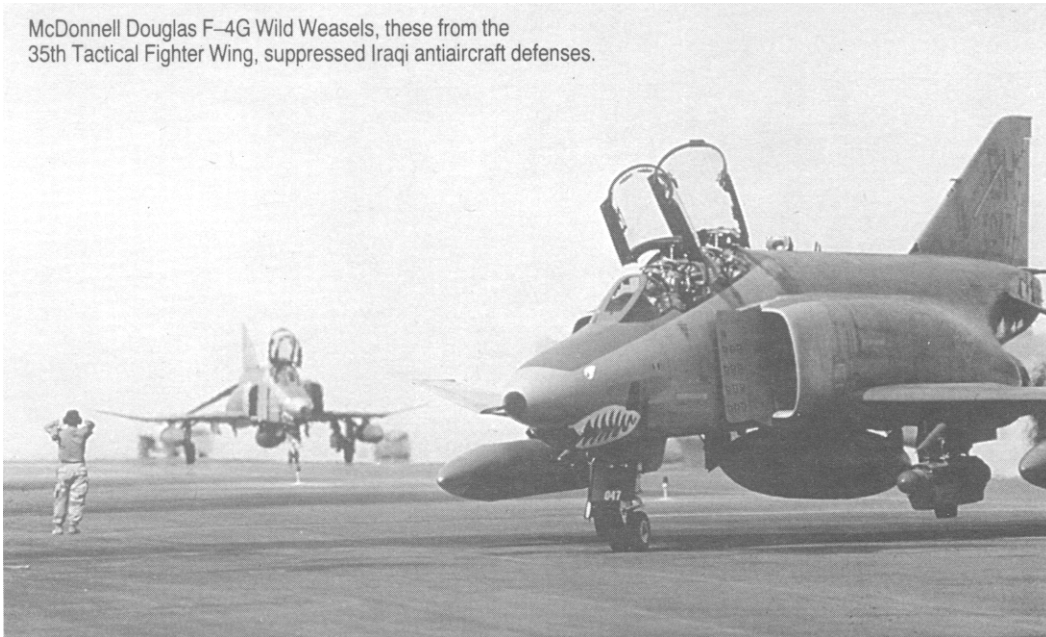


Boeing KC–135s conducted extensive refueling operations during deployment and combat operations. Here a KC–135 from the 141st Air Refueling Wing, Washington Air National Guard, refuels a McDonnell Douglas F–15 Eagle. The F–15 provided air superiority for coalition forces.

British Aerospace VC10 tankers, this one refueling Sepecat Jaguars, also provided air-to-air refueling capability during the Gulf War. *Courtesy, British Aerospace.*



The RAF's Panavia Tornado strike aircraft made its operational debut during the Gulf War specializing in low altitude missions. *Courtesy, British Aerospace.*



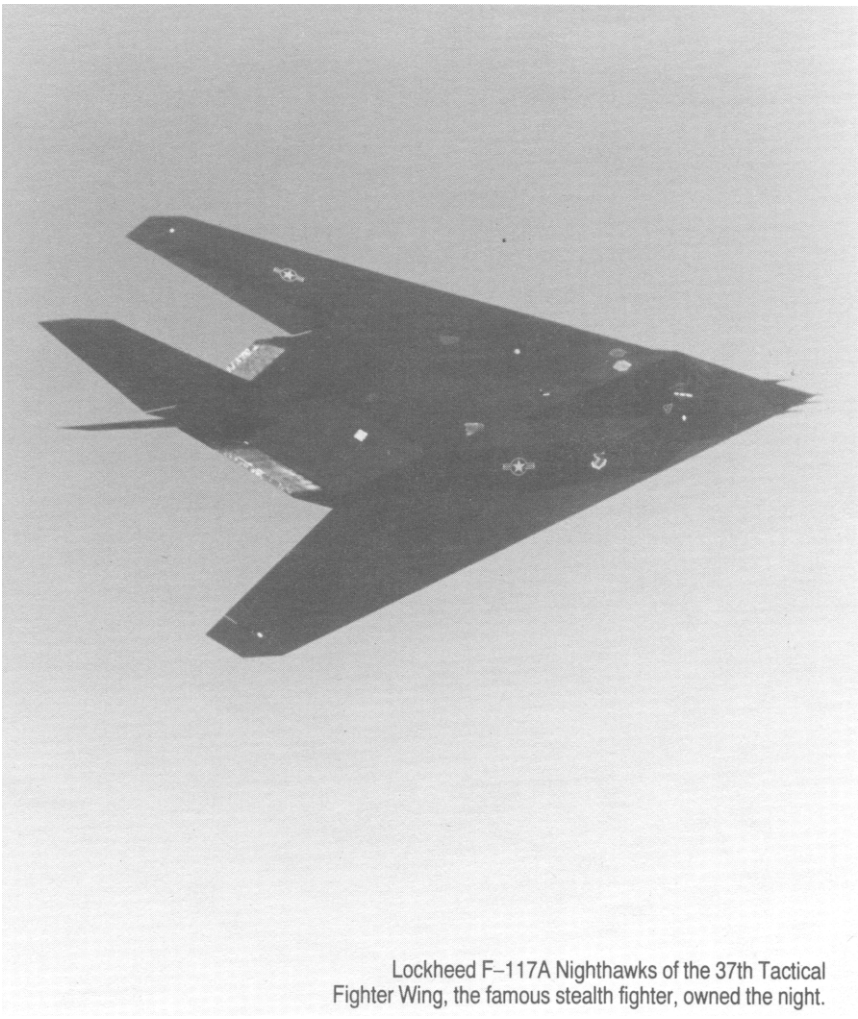
McDonnell Douglas F–4G Wild Weasels, these from the 35th Tactical Fighter Wing, suppressed Iraqi antiaircraft defenses.

RAF Sepecat Jaguar GR.1As assigned to No. 41 (Composite) Squadron primarily operate in a ground attack role.

Boeing B-52G Stratofortresses like this one from the 1709th Bomb Wing (Provisional) paid special attention to Iraq's elite Republican Guard.

General Dynamics F-16C Fighting Falcons proved a versatile attack fighter. Here Falcons from the 4th Tactical Fighter Squadron undergo maintenance.

Lockheed C–130 Hercules aircraft furnished tactical airlift support throughout the Persian Gulf theater.



Lockheed F–117A Nighthawks of the 37th Tactical Fighter Wing, the famous stealth fighter, owned the night.

Session Three

Crisis Response

Air Marshal Sir Frederick Sowrey, KCB, CBE, AFC, Royal Air Force, retired, Chairman of the Royal Air Force Historical Society, was educated at Charterhouse and joined the Royal Air Force in 1940. He received his flight training in Canada, then flew fighter reconnaissance missions in the European Theater from 1942 through 1944. Subsequently, he served as a flying instructor and with Fighter Command squadrons. Later, Air Marshal Sowrey was Commander of No. 615 Squadron from 1951 to 1954; Commander of No. 46 Squadron from 1958 to 1960; Commander of Royal Air Force Abingdon, 1962–1964; Senior Air Staff Officer Middle-East (Aden), from 1967 to 1968; Director of Defence Policy, Ministry of Defence, from 1968 to 1970; Senior Air Staff Officer, Royal Air Force Training Command, from 1970 to 1972; Commandant of the National Defence College from 1972 to 1975; Director-General of Royal Air Force Training from 1975 to 1977; and United Kingdom Representative to the Permanent Military Deputies Group, Central Treaty Organization, Ankara, from 1977 to 1979. Aside from his military service, Air Marshal Sowrey has been Chairman of the Sussex Industry Archeology Society, Member of the Board of Conservators, Ashdown Forest, and Vice Chairman of the Victory Services Association.

Introduction

Air Marshal Sir Frederick Sowrey

In earlier centuries, crisis response had a simplicity that many involved in today's problems would envy. Two thousand years ago, an individual could trigger a crisis and evoke a response. To be a Roman citizen was sufficient to call upon the military power of the state if one was wronged in a foreign land. *Civis Romanus Sum* (I am a citizen of Rome) brought land power in the shape of the Roman legions to one's aid.

The same principle was used at the height of the global power of the British Empire in the 1890s by Lord Palmerston as Prime Minister. A Maltese Jew, and therefore a British citizen, whose shop was wrecked by a mob in Athens was denied compensation. As a demonstration of sea power the British fleet was ordered into Greek waters to intimidate the government with successful results. Adequate compensation was forthcoming.

The major change from these former days is the power of the people in a democracy, influenced as they are by the media—particularly television—and the real time effect of communications. A further overlay is the sanctity of individual life and freedom as well as the limitations on instantaneous and uncoordinated response brought about by membership in international bodies and alliances, such as the United Nations, NATO, and the European Economic Community. As Winston Churchill said, "There is only one thing worse than fighting with Allies and that is fighting without them." With this background, we can take a look at crises in the round and pick at instances where air power has been involved in some way or other or has contributed to the resolution.

It goes without saying that it is essential to recognize that you are in a crisis and equally essential to maintain an open and evenhanded approach when all the pressures will be to "zero in" on the crisis to the exclusion of all else. Prior to the advent of nuclear weapons, countries could push a crisis over the brink and go to war to achieve national objectives with comparatively little fear of the results. As late as the 1900s, war was still seen as a way of gaining political advantage, particularly if one expected to win a quick victory with less casualties by striking first and hard. There was no incentive to resolve crises peacefully as they arose, and the inevitable happened with the outbreak of World War I in 1914. By 1918, air power was an extra element to be considered in a crisis and it was the combined effectiveness of the German army and air force as a war-winning combination which gave Hitler the confidence that war was to his advantage in 1939 and that no effort would be made to solve the international crisis caused by the invasion of Poland.

Session Three: Crisis Response

The Cold War had the advantage of involving both superpowers in the solution of crises as both had vested interests in the avoidance of nuclear war in spite of a minority view that it could be fought and survived. Consequently, once in a crisis, the resolution and extraction is important. If possible, the temptation to pin one's opponent into a corner from which he has no way of escape should be avoided. This was not possible in the Falklands Crisis, where the British government was dealing with national sovereignty over the islands and the Argentine government thought that they were also—hence the opportunities for either side to extract themselves without hostilities were limited. However, the threat of the strategic use of air power by the eight thousand mile round trip of an RAF Vulcan to attack Port Stanley airfield was used to impress the *Junta*.

It is the ability of aerospace power to use a third dimension that provides the significant contribution in crisis response. The Berlin Blockade had every chance of success for the Soviets if an allied ground task force had attempted to push their way along the autobahn, since mines, ditches, deliberately abandoned vehicles, and the like gave all the initiative to the Soviets. To disrupt airlift flights along the existing corridors, however, would have required a deliberate attack on transport aircraft with the escalation involved in such an act.

The movement of aircraft can also send a strong signal. Changes of readiness—so long as it cannot be misunderstood as preparation for a preemptive strike—spells out resolve, and deployment through third countries can bolster morale and show political underpinning. The British Government's ability to allocate RAF nuclear strike forces in support of Turkey in the now defunct Central Treaty Organization and also to Malaysia and Singapore in the former South East Asia Treaty Organization was a considerable political strengthening of those governments and gave then greater confidence in dealing with regional Cold War crises—but not internal security, as we shall hear.

The contribution of surveillance by the overall collection of intelligence in time and space is a continuing aerospace commitment, crisis or not. Reconnaissance of particular targets, such as the Soviet missiles based in Cuba and the missile transport ships in the Cuban Missile Crisis, showed intelligence gathered through aerial reconnaissance to be an essential tool of crisis management.

Any response to a crisis involves close political and military integration, the former to lay down the material aims and limitations and the latter to draw up the rules of engagement to achieve them. In the past, armed aircraft were flown over Beirut in a Middle East crisis without clear political direction that would have which enabled adequate guidance to be given to aircrews to help them face a variety of possible situations.

Precision strike is a further aerospace contribution, but target identification is seldom simple. In the intermittent crises in the Aden Protectorate, rocket

attacks by aircraft against dissident tribesmen based in deep rock caves were infinitely more swift, surgical, and selective than a ground expedition that would have had to run the gauntlet of hostile villages, with the risk of casualties to women and children.

Aerospace can also be crisis provoking. The crisis involving Francis Gary Powers and the U–2 shot down over Russia gave the Soviet Union the opportunity to make much worldwide propaganda, with the West and particularly the United States being cast as the villain in the dock. This was notwithstanding the fact that governments from both sides of the Iron Curtain were well aware that two-way intelligence gathering was taking place. The head of our Air Historical Branch, Ian Madelin, has reminded me that when we used to fly in the major United Kingdom air defence exercises of the 1950s and 1960s, Soviet intelligence trawlers would lie just off the end of the runway of his Scottish air base in international waters. Sadly, they were never driven ashore by storms, and photographs of the bristling aerial arrays where no fish would come nearer than fifty miles did not have the same effect on world opinion as did parts of a downed U–2.

Many of these aspects of crisis response will be widened and deepened in the presentations you are about to hear. Four specific cases all expertly researched and dealing with regional international crisis response, will provide the baseline for our subsequent discussions. They provide a fascinating spread, ranging from internal security in the Far East to probably the closest we have been to nuclear war and very close to home for you, the Cuban Missile Crisis. The spread covers some of the most important aspects of the Cold War—from intelligence gathering to the fragility of public opinion in a democracy. Far better that each speak for themselves.

First, I will ask that Dr. Malcolm Postgate, a distinguished historian, provide coverage of the Malayan Emergency from his background both with the Air Historical Branch and his wider experience in academia and the diplomatic world.

Second, we have Donald Welzenbach, with a background in newspapers and publishing and a former historian with the Central Intelligence Agency. He is going to speak on the origins of overflying the Soviet Union.

Next, Dr. Stephen Twigge of the University of Wales has been researching Anglo-American cooperation in the command and control of British nuclear forces. He is going to talk about the relationship between the Strategic Air Command and the Royal Air Force during the Cuban Missile Crisis from the perspective of the United Kingdom.

Finally, we have Jerome Schroeder, a notable product of the U.S. Air Force History Program, who has served in many assignments including that of Senior Enlisted Historian, United States Air Forces in Europe. A prolific writer, he is going to cover the American raid on Libya mounted from the United Kingdom, its political implications, and, particularly, its public relations aspects.

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Dr. Malcolm Postgate, Development Director, National Military and Aerospace Museum, Aldershot, was educated at Christ's Hospital, London, and Cambridge Universities where he earned his Ph.D. After a period as a tutor in Historical Geography, Dr. Postgate joined the RAF's Air Historical Branch in 1963 where he wrote a major history of the air aspects of the campaign against the communist insurgency in Malaya. Thereafter he served as a diplomat in Khartoum, Cairo, Beirut, and London. In 1974 he moved into merchant banking with Morgan Gronfell and Company, the Hong Kong and Shanghai Banking Corporation, and Merrill Lynch International. He was also founder and chairman of several companies specializing in Environmental Health, Security, Art and Life Assurance.

Operation Firedog: Air Support in the Malayan Emergency

Malcolm Postgate*

Thank you very much, ladies and gentlemen. Sir Frederick gave a very interesting introduction on crisis response, which is the topic of our conversation this morning. I thought what I would do is look at one particular example, the Malayan Campaign, which may not be that familiar to all of you, strictly as an example of crisis response. I think you know the results. In world opinion, we probably won. But it took a long time, and a lot of lessons were learned along the way.

My present task in the military and aerospace scene in the U.K. is to set up a museum for the military and the aerospace industries, and, basically, to make it interesting. So, it has to look at all aspects of a particular event; it must not be just a dull record of what happened. And quite by chance, the two words that were chosen for the theme of this operation were "crisis response." We sat and talked about this for a long time. In military terms we came to the conclusion that crisis response was best summarized in three words which are, in fact, the three main themes of this experience we are setting up between Aldershot and Farnborough. For people who do not know the United Kingdom, Aldershot has been the home of the British army since the 1850s; and Farnborough was the birth place of British aviation due, in a very real sense, to one of your famous characters. The person who started British aviation was a chap called Colonel Samuel F. Cody—the colonel being slightly apocryphal, as was his claim to be related to the famous William F. "Buffalo Bill" Cody. He started with balloons and kites and then explored powered flight. He managed to get Army Aircraft No. 1 flying in 1909 by plunging off a tree up at Farnborough not long after America had invented flight.† From that episode, of course, came the Royal Engineer Balloon Division of the Royal Flying Corps and then the Royal Air Force, so that is how it started. But that is an aside.

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* Dr. Postgate unfortunately passed away shortly after the symposium.

† Cody came to England in the 1890s with a Wild West show and stayed. With a showman's flair, he turned his background, name, and facial resemblance to Buffalo Bill to his own advantage. He demonstrated his system of man-carrying kites to the War Office in 1904 and became Chief Kiting Instructor at the Balloon School in 1906. In 1907, Cody and Col. J.E. Capper, built England's first semirigid dirigible, the *Nulli Secundus*, and a heavier-than-air craft capable of short hops in 1908. On October 16, 1908, he accomplished the first sustained, powered flight in Great Britain.

Session Three: Crisis Response

Back to crisis response, the themes were basically prepare, sustain, and advance. I think in a crisis, we would probably agree, that these are three useful words. Are you well prepared for a crisis? Can you recognize it when it is coming and get yourself in the right position to deal with it? Can you sustain your reaction to the problem? Have you the right equipment? Are you sufficiently trained? Are you deployed properly? And advance, of course, is how you set about solving it and, indeed, winning it as quickly and expeditiously as possible. So back to the Malayan Emergency from 1948 to 1960; certainly the biggest and most immediate crisis the British Empire faced, if you like, after it was worn out by the Second World War. And the immediate reaction you might have is that it took an awfully long time to beat a bunch of terrorists in the jungle in Southeast Asia because there were not that many of them. The answer to that thought is that we were not prepared, we were not deployed properly, and we were not positioned to be able to respond quickly to the problem.

Operation Firedog is of interest in considering crisis response as the only example of a successful air campaign in support of a civil power in Southeast Asia since the Second World War. It was not, however, a textbook response to crisis, if only because it took some time to recognize the crisis and because the forces used and their deployment were often not those best suited to dealing with the problem. Nevertheless the operation was successful, and the lessons it taught are applicable to all counterinsurgency operations in remote and difficult terrain. Parallels with Vietnam are obvious, but so are the differences, notably the scale of the problem, the geography, and the local politics, which, in the end, defeated far greater American forces in Vietnam than the United Kingdom deployed in Malaya.

Before analyzing the contribution of the air forces to the Malayan Emergency, we need to understand the origins and scale of the problem and the conduct of the ground forces' campaign that the air forces supported. Indeed, one of the difficulties faced by the air forces was that they were deployed in support of both a civil power and the ground forces and were seldom able to act independently to achieve their maximum efficiency. Furthermore, the terrorist threat was only their tertiary responsibility of the Air Officer Commanding (AOC), Far East Air Force, following the primary task of preparing countermeasures for a hot war against Chinese incursion and secondary role of supporting certain army and navy forces in their wider theatre obligations.

So, how did this crisis arise? Communist infiltration in Southeast Asia began in the 1920s with the Soviet Comintern's establishment of a Far Eastern Bureau at Shanghai. The Malayan Communist Party (MCP) was formed in 1929 to overthrow the Malayan administration. It had some initial success in fomenting labour unrest amongst the Chinese community—especially the Hainanese, who had little loyalty to their adopted country. This success was limited, however, by disagreements between the communists and Kuomintang

elements which reflected the struggle between Mao Tse-tung and Chiang Kai-shek in mainland China.

In 1937, the Kuomintang called a truce to present a united front against an expected attack by the Japanese Army, which already occupied a portion of mainland China. The MCP thus was able to appeal to the patriotism of those not otherwise interested in communism. When Malaya was about to be overrun in 1941, the British decided to leave behind a network of subversive agents to provide intelligence and harass Japanese supply lines. Ironically, in the light of later events, the only trained force available was that controlled by the MCP; two hundred or so trained guerrillas who retired into the jungle and were directed, after 1943, by British instructors of Force 136: former tin miners, rubber planters and policemen who knew the terrain. These guerrillas became the nucleus of the Malayan People's Anti-Japanese Army (MPAJA). After the inevitable trial of strength with the Kuomintang-sponsored Overseas Chinese Anti-Japanese Army, the MPAJA became a highly organized force, numbering by 1945 some four thousand guerrillas and six thousand ancillary forces operating from four or five deep-jungle camps.

After the Japanese surrender, the MCP resumed its anticolonial activities, and although most of the MPAJA took advantage of a government amnesty, several hundred armed and dangerous terrorists remained in the jungle. Swift imposition of British military rule prevented a communist coup d'etat, and the MCP reverted to earlier tactics of fomenting labour unrest. This was not enough for the Comintern, however. At the so-called World Federation of Democratic Youth at Calcutta in 1948, its leaders called for a campaign of violence and murder in Malaya. In response to this campaign, the newly created Federation of Malay States invoked emergency powers on June 16th of that year and called in the military to assist the civil authorities in restoring law and order. It was to be nearly ten years before these emergency regulations could be lifted.

The MCP had three aims in 1948: first, to create terror and economic chaos in rural areas to undermine confidence in the government; second, to "liberate" selected rural areas and establish communist administrations as a precursor to liberating the urban areas; and, third, to liberate the cities. MCP leaders estimated that each stage would take six months; in the event, they never achieved the first stage.

To put the ultimate defeat of the MCP into perspective, it is worth recognizing the disproportionate effort that was required to defeat a guerrilla force in a jungle theatre. The communist force never numbered more than six thousand (1951), 95 percent Chinese. This fell to three thousand in 1955 and to five hundred at the end of the Malayan Emergency. Altogether some eleven thousand terrorists were eliminated. At its zenith, this force was divided into approximately ten regiments, plus an independent regiment, deployed on a state, district, and local basis. These units tied down a military force varying from five and twelve times their size, of which twenty-five hundred were killed and

nineteen hundred wounded. Incident rates never fell below one hundred a month for five years and the total cost of the Malayan Emergency exceeded £700 million, of which the United Kingdom found £520 million, while much of the federal revenue of Malaya was diverted to meeting the balance.

Opposing the terrorists was a composite force comprising, at the height of the campaign in 1951, sixty-seven thousand police, three hundred thousand home guard, and twenty-three infantry battalions of approximately one thousand men each. The maximum army strength was thirty thousand, of whom half were nonoperational, drawn from all over the Commonwealth. In 1955 there were six British, six Gurkha, seven Malay, one Fijian and one East African regiments; one Australian battalion; and a New Zealand squadron of the Special Air Service (SAS). These were supported by one field regiment of artillery, two field engineer regiments, one commando brigade, three squadrons of the SAS and one squadron of The Parachute Regiment.

This diversity of forces was to have interesting operational results, with the Fijians, East Africans, and the Gurkhas achieving 50 percent more kills per contact than British Regiments and twice as many as the Malays—largely owing to their ready acclimatization to jungle terrain and ability to go for five days or more without aerial resupply, which often gave their position away. By 1955, the average soldier had to patrol for one thousand hours or lie in ambush for three hundred hours before making a contact.

The Malayan Campaign was thus largely influenced by the geography of the country, but also by politics and the changing policy of the MCP, the government, and the security forces. Of these, geography and politics played a major role. At a time when communism was threatening to undermine the whole of Southeast Asia (President Dwight D. Eisenhower's famous domino theory) with successes in Indochina and initially in Korea, the sealing of the Thai/Malay border ensured that the MCP received no arms or recruits from outside the country, and its position was therefore always tenuous and ultimately untenable—how different from the problems of attempting to interdict the Ho Chi Minh Trail in Vietman!

In the end, however, only the Malayan people could have defeated the communist threat, which is why the campaign remained a civil one in support of the uncommitted masses. At one stage, over a million Chinese were passive supporters of the MCP, but once their hearts and minds had been won over by such organizations as the Malayan Chinese Association and Good Citizens Committees, which persuaded them that communism was a lost cause and that the security forces could protect them from reprisals, the back of the rebellion was broken.

Even so, draconian measures were necessary to counteract the terrorist threat—again comparisons with Vietnam are inevitable. These measures were based first on separating the communists from the population on which they not only fed, literally, but also relied for recruits and information and, second,

protecting vulnerable areas against extortion. Between 1951 and 1953 nearly half a million Chinese were resettled in over five hundred "New Villages" protected by lights and perimeter fences—at a huge cost of $41 million—and their own Home Guard. Other less obvious, but equally effective measures were food rationing, shop licensing, national registration, two-year detention without trial—sometimes applied to whole villages (ten thousand were detained in 1950), wholesale deportation (twelve thousand altogether), and the establishment of eleven deep-jungle forts to protect the aboriginal population of some sixty thousand from communist intimidation. Eventually, the terrorists were virtually cut off from their food supplies, and this was the greatest single factor in their defeat.

Equally as important was intelligence. Lieutenant General Sir Harold Briggs, the first Director of Operations in 1950, is credited with the plan which bore his name to isolate and starve the terrorists and then systematically eradicate them region by region by the establishment of "White Areas." The success of this plan depended, however, on knowledge of terrorist movements. Early in the campaign, the Police Special Branch knew the name of all terrorists and the general area of their operations. After that, police informers, many of them ex-terrorists who proved surprisingly willing to talk, provided detailed information on their movements. A vital ingredient of the campaign was the dissemination of information on its success to the populace. This was achieved by a massive information and psychological warfare campaign whose results are incalculable. In 1951, ninety-one mobile address units were operating and heard by over one million people a month. From 1952 to 1954, over two hundred terrorists a year surrendered as a direct result of these appeals.

Before turning to the role of the air forces in the campaign, it is worth summarizing the successive phases of the ground campaign as air support was directly related to these. At the start of the Malayan Emergency, the initiative lay entirely with the terrorists, and with violence peaking in 1951 and communist successes elsewhere in Southeast Asia, the prospect looked gloomy. Not until the end of 1950 was the British Government convinced of the gravity of the situation; it then provided the necessary financial support and adequate equipment. With the appointment of General Briggs, things began to improve, and between 1951 and 1954, after a period of stalemate, counter measures by the Security Forces began to take effect. The battle was taken to the enemy—by then retired deep into the jungle—the back of the revolt broken, and the terrorists lost over half their strength. Incidentally, General Sir Gerald Templer, Director of Operations from 1952 to 1954 was also High Commissioner, the only time that civil and military authority was merged during the Malayan Emergency and therefore at its most efficient in dealing with the crisis.

From 1954 onwards, the campaign was largely a mopping up operation. Although the Briggs Plan to clear the country of terrorists from the south northwards had to be revised to clear it from the central states outwards, most

of the country had been declared "white" by Independence Day in April 1957. However, the Malayan Emergency was not declared officially over until July 31, 1960. The five hundred or so remaining terrorists retired to the Betong salient in Southern Thailand to follow Mao's dictum of a forty-year wait for power. Their leader, the charismatic Chin Peng—who had entered the jungle in 1938 to help form the MPAJA—was reported to be still alive in 1968 though rumoured to have died soon after.

The ground forces campaign against the terrorists to which the air forces gave support was based on a well-tried technique. First, a defensive framework was established in which troops were deployed in selected areas to dominate the jungle within five hours march of potential terrorist supply areas, thus forcing the terrorists to split up or move on. Offensive operations were then undertaken by constant patrolling, with full aerial resupply, the length of these operations increasing from three months to over a year, in some cases, as it became apparent that one "beat" through an area was not enough.

Just as the ground forces gradually evolved the correct structure and techniques, so did the air forces. From a command point of view, it was not until 1954 that the AOC at Changi on Singapore Island was moved to the centre of combined operations at the headquarters of the army and police at Kuala Lumpur and not until 1953 that air force personnel were appointed to the Operations and Joint Intelligence Centre to evaluate local target information. One result of the AOC's move to Kuala Lumpur was that the air forces, anxious for greater autonomy in action against the terrorists and a greater say in the tactical application of strategic plans, managed to revise their brief to incorporate an independent offensive role and tactical air transportation. Equipment more suited to counterinsurgency operations was provided, although the need to preserve the Federation from external threat dogged the organization and material of the air forces throughout the campaign.

If the command structure took time to evolve, so did the correct balance and deployment of the air forces that were engaged. Indeed, it could be said that it was never achieved. The exigencies of counteracting a wider threat than the internal security situation had a significant effect on the types of aircraft that were deployed. The Malayan Emergency also coincided with the phasing out of many older types and the introduction of jet aircraft and helicopters in an operational role.

As with the army, air support was a Commonwealth effort, with units from the Royal Air Force, the Royal Australian Air Force (RAAF), the Royal New Zealand Air Force, the Malayan Air Force and various ancillary forces, each with differing priorities and philosophies. If one wanted to devise a system that was least likely to succeed, the equipping and deployment of the air forces in the Malayan Emergency, at least until the latter stages, provides a prime example to follow. Altogether, some fifty separate squadrons took part flying over forty different types of aircraft.

At the start of the campaign, there were three fighter squadrons, four medium-range transport squadrons, one fighter-bomber squadron, and one photo-reconnaissance squadron in Malaya. By 1954 this had risen to two medium bomber, three fighter, three fighter-reconnaissance, three medium-range transport, four short-range transport and one photo-reconnaissance, a total complement of 166 aircraft. The roll call of aircraft types operated during the Malayan Emergency reads like a history of the RAF over the major part of its existence. From before World War II came the Ansons and Tiger Moths, and from the War and just after came the Spitfires, Sunderlands, Yorks, Tempests, Hornets, Mosquitos, Beaufighters, and Brigands. Then came the Lincolns, Shackletons, Velettas, Hastings, Bristol Freighters, Beverleys, Devons, Harvards, Chipmunks, Pembrokes, Austers, Pioneers, and Beavers. Then came the jets, first the Meteors and Sabres; then the Canberras, Vampires, and Venoms; and then the V bombers, the Vulcans, Victors, and Valiants that were detached for two-week visits every three months in 1957 and 1958. Finally, the helicopters arrived: Dragonflies, Sycamores, Whirlwinds, and S.55s.

The deployment of the air forces evolved gradually. At the start of the Malayan Emergency, all aircraft were deployed on Singapore Island with offensive support aircraft at Tengah and transport support at Changi. To get nearer to operational areas as the ground forces moved north, RAF Kuala Lumpur was reopened in 1948 and RAF Butterworth in 1950, but only to take detachments from squadrons based on Singapore. Further decentralization was discouraged by the expense of improving alternative airfields and the difficulties of administration and servicing. Nevertheless, by 1955, there were eleven airfields in the Federation where medium-range transports could land if required. Then there were the network of grass strips throughout the Federation, seventy-two by 1955, that were vital in establishing communication links with operational areas. Finally, hundreds of natural and artificial helicopter landing zones were used throughout the Malayan Emergency.

Air support operations can be divided into offensive, transport support, and reconnaissance. It is worth considering their impact on the campaign separately. It is doubtful whether any offensive air operations have taken place in less satisfactory conditions. The lack of strategic targets over featureless jungle, the difficulty of establishing well-demarcated bomb lines, and the lack of information on results ensured that bombing and strafing were designed mainly to contain the terrorists, drive them into ambushes, or simply to lower their morale. Most operations were part of preplanned operations, and demands for immediate strike action were rare. The technique of area bombardment of map squares achieved little but, *vide* the air offensive in the Second World War, was justified as the only method available of getting at the enemy, especially when they retired to deep jungle.

Improved intelligence and photographic cover gradually gave greater returns for less effort, but tangible results could hardly justify the immense

effort and expense involved. For example, eight Lincolns of No. 1 RAAF Squadron dropped 17,500 tons of bombs between 1950 and 1958, over half the entire amount dropped in the campaign, but were credited with killing only sixteen terrorists and destroying twenty of their camps. Lincoln medium bombers bore the brunt of the offensive, usually armed with fourteen one-thousand-pound bombs each, flying at 180 miles per hour in close "vic" formations of three to five aircraft at six thousand feet with fifty-yard separation. Altogether, 35,000 tons of bombs were dropped in 4,067 sorties, and expenditure on armaments exceeded £1.5 million per year at the height of the Malayan Emergency. The measurable impact was trivial. Nevertheless, British leaders considered that the incalculable effect of weakening enemy morale, driving them into ambushes, and reducing their ability to mount offensives was an important factor in preventing them from dominating certain areas and in shortening the duration of the campaign. It was estimated that air strikes assisted the ground forces in achieving 30 percent of their eliminations, justification enough for the effort.

Hornets were initially used for strafing and precision bombing, but despite their advantages of endurance and high firepower, they were obsolete by 1953. The replacement of Lincolns and Hornets by jets, particularly Canberras, undoubtedly affected the efficiency of the strike force. They were too sophisticated for this campaign. Flying at 240 m.p.h. with a seventy-five-yard separation and armed with only six one-thousand-pound bombs each, they had neither the range, endurance, or ability to fly slowly at low level of their predecessors. Sunderlands were used occasionally, but were restricted by their side doors and small bomb load, disadvantages that, on one operation in Johore, were turned to advantage by disposing of the base beer bottle empties. The piercing whistle they emitted and sharp crack on impact led to a marked increase in local terrorist surrenders!

In general, the offensive air support force proved adequate to meet the demands made on it, even if its results are difficult to assess. More calculable were the results of air transport support, the main role of the air forces in the campaign. With few surface communications, the mobility given to the ground forces by a combination of air supply, troop lifting, parachute operations, casualty evacuation, and intercommunication by light aircraft was essential. Supply drops, in particular, enabled troops to penetrate deep jungle and remain on patrol for extended periods. Twenty-five thousand short tons of supplies were dropped during the campaign, requiring an average of four aircraft and often eight daily. These were provided mainly by three squadrons, and it is a tribute to their technique that less than 1.5 percent of all supplies dropped were not recovered by the ground forces.

A minor, but interesting, role of medium-range transport squadrons was the evolution of the techniques of jungle paratrooping, particularly abseiling from the two-hundred-foot-high canopy. A few successful operations were carried

out, enabling troops to be introduced quickly into operational zones. However transport aircraft were generally better employed, and the small helicopter force that appeared in 1953 was capable of introducing a greater number of less specialized troops into the jungle with greater speed and accuracy.

Indeed the troop-lifting role of the small helicopter force was next in importance to air supply. Initially Dragonflies and Sycamores, then Whirlwinds and the S.55s of No. 848 Naval Air Squadron, the helicopters gave long needed flexibility to ground operations when stalemate threatened and were largely responsible for the elimination of the terrorist threat in the latter stages of the campaign. Demands on this small force were always greater than could be met, but remember that they were operating close to the limits of their endurance and serviceability, and it is not certain that the cost of a larger force would have been justified by results. Altogether, nineteen thousand passengers and 2.5 million pounds of freight were carried by helicopters during the Malayan Emergency, compared with sixteen thousand passengers and 3.5 million pounds of freight by Pioneer squadrons and over five hundred thousand passengers and 80.0 million pounds of freight by medium-range transport aircraft.

Other roles performed by helicopters included casualty evacuation, which enabled ground patrols to continue, rather than being aborted, was a great fillip to troop morale. Over five thousand casualties were evacuated by helicopter during the campaign. Spraying of jungle cultivations by helicopter—shades of Agent Orange in Vietnam—was carried out in a series of operations in 1953 and 1954, but never became a regular practice, as it was difficult to differentiate guerrilla from aboriginal clearings and the tactical reconnaissance force necessary to find them was not always available.

Such reconnaissance was mainly the task of the Austers of No. 656 squadron, which were controlled by the army to whom they were detached. They performed an invaluable role in spotting terrorist concentrations and movements, and their resources were stretched to the limit in providing an average of over fifteen hundred sorties a month throughout the Malayan Emergency. In the early part of the campaign, Austers performed communication tasks using the numerous light aircraft strips throughout the Federation, but from 1954 onwards, this task was taken over by the short takeoff and landing Pioneers (both single and twin-engine versions) of No. 267 Squadron. These especially provided an invaluable service in ferrying troops and freight into remote operational areas, notably those adjacent to deep-jungle forts.

Other support roles carried out by air transport forces included a major contribution to the psychological warfare campaign that so eroded terrorist morale. Medium-range transports dropped over five hundred million strategic and tactical leaflets, including "safe passes," during the campaign. A small number of Dakotas and Austers were converted for aerial broadcasting and completed four thousand hours on this important task. The number of terrorists who surrendered after hearing such broadcasts more than justified this effort.

By 1955 more than 70 percent of those who had heard such broadcasts stated that they were a major factor in their decision to give up. The broadcasts also had their lighter moments, as on the occasion when an Auster scared off a bull elephant that was threatening a ground patrol.

Finally, it is worth mentioning the valuable photo-reconnaissance work of No. l Squadron, which "mapped" most of the country on a scale of 1:63,360. It provided vertical and oblique photographs on a scale of 1:10,000 that proved most useful for tactical purposes until the terrorists retired into deep-jungle and camouflaged camps.

I hope that I have given you some flavour of Operation Firedog and of the wide diversity of tasks that the air forces carried out in support of the ground forces and civil authorities. If you ask simply whether this effort was worthwhile and whether these forces were used most effectively, you must consider the direction and outcome of the campaign as a whole. Despite early blunders and delays in recognizing the seriousness of the crisis, the combined Security Forces gradually got their act together and eventually defeated a small, but determined, communist terrorist threat to the stability of the country. The communist advance in Southeast Asia through China, Indochina, and Korea was halted in Malaya, and their invincibility and hold over local populations thrown into question. If the Malayan campaign had been lost in 1949 when the terrorists held the initiative, or in 1951 when a stalemate looked a likely outcome, the effect on neighbouring countries, particularly Thailand, would have been disastrous and would have considerably strengthened the hand of the communists throughout the region.

The air forces played a major role in winning this campaign. Operating in some of the most inhospitable conditions in the world, the air forces were after an enemy who, from 1952 onward, was mainly concerned with avoiding contact. They were constricted by an evolving command structure, a variety of national interests and equipment, much of it obsolete, and less than optimum deployment. Despite these handicaps, the air forces managed to carry out most of the tasks allotted to them and made an invaluable—and in the case of air transport support, a crucial—contribution to the outcome of the campaign.

Crisis response is about utilizing resources to their best advantage within the constraints—political, economic or technical—prevailing at the time. Hindsight shows how the air forces employed in Operation Firedog could have been equipped and deployed more effectively, and the many lessons taught by the campaign were and are applicable to similar situations. However, the answer to the fundamental question—was this effort worthwhile?—has to lie in the results it achieved.

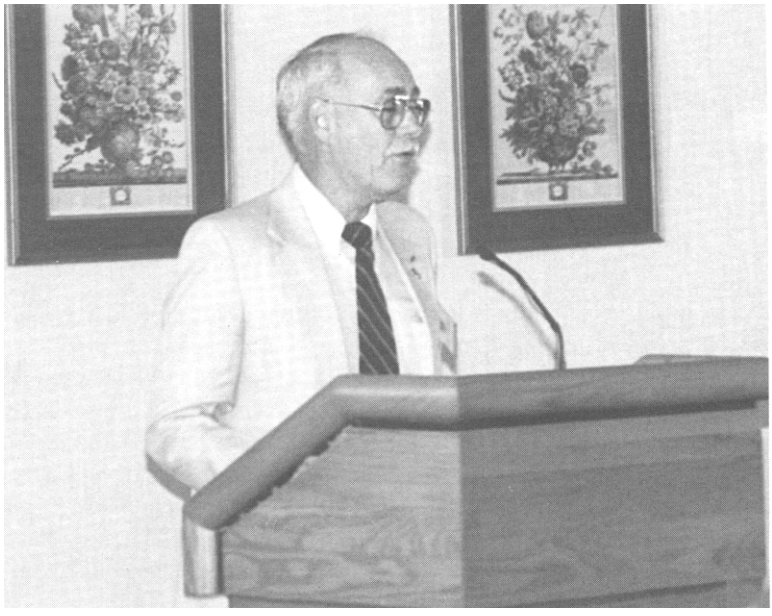
The Anglo-American Origins of Overflying The Soviet Union: The Case of the "Invisible Aircraft"

Donald E. Welzenbach

Radar, a pre-World War II invention, was under development by several nations, but progress in Great Britain enormously increased the device's power. During the early 1940s, this invention was further refined by the United States, and incorporated in improved radars distributed to Great Britain and the Soviet Union under the lend-lease program in 1943. Following the war, after the Soviet Union had isolated itself behind a phalanx of client states, the western nations sought for a means to keep tabs on the communist world. The knowledge that the Soviets were using American-made radar systems gave U.S. aeronautical engineers the belief that they could develop high-flying planes which would be able to avoid detection and subsequent interdiction.

In the mid-1980s, while researching the origins of the U.S. overhead reconnaissance program, I discovered two events in 1940 which contributed significantly to this effort: the British development of practical radar systems and the United States program to develop and mass produce these systems that resulted in the evolution of an American scientific-political elite whose influence became very significant by the early 1950s. This group of scientists traced its political roots to the summer of 1940 when Dr. Vannevar Bush, then president of the Carnegie Institution of Washington, D.C., and former vice president and dean of engineering at the Massachusetts Institute of Technology (MIT), proposed to President Franklin D. Roosevelt that he establish the National Defense Research Committee (NDRC). President Roosevelt accepted this recommendation and on June 16, 1940, the day after Paris fell to the German army, he asked Dr. Bush to head the new organization.[1]

Two months later, on August 22nd, a British scientific delegation, headed by Sir Henry Tizard, science adviser to the Air Ministry, arrived in Washington. Tizard, with the support of an influential body of British scientists as well as the backing of Prime Minister Winston S. Churchill, sought American help in perfecting several important British military inventions. During their six-week stay in the United States, members of the Tizard mission shared with their U.S. civilian and military counterparts Britain's most secret war machines.[2] Foremost among them was the cavity magnetron, a major improvement to the invention called radio detection and ranging, or "radar."[3] Tizard's group also brought information about antiship mine and submarine detection devices.[4]



Donald Welzenbach received his B.A. from St. Ambrose College in Iowa in 1956 and his M.A. from Georgetown University, Washington, D.C. in 1958. Between 1949 and 1960 he was an editor with several newspapers and publications in Davenport, Iowa, Washington, D.C., and Arlington, Virginia, including the (Davenport) *Times-Democrat* and the *Northern Virginia Sun*. From 1954 through 1955 he served as a Special Agent of the U.S. Army Counterintelligence Corps in Japan. Mr. Welzenbach joined the Central Intelligence Agency in 1960 where he worked as an editor, scientific editor, and budget officer. He became a historian in the Office of the Historian, Central Intelligence Agency, in 1982, retiring in 1987.

Radar had been developed into an airwarning system during the 1930s and provided the British with a vital long-distance edge in 1940 during the Battle of Britain. The early British radars used relatively low frequencies and were quite large and unwieldy devices—radar antennas were mounted on masts the size of telephone poles. Britain, at this time, was under constant bombardment, and the facilities for refining these inventions and bringing them into mass production were greatly overtaxed. The Tizard mission sought American help in accelerating this process.

Following the Tizard mission's departure, Dr. Bush appointed Dr. Karl T. Compton, president of MIT, to head an NDRC microwave committee to find a venue for this project. The first choice was the Carnegie Institution, but its building was too small for the project. A second possibility was Bolling Army Air Field, southeast of Washington, D.C., which had sufficient office space as well as an active runway. Bolling, however, lacked a view of the sea, a necessity for conducting long-range tests. Finally, Alfred Loomis, a member of both the MIT Corporation and the microwave committee, suggested that the MIT campus and a National Guard hangar at nearby East Boston Airport would provide adequate laboratory space and meet all other requirements. Thus, on October 16, 1940, Dr. Compton agreed to permit the establishment of a microwave laboratory at MIT.[5]

Seven months later, in May 1941, President Roosevelt converted the NDRC into the Office of Scientific Research and Development (OSRD), again headed by Vannevar Bush, with Harvard President James B. Conant as his deputy. Its mission was to organize a brain trust to develop new weapons and other military machines for the pursuit of the coming war.[6]

Given the close ties that Bush and Conant had with the scientists, mathematicians, and physicists at MIT and Harvard, it is not surprising that the Boston area became the hub of a vigorous scientific community. The prime example was OSRD's largest endeavor—even bigger than the Manhattan Project which developed the atomic bomb—the four thousand-man Radiation Laboratory at MIT's Cambridge campus. Known more familiarly as "RadLab," this facility was established with federal funding under the aegis and supervision of the MIT Corporation. By early 1943, the fully staffed RadLab was bigger than MIT. Indeed, an estimated 20 percent of the nation's top-ranking scientists were employed by RadLab. Included in their number were several men who would later play major roles in the overhead reconnaissance story: Lee A. DuBridge, RadLab's scientific director, later science adviser to President Richard M. Nixon; Edwin H. Land, inventor of the polarizing filter and polaroid camera, who through his firm, the Polaroid Corporation, was involved in developing gunsights and heat-seeking technology for the War Department; and James R. Killian, Jr., who later was President Dwight D. Eisenhower's presidential science adviser and the first man to occupy that position.[7]

Killian, a nonscientist who had majored in English and served as editor of MIT's *Technology Review*, became executive assistant to MIT President Compton after Vannevar Bush left MIT for the Carnegie Institution in 1939. When Compton agreed to have the microwave research project located on the MIT campus, his first concern was that his institute might suffer some loss of academic freedom through its association with the federally financed RadLab effort. He charged Jim Killian with keeping track of every penny of federal funds and keeping the federal government at arm's length from MIT's academic endeavors. That Killian handled this task with great facility is attested to by his subsequent high-level service under Presidents Eisenhower, John F. Kennedy, and Lyndon B. Johnson, as well as his selection to succeed Compton as president of MIT.[8] It must be pointed out that this was the first time the federal government undertook to finance research at a private educational institution. Compton and Killian plowed the ground which, a half-century later, is fertilized by hundreds of millions of federal dollars financing research projects at hundreds of colleges and universities.

RadLab's work on the British radar concept was done under the direction of the U.S. Army Signal Corps; consequently, all radar sets produced during World War II carried the initials SCR (for Signal Corps Radio) before each model number. The RadLab effort concentrated on four types of radars. First, the microwave early warning S-band 10-centimeter radar was an airborne system. RadLab scientists concentrated on reducing the size of this device, so that by early 1943 it was small enough to be carried aboard single-engine, night-fighter aircraft.[9] Second, the SCR–270 2.5-meter, cosecant-squared radar was a ground-based system that could detect aircraft flying as high as forty thousand feet at a distance of two hundred miles. While this unit could provide an early warning capability, it was seriously limited when it came to pinpointing and tracking specific aircraft.[10] Third, the SCR–584 antiaircraft, automatic-tracking radar used a narrow pencil beam to track objects up to eighty-five degrees above the horizon and at a slant range of forty miles. Its major drawback was the short life of its cavity magnetron. This critical component's mean-time-between-failure rate was between ten and twelve hours. Consequently, a standard operational procedure was developed to lengthen the device's useful life: the SCR–584 was not turned on until the SCR–270 early-warning unit had detected an intruder.[11] Fourth, the SCR–268 fire-control radar was similar to the SCR–584 unit in that it, too, had a short-lived traveling-wave-tube and was turned on only when the intruding aircraft was within range of the antiaircraft artillery it controlled. A similar gun-laying radar was developed for use aboard ships.[12]

By June 1943, RadLab had produced nearly six thousand radar sets,[13] fifteen hundred each of the four devices described above. According to Dr. Ivan Getting, a RadLab scientist at the time,[14] he attended a meeting in Washington, in mid-1943 which determined how these radar sets would be distributed. It was

clear that the British should have as many radar sets of each type as they required because the sets were based on their technology, but there was another important player to consider. By this time, a large-scale lend-lease effort was underway to supply the Soviet Union with war matériel, a large portion of which consisted of American-made fighter aircraft. These were being lost in great numbers, primarily because the Soviets based their aircraft far behind the lines and pilots had to fly great distances to find and engage Luftwaffe intruders. The Soviet pilots frequently exceeded their aircraft's operational radius, ran out of fuel while returning to their bases, and made crash landings. During the discussion over radar distribution, the subject of giving some to the Soviets arose. The reasoning behind this suggestion was that it would be cheaper to give the Soviets radar sets which could be used to pinpoint intruding German aircraft, thus reducing the number of aircraft lost and saving on the number of planes the United States was sending to the Soviet Union. As a result of this meeting, five hundred units each of the SCR–270, SCR–584, SCR–268, and the airborne radars were sent to Great Britain and a like amount to the Soviet Union.[15] This development became a critical element in the decision a decade later to develop high-flying reconnaissance aircraft.

Another aspect of British inventiveness which played a significant role in overflight of the Soviet Union lay in the development of high-flying aircraft, beginning with the DeHavilland Aircraft Company's jet-powered Vampire fighter. To demonstrate the flexibility of jet-engined aircraft, DeHavilland fitted the aircraft with four-foot extensions to its wings and installed one of its large Ghost jet engines. On March 23, 1949, test pilot John Cunningham flew the craft to a record altitude of 59,446 feet. This test demonstrated the inherent ability of jet-powered airframes to operate at altitudes unattainable by propeller-driven aircraft.[16] In the meantime, the English Electric Company's designers had begun work on a twin-engined, high-altitude jet bomber ultimately called the Canberra. The Mark-I Canberra made its maiden flight on May 13, 1949, achieving a top speed of 469 knots and a service ceiling of forty-eight thousand feet.[17] Its performance, size, and payload capacity made the Canberra a practical candidate for high-altitude reconnaissance.

During the summer of 1946, the United States undertook important tests of its new atomic weapons at Bikini Atoll in the South Pacific. These tests, code-named Project Crossroads, involved photographing the explosion from ships and airborne platforms based on nearby Kwajalein Island. Task Unit 1.52, composed of men who had played major roles in photo reconnaissance during World War II, was established to photograph the event.[18]

Deputy commander of Task Unit 1.52 was Lt. Col. Richard S. Leghorn who, as chief of Eighth Air Force's 67th Reconnaissance Group in Europe during World War II, had overseen all pre-D-Day and post-D-Day reconnaissance for the Normandy invasion. At the time Task Unit 1.52 was organized, Leghorn was on terminal leave in Rochester, New York, prior to separation.

Realizing the Bikini tests were a once-in-a-lifetime opportunity, however, he agreed to be reactivated and set off for Wright Field near Dayton, Ohio, to begin assembling the photographic unit.[19]

While in Dayton, Leghorn obtained a copy of *The United States Strategic Bombing Survey*, published on September 30, 1945. This slim volume was the result of a study ordered by Secretary of War Henry L. Stimson on November 3, 1944. Following in the footsteps of the allied armies as they drove the Nazi forces back into Germany, the 1,050-man survey group had assessed the effectiveness of allied bombing raids during the war.[20]

During his long train ride from Ohio to a New Mexico staging area, Leghorn read the 120-page *Survey* and learned he had overlooked much during his pre- and post-D-Day efforts. What struck him most forcefully was the amount of information contained in the hundreds of thousands of photographs that had passed through his unit, but gone unnoted. His photo-interpreters had been interested primarily in bomb craters and in the disposition of enemy troops, tanks, and artillery. Most had failed to notice the undamaged infrastructures of cities and towns and the continued operation of electric power plants. A multitude of significant indicators of the status of normal existence behind enemy lines had gone unrecognized. In fact, as the *Survey* pointed out, Germany's electric power production and distribution system had never been systematically targeted during the war. Had it been, the *Survey*, concluded, the war might have ended much sooner. The same could be said for German steel plants. They were seldom targeted and continued operating at almost full capacity throughout the war.[21]

The authors of the *Survey* observed that "in the field of strategic intelligence, there was an important need for further and more accurate information, especially before and during the early phases of the war." They added that "there was no established machinery for coordination between military and other governmental and private organizations.... The [European] experience suggests the wisdom of establishing such arrangements on a permanent basis."[22]

As one who had been at the forefront of these photographic operations, Leghorn was shocked by such oversights. He was also stimulated by the *Survey*'s recommendations, which are worth quoting at some length:

> In maintaining our strength and our security, the signposts of the war in Europe indicate the directions in which greater assurances may be found. Among these are intelligent long-range planning by the armed forces in close and active cooperation with other government agencies, and with the continuous active participation of independent civilian experts in time of peace as well as in war; continuous and active scientific research and technical development on a national scale in time of peace as well as in war; a more adequate and integrated

> system for the collection and evaluation of intelligence information; that form of organization of the armed forces which clarifies their functional responsibilities and favors a higher degree of coordination and integration in their development, their planning, their intelligence. . . . The air has become a highway which has brought within easy access every point on the earth's surface—a highway to be traveled in peace, and in war, over distances without limit at ever-increasing speed. . . . The combination of the atomic bomb with remote-control projectiles of ocean-spanning range stands as a possibility which is awesome and frightful to contemplate.[23]

Preparations for the Bikini tests were confined to the twelve hours of daylight on tropical Kwajalein, which left twelve hours of darkness for sleep and talk. With little to do in this pretelevision era but work, listen to the shortwave radio, and read week-old newspapers and magazines, the members of Task Unit 1.52 spent a great deal of time talking, and much of the talk had to do with the postwar world. Stimulated by the *Strategic Bombing Survey*, Leghorn argued, during these long discussions, that the only way to protect the nation from sneak attacks such as Pearl Harbor was to keep a wary eye on any potential adversaries. His experience during the war, particularly during the preparations for D-Day, had convinced him that it would be possible to keep track of threatening developments by photographing potential enemies from high altitudes.[24]

During the nightly gab-fests at the makeshift officers' club, Leghorn spoke at length about the challenge of collecting strategic intelligence with anyone who would listen, particularly with Dr. Duncan Macdonald, a lens designer from Boston University. His main points of discussion turned on the need for bigger and better lenses and higher flying aircraft. Leghorn's persuasive arguments for what he referred to as "pre-D-Day photography" made a lasting impression on Dr. Macdonald, who, following the Bikini test, returned home to head up Boston University's Optical Research Laboratory (BUORL).[25]

Within a matter of months, Dr. Macdonald asked Leghorn to be the main speaker at a ceremony held at Boston University on Friday, December 13, 1946, to mark the founding of BUORL. The audience for Leghorn's speech included executives from the nation's major photographic firms: Eastman Kodak, Fairchild Camera, Bausch & Lomb, Hycon, Perkin-Elmer, Chicago Aerial, and Bill Jack Optical. Also present were several important military officers: Lt. Gen. Curtis E. LeMay, Deputy Chief of Staff for Research and Development, Headquarters Army Air Forces (HQ AAF); Maj. Gen. Alden R. Crawford, Chief, Research and Engineering Division, Office of the Assistant Chief of the Air Staff for Matériel, HQ AAF; and Maj. Gen. Laurence C. Craigie, Chief, Engineering Division, Air Technical Service Command. The opening remarks were made by one of the great pioneers in the development of aerial

photography, Col. George Goddard, then Chief of the Photographic Laboratory at Wright Field.[26]

By this time, Leghorn had retired from the AAF and returned to work for Eastman Kodak. His speech, forty-three double-spaced typed pages, took him more than an hour to deliver.[27] But what he had to say would, over the next eight years, prove to be immensely important in fighting the Cold War. In his lecture, Leghorn discussed pre-D-Day reconnaissance, that is, reconnaissance of a potential enemy prior to the outbreak of actual hostilities, as opposed to combat reconnaissance, which is obtained during the waging of war. More important to the subject at hand, Dick Leghorn proposed research and development of "a long-range means of aerial reconnaissance which can be detected by an enemy at best infrequently and with great difficulty."[28] To take advantage of such a vehicle, he also urged development of high-resolution cameras.

Leghorn's remarks in 1946 had little immediate impact. World War II had been over just fifteen months; it was not the right time for warlike, if farseeing, recommendations. The "hot war" against Nazi Germany and Imperial Japan was over, the "cold war" had yet to begin, and the United States was rushing headlong toward disarmament. From the time of the German surrender on May 9, 1945, through mid-1946, nine million men were mustered out of the armed services, whose total strength at war's end numbered twelve million. Indeed, the pace of demobilization was so dizzying that President Harry S. Truman's new policy of toughness toward the Soviet Union experienced serious internal challenges during the summer and fall of 1946. Government and industry were working feverishly to return the nation to its prewar status. There was a sense of euphoria within America that year. The major concern had to do with inflation and finding jobs for the millions of demobilized servicemen. Very few citizens or politicians saw any Soviet threat in East Europe. We were the only nation with atomic weapons. We were the colossus which had, for the second time in the century, saved Europe from itself. It is true that former British Prime Minister Churchill, whose Tory party had been defeated by Clement Attlee's Labour Party in the 1945 elections, described the Soviet presence in Eastern Europe as an "iron curtain" during a speech at Fulton, Missouri, on March 5, 1946, and appealed for an Anglo-American pact to guarantee the self-determination of the nations of Europe. But the time was not yet right.[29]

Leghorn continued his warnings and his recommendations. Two years later, on December 3, 1948, he again took up the issue of pre-D-Day reconnaissance in a paper he delivered at a Topeka, Kansas, Aerial Reconnaissance Symposium conducted by the Rand Corporation.[30] Leghorn had experienced first hand the effects of the Iron Curtain when, as an employee of Eastman Kodak, he attempted to retrieve some of Kodak's assets from Prague, Czechoslovakia, in August 1948 after the communist putsch.[31] It cannot be overemphasized that Leghorn continued to be the critical link in promoting the concept of overhead reconnaissance during this period.

The fact that few people within the U.S. government were really hearing what Leghorn was saying was, to some extent, indicative of the general disorganization which existed within the bureaucracy. In late 1946, the Air Force was still part of the U.S. Army; neither the Central Intelligence Agency (CIA) nor the National Security Agency existed. The Commission for Reorganization of the Executive Branch headed by former President Herbert Hoover had yet to begin work, and its report, recommending the establishment of what would become the CIA, would not be released until mid-1947.

The world appeared to be a more threatening place by the end of the decade. In 1948, the Soviet Union blockaded Berlin and attempted to starve the city into submission. In 1949, Mao Tse-tung drove the Nationalist forces of Chiang Kai-shek from mainland China and the Soviets exploded an atomic bomb. And in 1950, the communist regime in North Korea attacked South Korea, provoking an immediate American response. The Korean conflict brought many former servicemen back to the colors, and in late 1950, Leghorn was persuaded to rejoin his former colleagues, now members of the new U.S. Air Force, and to head a reconnaissance division at Wright-Patterson AFB, which had been established on January 13, 1948, by merging Wright Field with Patterson Field. He reported for duty in April 1951, and his first action was to survey the free world's aircraft manufacturers to discover which made the highest flying plane. At that time, the Soviet MiG–17 interceptor struggled to reach an altitude of forty-five thousand feet. Leghorn felt strongly that any aircraft which could exceed sixty thousand feet could safely avoid interdiction by Soviet fighters, as high-altitude surface-to-air missiles were not yet a threat.[32]

Wright-Patterson's Aircraft Laboratory told Leghorn about the English Electric Company's development of the twin-engined Canberra which had the highest operational ceiling of any aircraft in the world though it had yet to exceed fifty thousand feet. Because of the Korean War, the Air Force had already expressed an interest in the Canberra as a replacement for its aging, piston-engined Douglas B–26 Invaders. The replacement would have to operate in several roles, including light bomber, night intruder, and reconnaissance aircraft, and nothing on the American horizon offered the immediate potential of the British jet. Accordingly, in late March 1951, the Glenn L. Martin Aircraft Company of Baltimore, Maryland, entered into an agreement with English Electric to produce the aircraft under license. The American version would be known as the B–57 Canberra.[33]

At Leghorn's insistence, English Electric sent engineers and designers to Dayton in late summer 1951 to investigate changes in the Canberra's design which would enable it to fly even higher. The English Electric specialists and Leghorn investigated reconfiguring the aircraft with very long, high-lift wings, new Rolls-Royce Avon-109 engines, a solitary pilot rather than a crew of three, and an airframe that was stressed to less than the Air Force's airworthiness requirements. Leghorn's paper exercise suggested that a Canberra so equipped

might reach sixty-three thousand feet before penetrating hostile territory and, as its fuel supply diminished, might eventually climb to sixty-seven thousand feet. Leghorn's unit subsequently produced a study paper recommending a request for proposal for an aircraft that could penetrate hostile territory to a radius of seven hundred nautical miles. Deployed around the periphery of the Soviet Union and People's Republic of China, such an aircraft could photograph up to 85 percent of the targets in the two countries.[34]

Leghorn's paper exercise actually resulted in two separate efforts to modify the Canberra. One led to the USAF RB–57D "big-wing" Canberra which took to the air in early 1955. Under this effort, modifications to the basic B–57B airframe included a 105-foot, high-lift wing in place of the stock 64-foot wing, a lengthened fuselage, more powerful Pratt & Whitney J57 engines, a crew reduction from three to one, and other modifications that allowed the RB–57D to operate at altitudes over seventy thousand feet. Martin ultimately delivered twenty of these aircraft to the USAF between May 1956 and March 1957.[35]

The other effort was a parallel attempt by the Royal Air Force (RAF) to develop a one-man, long-wing Canberra with extended range. This project resulted in the Canberra Mark-IIIPR7, thirty-six of which were delivered to the RAF's No. 541 Squadron. Related to this program, on May 4, 1953, a specially modified Mark-II Canberra, fitted with extra-powerful Bristol Olympus jet engines, attained a record altitude of 63,668 feet.[36] Subsequently, in mid-1953, under the code name Project Robin, a modified Mark-II Canberra, possibly the same one that had just set the record,

> flew at its maximum altitude from a base in West Germany, photographed the missile launch site at Kapustin Yar in the Soviet Union, and landed at a base in Iran. The Soviets—possibly forewarned by Kim Philby, the life-long Soviet spy then in charge of British intelligence's anti-Soviet operations—very nearly succeeded in shooting down the Canberra which took several hits.[37]

The critical number in the altitude part of the overflight equation was not entirely dictated by the need to avoid enemy interdiction, it was primarily to avoid enemy radar detection. And here we get back to the 1943 decision to provide the Soviet Union with radar sets made at RadLab. There was a tacit assumption made on the part of those working on developing high-flying aircraft that little had been done in the Soviet Union on radar theory; that, indeed, the Soviets were still using the SCR–270 radar sets made at RadLab and employing the same radar strategy. They made this assumption because, in the United States, few improvements had been made in military radar equipment between 1945 and 1950.[38]

The RadLab effort was dismantled after the end of the war and was replaced in 1950 with a much smaller endeavor known as Project Lincoln which

primarily focused on air defense measures.[39] The RadLab scientists and engineers had returned either to academia or to private industry. The private industrial firms, such as General Electric and Westinghouse that had manufactured parts for military radars, had turned their attention to other markets. It took the Soviet Union's 1949 atomic bomb test and the outbreak of the Korean War in 1950 to galvanize the Free World before anyone paid any serious attention to advancing radar theory. Then, as contracts for military hardware began flowing into the private sector, the expertise of those who had participated in the World War II effort was sought out. The institutional memory, when it came to radars, was that the SCR–270 early warning radar was unable to detect an aircraft flying higher than forty thousand feet at a range of two hundred miles.

To its chagrin, the USAF discovered in 1952 that the Soviets had continued radar development and had provided them to the North Koreans during the Korean War. One of these, a ground-controlled intercept radar codenamed Token was used by the North Koreans to direct interceptor aircraft to intruding United Nations aircraft. The Token radars did not suffer from the overheating problems inherent in the lend-lease SR–584 devices and proved highly effective. However, the intelligence reports on the Token radars were not widely disseminated, and their significance was not fully comprehended. The relative handful of people inside and outside the government who were involved in developing high-flying aircraft were seemingly unaware of this new threat. The majority of those directly involved in developing a high-flying aircraft for overflying the Soviet Union were still of the opinion that the Soviets were using RadLab radars.[40]

As can be seen from the evolution of the strategy of pre-D-Day or overhead reconnaissance, as related above, there was substantial evidence that aircraft could be developed that could fly high enough and cameras and lenses manufactured that could see far enough to make high-altitude reconnaissance possible. These were technological challenges, but solvable problems. The major difficulty in implementing Leghorn's pre-D-Day concept was the political challenge. Here the question became one of avoiding war or, at the very least, not antagonizing a powerful, hostile nation. President Truman was not keen on overflying Soviet territory and, by late 1950, he had his hands full with the hostilities in Korea. After President Eisenhower took office in January 1953, he, too, proved reluctant to challenge the sovereignty of Soviet airspace.

Although there was substantial support for embarking on a program of overhead reconnaissance of the Soviet Union among the U.S. military hierarchy and the scientific advisers to President Eisenhower, there remained the question: How can the President be convinced that such a program will not start a war or jeopardize U.S./Soviet relations?

Indeed, it was here that the argument about "radar invisibility" came into play. On November 24, 1954, President Eisenhower was persuaded by two very

influential advisers, James Killian and Edwin Land, that an aircraft could overfly the Soviet Union without being detected.[41] There was no pretence that the aircraft would actually be invisible, rather that it would simply evade detection. The theory at play here was that if an intruding aircraft could attain an altitude significantly greater than forty thousand feet before it penetrated the two hundred-mile limit of the SCR–270 early-warning radar, then the SCR–584 antiaircraft, automatic-tracking radars would not be alerted to the intruder's presence and would not be activated. The intruding aircraft, if picked up by air traffic control radars within the Soviet Union, would be treated just as any other plane in that radar's airspace and not be tagged as a "hostile."

And why would President Eisenhower consider such an argument from two men who were neither members of the USAF nor even of the U.S. government? At this time, Killian was chairing and Land was a member of the Technological Capabilities Panel which Eisenhower had specifically empowered to advise him on the Soviet threat. He had known and esteemed Jim Killian since late 1948, when Killian, as president of MIT, and Eisenhower, as president of Columbia University, attended Ivy League functions together. His confidence in Jim Killian was such that if Killian and Land were convinced by the radar invisibility argument then he, as President, should accept their advice. Eisenhower had reservations, however, which later proved to be well-founded. The war-wise President felt strongly that if the Soviets could detect an intruder and predict its flight path—that is, if the intruding aircraft flew on long, straight, easily computed courses—then the Soviets would have time to plan for its interdiction.[42] Ultimately, however, the aircraft selected for these missions was not the RB–57D; rather it was the U–2 the CIA had developed in greatest secrecy.

As it turned out, the early U–2 missions successfully avoided detection by the SCR–270 early warning radars, only to be discovered by new radars of Soviet manufacture, such as the Token and height-finding radars. Although U–2 flights were detected, the tracking that followed was intermittent at best, and extremely inaccurate. The July 5, 1956, mission, in which a U–2 flew over both Leningrad and Moscow provides a good example of Soviet technical limitations at the time. The official protest, sent on July 9, described the aircraft that flew over Leningrad as "twin-engined" and failed to mention that it had also passed over Moscow. Further, the note made no allusion to the aircraft that had overflown Leningrad on the previous day. In response, the United States officially denied that a twin-engined aircraft had overflown Leningrad and left it at that.[43] But the very fact that the flights were detected at all upset President Eisenhower. And, while he realized that the U–2s were safe from interdiction, the President set in motion a new project to build a truly "invisible" aircraft, but that is another story.

Not only had the Soviet Union been busy upgrading its radar network, but it had also begun work on a surface-to-air missile, the SA–2 Guideline, which

would bring the U–2's Soviet overflight program to an abrupt end, but not until May 1, 1960. On that day, Francis Gary Powers was piloting a U–2 over the Siberian city of Sverdlovsk when an SA–2 exploded behind his aircraft causing it to crash and him to be captured.[44]

Nevertheless, the U–2 and its successors, such as the U–2R, TR–1, and TR–2, continued flying and even today they are plying their trade at high altitudes collecting strategic and military intelligence as well as geological and environmental data about planet earth.

Addendum*

For an understanding of the reasons for this suggestion, it will be profitable to consider the probable effects of the birth of atomic warfare on military aerial reconnaissance.

There will be two principal effects. In the first place, strategic operations will dominate the military scene and will assume the position of prime importance. This situation means greater centralization of facilities and will permit the use of the most highly technical type of equipment. Long-range reconnaissance of any place on earth from established bases will be a necessity.

The second effect will be a greater demand for aerial reconnaissance prior to the outbreak of hostilities. At the present time, we are seeking national security through the building of an adequate international political structure, and it is generally agreed by military men that political security is probably the only effective means of protecting the nation against atomic weapons. However, should an adequate political structure not be established, or if a suitable one is formed which should break down at any time in the future, then military intelligence becomes the most important guardian of our national security. The nature of atomic warfare is such that once attacks are launched against us, it will be extremely difficult, if not impossible, to recover from them and counterattack successfully. Therefore, it obviously becomes essential that we have prior knowledge of the possibility of an attack, for defensive action against it must be taken before it is launched. Military intelligence is the agency for providing this information, and our national security rests upon its effectiveness, next to a sound international political structure.

Aerial reconnaissance, as one of the principal information collecting agencies of military intelligence, can play an exceedingly important role in this period prior to the outbreak of hostilities. This situation is particularly true in the case of potential enemies of a totalitarian, police-state nature where the acquisition of information by the older methods of military intelligence is more successfully blocked. However, if we were to perform a military reconnaissance flight over a nation with whom relations are not too friendly, under present thinking this flight would be considered an act of military aggression. It is also

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* Pertinent paragraphs from Richard Leghorn's December 13, 1946, lecture at Boston University's Optical Research Laboratory, "Objectives for Research and Development on Military Aerial Reconnaissance," pp. 42-43.

probable that the attitude of the American public would reject this means of acquiring information. It is unfortunate that whereas peacetime spying is considered a normal function between nation-states, military aerial reconnaissance—which is simply another method of spying—is given more weight as an act of military aggression. Unless thinking on this subject is changed, reconnaissance flights will not be able to be performed in peace without permission of the nation-state over which the flight is to be made. For these reasons, it is extraordinarily important that means of long-range aerial reconnaissance be devised which cannot be detected. Until this is done, aerial reconnaissance will not take its rightful place among the agents of military information protecting our national security prior to the launching of an atomic attack against us.

The accomplishment of this objective is not as technically difficult as it might at first appear. Extremely long-range aircraft, capable of flying at very high altitudes, are currently on the drawing boards, and in some cases prototypes have been constructed. Effective means of camouflaging them at high altitudes against visual observations are well known. It is not inconceivable to think that means of preventing telltale reflections of other electro-magnetic wave lengths, particularly of radar frequency, can be developed. With such a tool at hand, information can be secured of a potential enemy's mining of radioactive materials and his plants—necessarily large—for the production of fissionable products, as well as a variety of other essential data. . . .

Any brief discussion of aerial reconnaissance, such as included in this paper, cannot begin to indicate the many and complex military purposes which can very possibly be met by research and development in this field. There is no part of this subject in which science and engineering cannot produce helpful results. However, the most beneficial results will be obtained *only* if specific research or development programs are constantly reviewed in the light of their relation and importance to the over-all and ultimate objective of the methods and techniques of military aerial reconnaissance—which is to make possible, by ways requiring the least expenditure of military effort, the continuous gathering of important military information by aerial means which the enemy cannot effectively prevent, and to make possible its prompt delivery in useful form to all who require it.

Notes

1. James R. Killian, Jr., *Sputnik, Scientists, and Eisenhower: A Memoir of the First Special Assistant to the President for Science and Technology* (Cambridge, Mass.: MIT Press, 1977), p. 58.
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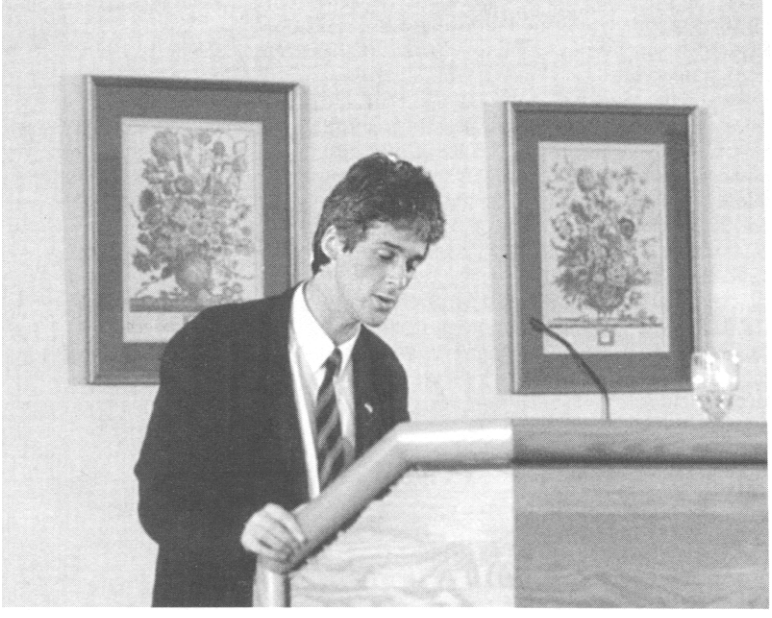

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Anglo-American Air Force Collaboration And the Cuban Missile Crisis: A British Perspective

Stephen Twigge

As Sir Frederick Sowrey has said, I am from the University of Wales, but you will be relieved that I will not be delivering this paper in Welsh. I am also slightly apprehensive, looking around the room at some of the distinguished guests and knowing some of the roles they played during the Cuban Missile Crisis. I should come clean here at this point and say that I was six months old at the time.

> The introduction of QRA on the 1st February 1962 has led to an integration with SAC rather than mere coordination.[1]

The full implications behind this statement by Sir Kenneth Cross, Bomber Command's Commander in Chief, were soon to be realized. In less than nine months, the United States and the Soviet Union were to be involved in what has been described as the most dangerous conflict between the two superpowers in the nuclear age,[2] precipitated when the Soviet Union attempted to install medium- and intermediate-range ballistic missiles (M/IRBMs) on the island of Cuba, a situation the U.S. government was determined to reverse. For thirteen days between October 15 and 28, 1962, the world held its breath as the two superpowers began to contemplate the real possibility of nuclear war.

The aim of this paper is twofold. First, to place the relationship between Bomber Command and SAC in its historical context and describe the main features leading up to the integration of the two forces in February 1962. This historical context will then be used to examine the wider role played by the Royal Air Force during the Cuban Missile Crisis; an exigency that demonstrates clearly the interrelationship which existed between the two air forces.

There has always been a close relationship between the air forces of Britain and the United States, derived in part from their common attempts to develop an independent role within their respective service structures and reinforced in the combined bomber offensive of the Second World War. This close relationship continued after the war and has been described as "a private, informal and practical liaison . . . continued both within and without the laws and policies of both countries."[3]

In one significant area, however, cooperation was specifically excluded from the agenda: namely, the atomic weapon and its role within the U.S. Strategic Air Plan. The 1946 U.S. Atomic Energy Act resulted in the immediate cessation of sharing nuclear information with Britain and was instrumental in Britain's later decision to develop an independent nuclear weapons capability. Throughout the late 1940s and early 1950s, the British government continually sought to reestablish the spirit of wartime collaboration and gain a greater degree of participation within the American nuclear programme. In adopting this policy, Britain hoped to increase her influence on the future direction of American nuclear strategy.

This approach eventually brought success. In 1952, Prime Minister Winston Churchill was given a personal briefing on the U.S. Strategic Air Plan, allowing Sir William Dickson, Chief of the British Air Staff, to initiate discussions with the U.S. Air Staff on the planning requirements for the immediate atomic counterbombardment of the Soviet Union's long-range bomber bases in the event of general war.[4]

In 1954, the Anglo-American nuclear relationship was further strengthened when the U.S. Congress approved amendments to the Atomic Energy Act which allowed for the exchange of data on the external characteristics of nuclear weapons in terms of their size, weight, shape, yield, and effects. This information was utilized by the RAF to initiate Project E, a programme of refitting their DeHavilland Canberra bombers to enable them to carry American nuclear weapons.[5]

In December 1956, this process of cooperation was increased considerably when Sir Dermot Boyle, Chief of the British Air Staff, received proposals from General Nathan Twining, Chief of Staff of the USAF, to furnish the RAF with American atomic bombs in the event of general war and to coordinate the nuclear strike plans of the USAF and RAF.[6] These proposals were later ratified in an exchange of letters between the British Minister of Defence, Duncan Sandys, and American Secretary of Defense, Charles E. Wilson, during a meeting held in January 1957.

Subsequently, a series of meetings were undertaken between SAC and Bomber Command to establish a combined strike plan. In the course of these discussions, it was discovered that all Bomber Command's targets were also covered by SAC. Eventually, consultation produced a fully integrated plan that took advantage of Bomber Command's ability to be on target in the first wave several hours in advance of the main SAC force operating from bases in the United States. The first fully coordinated strike plan between the two countries came into operation on October 1, 1958. In this plan, Bomber Command was given responsibility for the destruction of 106 targets, which included 69 cities classified as centres of government or that were of other military significance, 17 airfields for long-range aircraft which constituted part of the Soviet nuclear threat, and 20 additional elements of the Soviet air defence system.[7]

The Sandys-Wilson discussions were also significant for other areas of Anglo-American air force cooperation. Specifically, they yielded a proposal to supply Britain with four squadrons of U.S. Thor intermediate-range ballistic missiles. After a series of protracted negotiations, the first Thor missiles arrived in Britain in September 1958 and were declared operational by the Secretary of State for Air, George Ward, on December 9, 1959.

The deployment of Thor centred on four main bases, those at Driffield, Hemswell, North Luffenham, and Feltwell. Each main base was surrounded by four satellite stations, with the missiles deployed at each location in groups of three. The squadrons were fully manned by RAF personnel, with the warheads under the control of American custodial officers. During the programme, over twelve hundred RAF airmen received technical training in the United States on missile technology.

The operational use of the Thor missile was governed by a Memorandum of Understanding dated February 22, 1958, which reaffirmed the Attlee-Truman understanding that "the decision to launch these missiles will be a matter for joint decision . . . in the light of the circumstances at the time."[8] In practice, this was achieved by a dual-key system in which a tactical hold could be introduced into the missile's countdown sequence by inserting a key into the control mechanism. This could be undertaken by either the RAF or USAF representative designated to be present at the launch control station at all times. Only after the authenticated launch order had been received would the countdown be resumed. It was expected that operational orders would be transmitted simultaneously through two channels. For the USAF, they would pass from Headquarters SAC through the 7th Air Division headquartered in England and then go directly to the missile squadrons. For the RAF, the orders would pass from the Air Ministry through HQ Bomber Command and then be sent directly to the squadrons.

The continued validity of Thor and the Medium Bomber Force as an effective deterrent, however, was dependent on their ability to escape destruction on the ground in the event of a surprise attack. To ensure the survivability of the force, the RAF instituted a dual strategy of force dispersal and increased early warning. The former resulted in the Bomber Command Alert and Readiness Plan, adopted in 1958, whilst the latter was provided two years later, when Britain became one component in the American Ballistic Missile Early Warning System (BMEWS).

BMEWS consisted of large radar stations situated at Thule in Greenland, Clear in Alaska, and Fylingdales in England. The purpose of these stations was to detect incoming Soviet missiles and provide warning times that ranged from three to seventeen minutes. The station at Fylingdales was a joint project between Britain and the United States and information from its radar was passed to the Air Defence Operations Centre in the United Kingdom and the North American Air Defense Command in the United States. Britain's participation

in the project resulted from the near certainty that any Soviet attack would be coordinated against both American and British targets.

Intelligence cooperation between the two air forces was also strengthened by RAF participation within the American U–2 programme. These missions were launched from Peshawar in Pakistan and took in targets across Soviet Central Asia, the Caucasus, and into the heart of Russia itself. Britain's target list is understood to have focused on the factories and airfields responsible for building and basing Russia's strategic bomber force.[9]

In 1962, as a direct result of the information supplied by BMEWS, Bomber Command was able to place a portion of the V-bomber force under conditions of Quick Rreaction Alert (QRA). The introduction of QRA ensured that, at each main base, at least three fully armed weapons systems—aircraft, crew, and bombs—would be held at fifteen minutes readiness on a continuous basis.[10]

The introduction of QRA, and the resultant need to coordinate the Thor strike capability with the other elements of the deterrent force, necessitated a revision of the combined strike plan. The revised strike plan, which became effective from August 1, 1962, only two months before the advent of the Cuban Missile Crisis, provided for attacks by the British bomber force and Thor missiles on sixteen cities identified as centres of administration, population, and control; forty-four "offensive capability" targets, such as airfields; ten "defensive capability" targets, such as air defence control centres; and twenty-eight IRBM sites[11]

It is apparent from this historical review of air force relations that in any conflict between the Soviet Union and the United States, the response of the RAF would have been intimately linked to the actions of the USAF.

The first indication that the Soviet Union was installing IRBMs in Cuba was contained in photographic evidence provided by a U–2 reconnaissance flight over the island on October 14. Corroboration was supplied by subsequent U–2 overflights with President John F. Kennedy informed of the discovery on October 16. In discussing possible courses of action, the key members of the Kennedy administration were conscious of the need to obtain European, especially British, support for any diplomatic or military responses to the crisis.

The initial response from the Department of State was that "the support of the British is vital. And it is not automatic. The UK did not tell us what it was doing in Suez, with disastrous results." A further recommendation was that if unilateral military action were to be undertaken by the United States "at least the UK should be fully briefed in advance—probably also France."[12] From a military point of view, the U.S. Joint Chiefs of Staff concluded that the only satisfactory solution to the Cuban problem would be a surprise attack on a comprehensive target set, with the proviso that "[British Prime Minister Harold] Macmillan, and possibly [West German Chancellor Konrad] Adenauer, should be notified of this action at least two hours in advance."[13] The first official indication that Britain received regarding the impending crisis occurred on

October 21, when David Ormsby-Gore, the British Ambassador in Washington, was given a personal briefing by President Kennedy on the current situation within Cuba and the proposed American responses.[14]

At 7:00 p.m. eastern standard time on October 22, in a televised speech lasting seventeen minutes, President Kennedy announced to an unsuspecting American public the discovery of missiles in Cuba and the immediate imposition of a naval blockade around the island. As the President began to speak, American forces worldwide were placed on a higher state of alert, with SAC moving to Defense Condition (DEFCON) 3.

As a result of procedures implemented in 1960, this information would have been relayed directly to Bomber Command. These procedures ensured that any changes in SAC's alert status would be immediately transmitted to HQ Bomber Command via the 7th Air Division.[15] This announcement would also constitute the first official communication between the two air forces specifically concerned with the Cuban crisis.

There is, however, *prima facia* evidence to suggest that Bomber Command had been fully appraised of developments at least two days in advance of President Kennedy's public announcement. According to Air Vice Marshal Stewart Menaul, Senior Air Staff Officer at Bomber Command:

> The Defence Ministry in London and Bomber Command staff watched anxiously during this tense period and speculated on how America might react. By 20th October the situation had deteriorated so seriously and rapidly that the Commander-in-Chief kept in continuous communication with the Air Ministry in London and with Strategic Air Command Headquarters at Omaha, Nebraska.[16]

The relationship between Bomber Command and SAC was particularly close during the first two weeks of October. On October 3rd, the Chief of Staff of the USAF, formerly the Commander in Chief of SAC, Gen. Curtis E. LeMay, visited RAF Scampton, while from October 4th through the 14th, Air Marshal Cross visited the United States as a guest of SAC. However, Menaul's account is difficult to believe for two reasons. First, Prime Minister Macmillan, the Foreign Secretary, Sir Alec Douglas-Home, and the Chief of the Defence Staff, Lord Louis Mountbatten, only received personal briefings on the situation in Cuba from U.S. officials in the afternoon of October 22, a procedure which involved the American Ambassador to Great Britain, David Bruce, undertaking a midnight rendezvous at RAF Greenham Common carrying a loaded revolver.[17] It is therefore doubtful that any other British government or military representative would have possessed such detailed information before this date.

Second, according to Bomber Command's engagement list for October 1962, on Saturday, October 20, Air Marshal Cross attended the Annual Royal Observer Corps dinner at RAF Uxbridge,[18] an environment in which continuous

communication with London and Omaha would seem difficult to imagine. However, if Menaul's account is true, it would indicate that intelligence information of considerable sensitivity was exchanged informally between the two air forces and by means which circumvented the normal machinery of government.

A more probable scenario is that senior British air force officers had been forewarned to expect an imminent American announcement concerning events within Cuba, but that any information supplied in this manner would have been of a general nature. This conjecture is based on the fortuitous coincidence that when Soviet missiles were discovered in Cuba, Maj. Gen. Sir Kenneth Strong, Chairman of the Joint Intelligence Bureau, and Sir Hugh Stephenson, Chairman of the Joint Intelligence Committee, were present in Washington, D.C., attending a meeting of the Commonwealth Intelligence Services Conference. On Friday, October 19, Strong and Stephenson were briefed by Ray Cline, the Central Intelligence Agency's Deputy Director of Intelligence "on the totality of the Soviet threat in Cuba."[19] Although it is uncertain how this information was utilized, it is probable that British Air Intelligence would have been appraised of the details.

A further piece of evidence supporting this view is contained in an official USAF study of the Cuban Missile Crisis. This review states that the first actual knowledge of the Cuban situation "aside from speculation" that was made available to Gen. Truman H. Landon, the Commander in Chief of United States Air Forces in Europe, and other component commanders occurred at a hastily arranged meeting with Gen. Lauris Norstad in his capacity as Supreme Commander, Supreme Headquarters Allied Powers Europe at Orly Airfield, Paris, at 1500 Greenwich mean time on October 22.[20] It is highly unlikely that Bomber Command would have been appraised of these details two full days in advance of such information being made available to the commanders of USAFE and SHAPE.

This chronology of events is further reinforced by the subsequent alert status adopted by U.S. tactical alert squadrons based in the United Kingdom. Three of the units—the fourth was reconnaissance—flew F–100 Super Sabres capable of carrying 1.1 megaton nuclear weapons.[21] These squadrons operated under two distinct categories of alert: "overt" alert, in which base klaxons would sound and all personnel would report to their duty stations to upload bombs on all available operationally ready aircraft, and "covert" alert, in which only selected people on a duty roster would be contacted by radio-telephone and told to report to their duty stations.[22] It would appear that, several hours prior to President Kennedy's public announcement, a "covert" alert affecting all U.S. tactical alert squadrons was initiated.[23]

The significance of this alert for RAF and USAF cooperation is that a proportion of the U.S. tactical forces were coordinated with the Thor strike plan. In broad outline, the coordinated plan consisted of first utilizing the British-

based F–100s to deliver the primary nuclear strike, which was to be followed within a minute by a Thor missile operating in a secondary follow-on strike role.[24]

The purpose of this cross-targeting policy was to assure complete destruction of the target irrespective of the survivability of any specified launch site. In employing this strategy, the Planning Staff selected weapons and delivery vehicles from different types of bases and geographical locations to achieve the highest probability of delivering a weapon on any given target.[25]

In the case of East Berlin, which was regarded as one of the Warsaw Pact's main command and control centres, this strategy was employed *a fortiori*, presenting considerable problems for the hapless pilot who was expected to make his bomb run after one Thor had already exploded and before the arrival of another. It is not surprising that during the Cuban Missile Crisis, the pilot assigned this task is remembered as the individual who sweated the most during cockpit alert![26]

As the crisis developed, the tactical alert squadrons adopted a more advanced state of alert. At the most critical point of the crisis, pilots adopted cockpit alert, ground power units were engaged, all covers were taken off the weapons, and aircraft engines readied for an immediate start. In the case of the 20th Tactical Fighter Wing, target commitments were increased by fourteen during the crisis, with an additional two aircraft placed on tactical alert. This increase occurred after HQ USAFE transferred responsibility for nuclear strike targets to squadrons in the United Kingdom, allowing the squadrons to implement contingency plans for the protection of Berlin.[27]

These events clearly show that, during the Cuban Missile Crisis, American nuclear forces stationed in Britain were placed on a heightened state of alert. As coordination with Bomber Command was an integral facet of the combined strike plan, it is essential that the role played by the Thor missile squadrons and the V-Force during the crisis is examined in detail.

Menaul's account of events states that when Bomber Command was informed on October 25 that SAC had increased its alert state to DEFCON 2, Bomber Command stations were involved in one of their frequent alert and readiness exercises. This enabled "certain preliminary measures" to be taken "as a matter of routine." On Friday, October 26, these exercises were extended; and in the early hours of Saturday morning, Air Marshal Cross "increased the readiness state of the force."[28]

The alert and readiness exercises referred to by Menaul are almost certainly those of Exercise Mick. This was a no-notice exercise in which all bomber airfields were required to generate—that is, prepare for war operations—*all* available aircraft, bringing together the three elements of each weapons system: the aircraft, the nuclear weapons, and the flying crew. A decision also had to be made as to whether to recall to base those aircraft on overseas visits or undergoing major servicing at maintenance units. Once an aircraft was declared

serviceable, with its nuclear weapons loaded, its assigned crew came to fifteen minutes readiness. When the exercise was declared over, the nuclear weapons were to be offloaded and returned to the secure storage area and the normal flying programme resumed. Exercise Mick, it will be recognized, was a nonflying exercise controlled throughout by HQ Bomber Command.[29]

As a consequence of calling this exercise, Alert Condition 3 of the Bomber Command Alert and Readiness Procedures (Aircraft) would have been implemented. This alert condition specifically enabled the Commander in Chief, Bomber Command, during a period of political tension, "to take certain precautionary measures short of the full and specific measures involved in the calling of higher Alert Conditions."[30]

It would appear that in the context of the Cuban Missile Crisis, certain problems were encountered in the implementation of these procedures. Specifically, if all available aircraft had been generated—as specified in Exercise Mick—this could have been interpreted by Moscow as the prelude to an imminent preemptive strike, running counter to Prime Minister Macmillan's expressed wishes that no overt military measures were to be taken which might lead to uncontrolled or unanticipated escalation. As yet, it is unclear how Macmillan conveyed these instructions to Bomber Command.[31]

It appears that HQ Bomber Command, in a somewhat *ad hoc* arrangement, modified Exercise Mick, so that instead of generating all available aircraft, stations were ordered to double the number of bombers on QRA. At most stations within Bomber Command this would have required six aircraft in total. However, at RAF Waddington, the number of bombers on QRA was trebled, resulting in nine fully armed Vulcans at fifteen minutes readiness.[32] It is instructive that, after the Cuban crisis had been resolved, Exercise Mick was redesigned so that readiness percentages within Bomber Command "could be changed unobtrusively."[33]

The implementation of Exercise Mick also affected the Thor missile squadrons. However, the difficulties this presented to the V-Force were not encountered by the Thor squadrons, as operational directives were dictated by their state of alert. This consisted of a five-phase sequence, as follows:

> **Phase 1**. All equipment and targeting data checked. Countdown sequence initiated.
>
> **Phase 2**. Shelter retracted and missile erected. Targeting data entered.
>
> **Phase 3**. Missile loaded with fuel. Target data and missile valves rechecked.
>
> **Phase 4**. Missile functions transferred to internal power source. Missile topped up with liquid oxygen (LOX) if required.
>
> **Phase 5**. Authenticated launch code received. Keys turned and engine started.[34]

The normal procedure that was usually adopted by the Thor missile squadrons in alert and readiness exercises consisted of preparing all available missiles to a Phase 2 "planned hold," from which stage they were given a simulated countdown to liftoff.[35] From the available evidence, it would appear that for a period of about three days during the course of the Cuban Missile Crisis, the Thor squadrons were placed at Phase 2 of this sequence, with targeting entered and the missiles uncovered and erected.[36]

There is, however, anecdotal evidence which suggests that the Thors at RAF Hemswell were fully fuelled and in Phase 4, a technical hold of four minutes readiness. This was achieved by increasing the length of the crews' shift periods from eight to twelve hours and continually topping up the missiles with LOX to replenish the lost fuel which was reportedly "gassing off freely."[37]

The respective conduct of the British and American officers serving on the Thor squadrons during this period gives an insight into the two countries differing perceptions of threat engendered by the Cuban Missile Crisis. American Authentication Officers are reported to have been in a highly agitated state and constantly on the phone to their Airborne Operations Centre. The RAF, by comparison, adopted "a very laid back attitude—in complete control of their reasoning."[38]

According to Air Marshal Cross, the Cuban crisis fully demonstrated the value of the Thor missile; for without visible change "59 of the 60 missiles had been made serviceable and ready simply by use of the telephone."[39] Despite these commendations, the decision to withdraw the Thor squadrons from the United Kingdom had already been taken, and on April 1, 1963, Thor began its return to the United States—a decision thought regrettable by many in the RAF.

An additional area in which cooperation between the two air forces was essential concerned the deployment of the three Valiant squadrons assigned to the Supreme Allied Commander Europe. In the event of war, these aircraft were to be armed with two American Mark 5 nuclear weapons and operate under the command of SACEUR. The three Valiant squadrons were stationed at RAF Marham and in peacetime were under the operational control of the base commander. The nuclear weapons, however, were completely under the control of USAF personnel.

The loading of these weapons was always supervised by American officers who also shared guard duties for the entire base with RAF security police. In the case of the aircraft on QRA, this control was maintained by positioning the aircraft in a specially secure compound on the far side of the airfield. Release of the loaded aircraft to the RAF could only occur after the American custodians had received an authenticated release message on dedicated U.S. channels.

It would appear that at some point during the Cuban Missile Crisis, RAF Marham received instructions from both British and American channels to load up all available aircraft with nuclear weapons. When the Valiants were being prepared, however, it soon became apparent that the American custodial officers

could not maintain physical control of all the nuclear weapons, as they were only established with sufficient manpower to monitor the QRA compound and the nuclear weapons storage area. Therefore, at the discretion of the Commanding Officer, U.S. Air Force, control of the weapons was handed over to the base commander. This resulted in a total of twenty-four Valiant Bombers, each armed with two American nuclear weapons, placed under the effective control of Bomber Command.[40]

The reasons why the USAF custodial officers adopted this procedure may be explained by the outcome of a Bomber Command alert and readiness exercise, which was held on September 20 through 21, 1962. The postexercise report, which was only circulated to the stations on October 2, stated that:

> The present SACEUR release procedures are liable to impose such a delay on the scrambling of the SACEUR assigned force that it seriously risks being destroyed on the ground. This has been the subject of previous negotiation with SACEUR and is being taken up again.[41]

As this was the first time weapons release procedures had been practiced by USAF custodians at RAF Marham, there is a possibility that new or modified release procedures may have been adopted between October 2 and October 23. There is also the possibility that the custodial officer interpreted his mandate in very broad terms. Custody would have still been maintained by placing one American airman in the "vicinity" of the aircraft. In addition, the Atomic Energy Act required ownership but did not specify custody. Therefore, although the American nuclear weapons were loaded aboard twenty-four British Bombers, legally they were still under the ownership of the United States and hence in compliance with the letter of the Act, if not the spirit. The final possibility is that *ad hoc* arrangements were implemented in the light of conditions at the time.

Attention has so far been centred on the effect of the Cuban Missile Crisis on Anglo-American air cooperation within the European theatre of operations. There is evidence, however, which suggests that Britain was willing to supply both logistic support and military personnel in support of American activities against the Cuban mainland. This evidence is contained in a telegram from the U.S. State Department to Ambassador Bruce. In this telegram, Bruce is requested to ascertain whether Britain would be willing to sanction the use of Mayaguana airfield in the Bahama Islands for use by U.S. tactical aircraft in combat operations against Cuba.[42] In October 1962, the U.S. Joint Chiefs of Staff informed the U.S. Navy's Commander in Chief, Atlantic, that the British government had agreed that the United States could proceed with the prepositioning of supplies and equipment at Mayaguana. The agreement, however, was conditional on the understanding that nothing was to be put into

writing and that the facilities were not to be put into active use without prior agreement of the British government.[43]

There is a further interesting twist to this story, for on Saturday, October 27th, crew members of Nos. 201, 206, and 42 Squadrons were hurriedly recalled to RAF St. Mawgan in Cornwall, where they were briefed on the current developments regarding Cuba. In this briefing, it was stated that, as events in the Caribbean had now reached crisis point, it had been decided to send three antisubmarine warfare squadrons to the area "to show the flag." Further instructions were to be made available to the crews on arrival. All three squadrons were in full battle configuration and prepared for takeoff when the mission was cancelled at the last moment.[44] The exact nature of this mission is as yet uncertain. However, in a report on the deployment and status of forces during the Cuban Missile Crisis, the U.S. Joint Chiefs of Staff stated that "aircraft from Bermuda and Roosevelt Roads, Puerto Rico, will conduct daylight searches to the East of the Quarantine Arc. Additional land based patrol aircraft are being provided by COMASWFORLANT [Commander, Antisubmarine Warfare Force, Atlantic] from Bermuda and Roosevelt Roads."[45] As Bermuda is a British dependent colony, this statement implies that the British government either gave consent for its use, or, alternatively, that British aircraft were participating in the quarantine of Cuba.

For statesmen and service chiefs alike, the Cuban Missile Crisis served to reinforce the Anglo-American alliance. Whilst most accounts of British involvement emphasize the importance of the close personal relationship which existed between Prime Minister Macmillan and President Kennedy, this represented only the focus of a network which permeated all levels of government. The air forces were no exception and in many respects set the agenda. The Cuban Missile Crisis, however, clearly shows the extent and the limits of this relationship. It is now becoming apparent that the extent of air force cooperation and its significance for British military preparations during the Cuban Missile Crisis is far greater than has previously been envisaged. The existence of the combined strike plan, the cross targeting of Thor missiles with British-based F–100s, and the dependency of QRA-based aircraft on tactical warning information supplied from BMEWS effectively linked the actions of Bomber Command to the USAF.

The consequences of this linkage are exemplified by the broader strategic ramifications of the crisis. For, if the United States had attacked Cuba there could be little doubt that the Soviet government would have reacted in Berlin. There would then have been a real and immediate risk of nuclear war. This opinion belongs to the British Foreign Secretary, Sir Alec Douglas-Home, who, in expressing these sentiments to his Cabinet colleagues, articulated the widely held belief that nuclear war was only narrowly avoided.[46] How the British and American air forces would have reacted to a Soviet attack on Berlin has yet to emerge. In Prime Minister Macmillan's opinion, however, any retaliatory action

against Berlin, as envisaged in the various contingency plans, would have led "either to an escalation to World War or to the holding of a conference."[47] What is becoming clear is that any response would have required a high degree of coordination between the two air forces.

The Cuban Missile Crisis also demonstrated the independent capability of the USAF, as, apart from the request to use Mayaguana airfield, direct British involvement was neither required nor requested. However, despite its lack of direct involvement, the support of the Royal Air Force was an important psychological factor. As Air Marshal Cross later explained, "the Americans knew exactly that they had a friend at their side fully at readiness."[48]

The events of the Cuban missile crisis clearly demonstrate the high degree of cooperation which existed between the two air forces. It is, therefore, ironic that only six weeks after the successful resolution of the crisis, continued long-term strategic cooperation was effectively curtailed when the U.S. administration announced the cancellation of the Skybolt missile.

Notes

1.Commander-in-Chief's Conference, Nov 14, 1962, AIR 24/2689, Public Record Office (PRO).
2.Georgi Kornienko, adviser to Nikita Khrushchev, in *The Independent*, Oct 5, 1992.
3.Sir Frank Cooper, Permanent Under Secretary of State, Air Ministry, "The Direction of Air Force Policy in the 1950s and 1960s," *Proceedings of the Royal Air Force Historical Society*, No. 11, 1993.
4.CAB131/13, D(53)5, Jan 29, 1953, PRO.
5.Ian Clarke and David Angell, "Britain, the United States and the Control of Nuclear Weapons: The Diplomacy of Thor Deployment 1956-58," *Diplomacy and Statecraft*, Vol. 2, No. 3, Nov 1991, p. 161.
6.AIR 8/2201, COS(56)451, Dec 14, 1956, PRO.
7.AIR 8/2201, COS(58)148, Jun 5, 1958, PRO.
8.Supply of Ballistic Missiles by the United States to the United Kingdom, Cmnd 366, Her Majesty's Stationery Office (HMSO), London, Feb 22, 1958.
9*Jane's Defence Weekly*, Aug 7, 1993, p. 14.
10.Operational Order 1/62, AIR 28/1657, Jan 31, 1962, PRO.
11.Strategic Strike Planning by Bomber Command, Oct 5, 1962, AIR 28/2201, PRO. There was also an independent national plan, which provided for attacks on fifteen cities by 1962.
12.Specific Contingencies: US Action Sequence, c. Oct 19, 1962, *The Cuban Missile Crisis: 1962*, fiche 00692, National Security Archive (NSA), Washington, D.C.
13.Chronology of JCS Decisions Concerning the Cuban Missile Crisis, Dec 21, 1962, fiche 02780, NSA.
14.David Ormsby-Gore (Lord Harlech) quoted in *The Listener*, Jan 30, 1969, p. 143.
15.Memorandum from DCDS, Jun 27, 1960, DEFE 13/122, PRO.
16.Stewart Menaul, *Countdown: Britain's Strategic Nuclear Forces* (London: Robert Hale, 1980), p. 114.
17.David Bruce Diaries from Oct 21, 1962 to Oct 28, 1962, fiche 01623, NSA.
18.AOC-in-C's Engagements for the Month of October 1962, AIR 24/2688, PRO.
19.Len Scott, "La Grande Bretagne et la Crise des Missiles," in M. Vaisse, ed., *L'Europe et la Crise de Cuba* (Paris: Armand Colin, 1993), p. 77.
20.The Cuban Missile Crisis: Impact in the USAFE Area, Feb 28, 1963, fiche 02973, NSA.

21.Report on Exercise Fallex 6-22 September 1962, AIR 24/2688, PRO. The units involved were the 20th Tactical Fighter Wing at RAF Wethersfield, 48th Tactical Fighter Wing at RAF Lakenheath, and the 81st Tactical Fighter Wing at RAF Bentwaters. The 10th Tactical Reconnaissance Wing was at RAF Alconbury.
22.Correspondence.
23.Correspondence.
24.Correspondence.
25.Briefing for the President by the Chairman, Joint Chiefs of Staff, on SIOP-62, Sep 13, 1961, fiche 00107, NSA.
26.Correspondence.
27.The Cuban Missile Crisis: Impact in the USAFE Area, Feb 28, 1963, fiche 02973, NSA.
28.Menaul, *Countdown*, p. 115.
29.Correspondence.
30.Operational Order 38/62, Nov 2, 1962, AIR 24/2689, PRO. Bomber Command's Alert Procedures ranged from 5 (peace time) to 1 (cockpit readiness).
31. At 2.14 p.m. eastern standard time, the Joint Chiefs of Staff notified the State Department that U.S. military forces worldwide would go to DEFCON 3 effective at 7.00 pm. They also stated that SACEUR had been ordered to persuade NATO countries to place their forces to assume a comparable alert posture but that he was authorised to exercise his discretion in complying with this directive. During the day, General Norstad conferred with Prime Minister Macmillan, who strongly argued against mobilizing European forces. Aware that an alert might weaken European support for the United States, Norstad decided not to put European forces on to a higher alert status.
32.Correspondence.
33.Commander-in-Chief's Conference, Nov 14, 1962, AIR/2689, PRO.
34.Correspondence.
35.BC/S.97462, Oct 2, 1962, AIR 24/2688, PRO.
36.Correspondence.
37.Correspondence.
38.Correspondence. Fiche 03372, undated, NSA. The first Airborne Operations Centre scrambled on October 24 and remained airborne until November 11. During this period forty-six missions were flown for a total of 558 hours.
39.Commander-in-Chief's Conference, Nov 14, 1962, AIR 24/2688, PRO.
40.Correspondence.
41.Post Exercise Report on Exercise Micky Fin II, Oct 2, 1962, AIR 24/2688, PRO.
42.Text of Defence Department Letter on the Possibility of Using Mayaguana Airfield in the Event of an Attack on Guantanamo, May 31, 1961, fiche 00084, NSA.
43.Summary of Items of Significant Interest Period 090701-100700 Oct 1962, fiche 00571, NSA.
44.Correspondence.
45.Situation Report 3-62, as of 250400Z October 1962, Operation Scabbards, Oct 25 1962, fiche 01325, NSA.
46.Conclusions of a Cabinet Meeting held on Monday 29 October 1962, CAB 128/36, PRO.
47. Prime Minister Macmillan to President Kennedy, October 22, 1962, 7.43 pm, John F. Kennedy Library, Cambridge, Mass.
48.*The Nuclear Age*, Oral History, Liddell Hart Centre for Military Archives, King's College London.

Group Captain Ian Madelin, Royal Air Force, retired, Chief of Air Historical Branch, Royal Air Force, joined the Royal Air Force in 1951 and did his pilot training and fighter weapons training in the United States. Subsequently, he served with fighter squadrons in the United Kingdom, Germany, and the Middle East. He commanded No. 73 Squadron flying B–57 Canberras from Cyprus, 1965–1968, and subsequently served in the Ministry of Defence as Harrier officer in the Operational Requirements Section. He has also held posts in Supreme Headquarters Allied Powers Europe, in Brussels, Belgium, and has served on the Directing Staffs at both the Royal Air Force Staff College and the U.S. Air Force War College. His last post with the Royal Air Force was Air Attaché to the British Embassy in Rome. He has served as head of the Royal Air Force Air Historical Branch since 1989.

Some Additional Comments on Command and Control of Nuclear Forces During the Cuban Missile Crisis

Group Captain Ian Madelin*

It is very presumptuous of me to make any comment on Dr. Stephen Twigge's talk. My own interest in this subject was, in fact, aroused by some questions I got from Dr. Twigge about eighteen months ago. I could not answer the questions because I did not know the answers, but if I had known them, I could not have passed them on because we were then still inside the thirty-year rule which, as you know, governs our release of public information.

The commonly held view of the Cuban Missile Crisis was that the world held its breath. Well, the Cabinet Papers were not released when Dr. Twigge wrote to me, but they are released now, and, if you read those, there is no impression of anyone holding their breath. I am not too sure that is the thing that Prime Minister Harold Macmillan would ever have done anyway, but if you look at all the meetings of the Cabinet in that crucial week, they cover quite routine matters. They talk about the legitimacy or otherwise of a maritime blockade. There was a touch of *amour propre* about whether the great maritime British could allow their ships to be stopped at sea by the Americans, and could not the Americans just take our word that there was nothing on them, and then what would the President of France, General Charles DeGaulle, think if his ships were stopped and ours were not. There were questions of whether there may not be overreaction here? The United States had missiles stationed in Europe targeted against the Soviet Union and all of Europe was used to living within Soviet missile threat. Was this really any different from that?

That was the tenor of all their discussions. The Secretary for Defence, Peter Thorneycroft, was present at all of these Cabinet meetings and there is no record of him saying anything at all. There is no record of or any reference to the military aspects or military reactions. Whether the Defence Council separately

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* With the permission of General Poe and Air Marshal Sowrey, and with Dr. Twigge's concurrence, Group Captain Madelin, head of the RAF Air Historical Branch, provided some supplemental comments on Dr. Twigge's topic based on his personal examination of the British Cabinet Papers and conversations with Air Chief Marshal Sir Kenneth Cross, Commander in Chief of Bomber Command at the time of the Cuban Missile Crisis.

had meetings about this, I do not know; I have not looked at the papers. But if they did, it was not reflected in the Cabinet, and nothing went down to the Commander in Chief of Bomber Command, who was Sir Kenneth Cross. Sir Kenneth Cross acted largely on his own initiative, and his recollections differ from those of Air Marshal Stewart Menaul to which Dr. Twigge referred. And it was not for want of trying, he said. He was frequently trying to get confirmation for what he was doing by talking up the line, and he was not getting any explicit response.

The other interesting point is his collaboration with Strategic Air Command Headquarters at Omaha. I pass this on because there was a chance that Sir Kenneth Cross could have been here today and he is not, but I am sure if were here he would have passed it on himself. His connections with the Commander in Chief of Strategic Air Command were always very close; both with General Curtis LeMay and with General Tommy Power. In fact, he said, he frequently chatted on the phone to Tommy Power, sometimes daily. But once the Cuban Missile Crisis started, there was no one on the other end of the phone and there was no one on the end of the phone until the crisis was over. He suspected that this may have been deliberate, and if there is anyone here who knows about this, I'm sure Dr. Twigge would like you to talk to him afterwards. And if it was deliberate, then surely it is understandable, because if you are playing this game of "eyeball to eyeball" with the other guy, seeing who blinks first, it is better if there is only one person on your side. It could well have been that it was deliberate, but Air Marshal Cross does not know.

Air Marshal Cross did know something about what SAC was doing, and he knew that CINCSAC knew what he, Cross, was doing through SAC's 7th Air Division, which was located near his own headquarters at High Wycombe. On his own initiative, he put all of the Royal Air Force's Thor missiles on readiness. But the Thor missile was a dual-key weapon, so he could not do this without 7th Air Division knowing, and he knew they were talking back to SAC. If, though, it was the United States' intention to play this by themselves, then that would explain the interesting difference in attitude between the two nations' missile crews on the Thor bases which Dr. Twigge has just told us about. You can understand the perplexity of the Americans who saw something going on that was not in their game plan and, as he says, the laid-back attitude of the British who were simply doing what their commander told them.

Air Marshal Cross said his first contact upwards took place one week later, and he has confirmed that from an unimpeachable source, namely his ex-driver. It was a Sunday, and he was asked to go up to London in the afternoon, about half-past five, to White's Club to meet the Chief of the Air Staff, Sir Thomas Pike, and the Secretary of State for Air, Hugh Frazier, who said to Cross: "Well, what shall we do?" Sir Kenneth deterred them. He had already implemented all the measures which could be done routinely and covertly. Anything beyond that would be overt and could be construed as provocative and destabilizing. And

by then the missile crisis was more or less over. Air Marshal Cross sums it up by saying that during the crisis, from him downwards, everything worked perfectly; from him upwards, he perceived nothing worked at all.

No doubt, though, he was keeping the Air Ministry informed through the Vice Chief of the Air Staff, who was his normal channel of contact there. The steps he was taking were quite appropriate and, in retrospect, one would not say we should have done anything more or different.

So from a historical point of view, the more interesting aspect of this episode is the apparent disconnect between military command structures and the higher level of government which directed them. This has already been referred to twice during this symposium, by General Horner yesterday and by Sir John Curtiss today. In a slowly breaking crisis, it may not matter because the connections could establish themselves as the events unfold. But with a crisis such as this one, the connections must be in place already, immediate and responsive, and, what is more, with the participating parties mutually well informed.

I think London is better at this than it used to be, but from what we have heard during these proceedings, there is nothing to be complaisant about. There is a lesson from history here and it is one worth stressing.

Chief Master Sergeant Jerome E. Schroeder, U.S. Air Force, retired, Historian, North American Aerospace Defense Command History Office, Peterson AFB, Colorado, joined the U.S. Air Force in 1966 and transferred to the Air Force History Program in 1972. He subsequently served as historian of numerous wings including the 306th Strategic Wing, RAF Mildenhall, and the 501st Tactical Missile Wing, RAF Greenham Common. Later assignments included Deputy Historian, Third Air Force, RAF Mildenhall, and Senior Military Historian, Headquarters United States Air Forces in Europe. While in the last assignment, Chief Schroeder deployed to Turkey as historian of Joint Task Force Proven Force during Operation Desert Storm. He retired from the United States Air Force in 1992. Chief Schroeder's many monographs and special studies include "The Effect of Civilianization on Third Air Force," "USAFE Tests the Composite Wing Concept During Desert Storm," "The History of Joint Task Force Proven Force (Operation Desert Storm)," and "Joint Task Force Quick Lift."

El Dorado Canyon: The Political and Public Affairs Aftermath*

Chief Master Sergeant Jerome E. Schroeder

After the many distinguished visitors I see in the audience and the many speakers that spoke before me, I feel sort of like the little gentleman with the broom following the big parade.

At 9:00 p.m. eastern standard time (EST) on April 14, 1986, President Ronald Reagan announced on national television that

> at 7:00 this evening . . . air and naval forces of the United States launched a series of strikes against the headquarters, terrorist facilities, and military assets that support [Col.] Muammar Qaddafi's subversive activities. The attacks were concentrated and carefully targeted to minimize casualties among the Libyan people, with whom we have no quarrel. . . . From initial reports, our forces have succeeded in their mission.[1]

Because the United States launched a major part of its air strike against the Libyan terrorist facilities from Royal Air Force bases in England, it brought about a fierce debate within the British political, media, and public sectors over the use of U.S. Air Force aircraft based in the United Kingdom in unilateral military operations. This debate centered over questions of national sovereignty as well as concerns over British stature on the world stage. Beyond the debate, the Libyan air strike also caused a perception within the British and American military communities that retaliatory terrorist attacks were imminent.

The background and history of this air raid, code named El Dorado Canyon can be sketched fairly quickly. The late 1970s and early 1980s had seen what appeared to many to be a serious rise in terrorist attacks on Americans and American activities, particularly in Europe. Though absolute proof was hard to come by, U.S. intelligence agencies had concluded that the Libyan government of Colonel Qaddafi was behind much of this activity. By the mid-1980s, the Reagan administration was determined to suppress the colonel's activities. The

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* This paper is based upon an official U.S. Air Force historical study entitled "Eldorado Canyon: The Political and Public Affairs Aftermath" completed by the author in December 1987. The study and its supporting documents are on file at the U.S. Air Force Historical Research Agency, Maxwell AFB, Alabama.

immediate catalyst for El Dorado Canyon was the terrorist bombing of the La Belle Disco in West Berlin on April 5, 1986, in which an American soldier and a Turkish woman were killed and hundreds injured. Retaliation took the form of air strikes flown by U.S. Navy aircraft from the carriers *America* and *Coral Sea* in the Mediterranean and U.S. Air Force F–111Fs from RAF Lakenheath, England. The strikes focused on five targets. Navy aircraft struck the Banghazi military barracks and Benina airfield, while F–lllFs attacked three targets in the vicinity of Tripoli: Qaddafi's headquarters at the Aziziyah barracks; the Sidi Bilal terrorist training camp; and the military portion of the Tripoli airport.[2]

The U.S. Air Force contribution to El Dorado Canyon was a Herculean effort. The strike force included twenty-four F–111Fs—eighteen strike aircraft and six spares—and three EF–111A electronic jamming aircraft, supported by twenty-eight KC–135 and KC–lO tanker aircraft which provided air refueling for the extended mission. French President Francois Mitterand denied a request to allow the strike force to cross French air space, forcing it to fly an Atlantic Ocean route along the coasts of France and Spain through the Straits of Gibraltar to its targets in Libya, and to return by the same route. The air crews thus had a round trip of fifty-four hundred miles that took fourteen hours. President Mitterand's decision also meant that a significant number of the KC–135 and KC–10 tankers had to be deployed from the United States to England. The strike force reached Libya, bombed its targets with mixed success, and returned to England with the loss of one aircraft, probably shot down by a surface-to-air missile. Of the eighteen strike aircraft, two aborted prior to reaching Libya and were not replaced by backup aircraft while four aborted in the target area. Of the remaining aircraft, four F–111Fs actually hit their targets accurately. Despite what might be considered ambivalent results, in the final analysis, El Dorado Canyon succeeded in its main purpose: terrorist acts appeared to wane, and Colonel Quaddafi remained relatively quiet for some time thereafter.[3]

As early as a week prior to the raid, the British media began speculating that British-based F–111s would be used to strike Libya. This speculation intensified about a week prior to the raid, fueled by three developments, two directly connected with the raid. The first event was the visits of Vernon Walters, U.S. Ambassador to the United Nations, to several European capitals during the weekend before the raid. The purpose of Walters' visit to London was to brief Prime Minister Margaret Thatcher on the raid, assure her that the target were terrorist related, and show her a draft of President Reagan's postraid public announcement. Walters also visited leaders in Paris, Bonn, Rome, and Madrid to detail the intelligence information the United States was acting upon and ask for their support. The British media made the obvious inference; that Walters was trying to gain support for some kind of action against Libya. The second development was the arrival of a large number of air refueling aircraft deployed from the United States to RAF Mildenhall and RAF Fairford in the

days prior to the raid. Public affairs officers at Third Air Force could only respond to anxious questions from the press that they could not speculate on the tankers, that the bases were doing "business as usual," and that KC–10 aircraft normally transited bases in the United Kingdom, responses unlikely to allay speculation. The third event involved the North Atlantic Treaty Organization readiness exercises—preplanned, periodic exercises called Salty Nation—held coincidently at RAF Lakenheath and RAF Upper Heyford. The British media saw these as a cover to prepare the F–111s for a raid against Libya. In fact, the exercises were part of normal training procedures. They, however, were easily observed changes to routine and, especially in connection with the other developments, increased preraid speculation by the British media.[4]

The Department of Defense expected media interest and a certain amount of negative news coverage in Britain as a result of the raid. Accordingly, it established a Joint Information Bureau (JIB) at RAF Mildenhall on the evening of April 14th with the arrival of two senior public affairs officers—one from Headquarters United States European Command and the other from Headquarters United States Air Forces in Europe. Public affairs personnel from RAF Mildenhall, RAF Lakenheath, RAF Bentwaters, and RAF Chicksands manned the JIB on a 24-hour basis. The public affairs aspect of the postraid queries was thus centrally managed by the DOD public affairs office. Queries that could not be answered with standard explanations provided ahead of time by the DOD had to be referred to the Pentagon. Despite these preparations, however, the DOD and the JIB were unprepared for the considerable negative press coverage elicited by El Dorado Canyon.[5]

President Reagan's announcement quoted above took place at about 2:00 a.m. EST on April 15th in Great Britain. But since the British media had correspondents based in Washington, D.C., the JIB expected press queries immediately after the President's announcement. Surprisingly, however, the JIB did not receive any queries until much later during the morning of the 15th, and even then, the queries, mostly by telephone, were jumbled as members of the British media initially were unsure of the scope and ramifications of the raid. Once the immediate shock wore off, the number of media queries escalated dramatically.[6]

The British public breakfasted on the morning of April 15th to televised reports on the air raid and much of what they saw was uncomplimentary. The initial newscasts were quick to condemn the American action and, according to Third Air Force public affairs officers, painted an extremely lurid and one-sided picture. For the next several days, British national television and newspapers flooded the public with pictures of civilian casualties and the collateral damage caused by the bombs that missed their targets. The broadcasts, news articles, and editorials portrayed the United States as uncaring and indicated that the Americans bombed civilian targets indiscriminately. Closer to home, the American attack had placed the British public at risk from terrorist

retaliation. Regional news coverage focused on demonstrations at bases involved in the attack as well as concerns within the surrounding communities about terrorist retaliation. The American response to this coverage was complicated by a disconnect between perceptions in Washington and the situation in England. Initial reports from the Pentagon revealed that there was overwhelming political, public, and media support within the United States for the air strike against Libya.[7] It took several days for Pentagon public affairs officials to realize the extent of the negative reaction to the raid in England.

Much of the negative reaction was the result of the coverage from Libya, which was carefully controlled by the Libyan news agency JANA. The Libyans especially capitalized on the collateral damage that had occurred. JANA officials took British television crews to selected sites where collateral damage had occurred and to the hospitals which treated wounded civilians, where they filmed closeups of injured women and children. Worse, in the view of Third Air Force public affairs specialists, both British television and newspapers reported information provided by JANA as absolute fact, often ignoring contradictory materials. For example, British newspapers printed an Italian news service release which quoted a Radio Libya report that forty-five F–111s had participated in the raid, not eighteen. Additionally, the Libyans showed the press what they claimed to be parts of an F–111 they shot down. The press reported this as fact despite the JIB information that the wreckage was from a Libyan surface-to-air missile. All-in-all, the JIB's responses to JANA's selective information campaign were rarely published by the British media.[8]

While sensationalist news coverage could be expected in the tabloid press, subsequent examination showed that sensationalism and unbalanced reporting appeared in even the most respectable venues. Several months after the raid, Mr. Norman Tebbit, Chairman of the Conservative Party, severely criticized the august British Broadcasting Corporation (BBC).[9] Tebbit compared the BBC newscasts with those made by the Independent Television Network (ITN) and concluded that the BBC's newscasts were filled with "left-wing bias, errors, and scaremongering."[10] He further noted that ITN had "scrupulously avoided guiding viewers" while the BBC broadcasts had "not strived to achieve impartial news reporting."[11] The BBC newscasts had claimed that the United States had "committed an act of unjustifiable aggression that caused the deaths of many innocent civilians and increased international sympathy and support for Colonel Qaddafi."[12] None of these statements, as Mr. Tebbit pointed out, could be supported by fact.[13]

From the beginning, the JIB was limited in the responses it could make by policies outside its control. For example, the British media wanted to interview the aircrews who participated in the raid. Maj. Gen. Thomas J. McInerney, the Third Air Force Commander, would not allow interviews because identification of the aircrews might make them and their families potential targets for terrorist retaliation. Officially, public affairs personnel in

England could not even reveal the designation of units that participated in the raid or their bases. Preliminary statements made by senior officials in Washington indicated that aircraft from RAF Lakenheath, RAF Upper Heyford, and RAF Mildenhall took part in the raid. They did not mention, in an apparent oversight, that tankers from RAF Fairford were also involved. Because of the strict guidelines set down by DOD, however, neither the JIB nor the RAF Fairford public affairs office could confirm Fairford's role in the raid until about April 17th. Their "no comment" replies to the media were scarcely credible and led to speculation that RAF Fairford's role was being covered up for some reason.[14]

Between the time JIB opened early on the morning of April 15th until it closed on April 18th, the bureau responded to over nine hundred media inquiries. By the fourth day after the raid, the number of queries decreased to the point where they could be handled in routine fashion by base public affairs offices. The focus of the inquiries changed as well. The bulk of the queries on April 15th and 16th involved operational aspects of the missions, but by the 17th the media inquiries changed to other matters such as information on the missing F–111 crew.[15]

The Chief of Public Affairs at RAF Mildenhall later called the JIB operation a success despite severe handicaps. For one, pre-raid planning concentrated on the objective itself. "There was not a great deal of planning for the post recovery period," General McInerney affirmed. "We were focusing on the efforts to execute the mission properly."[16] For another, planning and execution was done in absolute secrecy. Local public affairs officers, who manned the JIB, were unaware of the raid until the aircraft left their bases in the United Kingdom. Thus, they were unable to conduct advance planning. Initially, the result was unnecessary confusion within public affairs channels, however, procedures were quickly set up to deal with the massive number of media and public queries.[17]

The JIB was a short-term response to the immediate situation. Of more significance and interest was the long-term relationship between the U.S. Air Force in Great Britain and the local populations it helped to protect. Since 1951, relations between Third Air Force, its subordinate units, and the British communities in the vicinity of U.S. air bases had been generally amicable. The Anglo-American relationship had been one of cooperation, trust, and communication. The American raid on Libya changed this affable atmosphere overnight.[18] This relationship was conditioned by, as well as reflected in, the political fallout of El Dorado Canyon.

Prime Minister Thatcher had approved the use of British bases for the U.S. air strikes in full realization of the substantial consequences for British communities should terrorist retaliation occur. As a result, her government came under severe condemnation from British political and public sectors. This criticism was from neither the political left nor the right specifically, but

reflected a broad spectrum of opinion across Great Britain. Some questioned whether or not such violent action would reduce or eliminate state-sponsored terrorism. Others objected to unilateral use of U.S. forces outside their NATO commitment to the defense of Europe. Most feared terrorist retaliation against Great Britain and her subjects, or some kind of economic embargo. Of great significance was the deep-seated emotional reaction to the raid that stemmed from a concern about U.S. military power and its influence throughout the world.[19]

Mrs. Thatcher initially faced some dissention within her cabinet and her own Conservative Party; however, this proved limited and they closed ranks rather quickly under the leadership of the "Iron Lady." She encountered more serious opposition to the raid in the House of Commons, especially in a heated debate during an emergency session on April 15th. In response to pointed questions, she stood her ground, telling the Commons that it was "inconceivable [that] . . . we should refuse U.S. aircraft and pilots the opportunity to defend their own people." The Prime Minister further reminded Members of Parliament of the American assistance during the Falklands War and willingness of the United States to keep three hundred and fifty thousand troops in NATO to provide security for western Europe.[20]

Most of the negative responses to the raid came from the Labour, Social Democrat, and Liberal Alliance MPs. Labour held that the unilateral action by the United States was an improper use of NATO forces and that the raid would surely lead to more terrorism, not less. Labour MPs also accused Mrs. Thatcher of "groveling subservience to President Reagan" and being "Reagan's poodle."[21] The Social Democrat and Liberal MPs were less critical of her decision, but put forth the position that if there was such strong evidence to link Qaddafi to specific terrorism activity, it should have been presented to the United Nations Security Council for action. Generally, the opposition parties were concerned that Britain was now a more visible target for terrorist attacks and were eager to score partisan points on an issue where the Conservatives were clearly vulnerable. They also expressed the fear of retaliation against Britons living in Libya and countries sympathetic to Qaddafi.[22]

Mrs. Thatcher faced another day of furious debate in the Commons on April 17th, fueled by the retaliatory murder of three British hostages in Lebanon and a coincidental thwarted attempt to blow up an El Al airliner at London's Heathrow Airport. During this debate, the opposition accused the Prime Minister of abandoning the British hostages and provoking further terrorism. Even members of her own party expressed uneasiness about these recent events.[23]

Another consequence of the raid was that it caused discussion of the 1952 Truman-Churchill protocol regarding and British consultations prior to the use of U.S. forces based in Britain. The protocol, although vaguely worded, had worked well previously. Consultations between the two governments prior to

El Dorado Canyon had been frequent and mutually satisfactory, and it had been properly invoked in the case of the Libya raid. The attack, however, led to demands from some quarters in the British government for additional assurances that the United States would consult Britain in the future.[24]

Fallout from the political debate affected the local communities near the bases, as well as people on the bases. Except for a brief interlude between 1946 and 1948, there had been a stable American presence in East Anglia since shortly after the end of World War II. The Anglo-American communities had worked hard to nurture close friendship and cooperation on matters of mutual concern. Each Third Air Force base had a community relations advisor and an Anglo-American Committee to provide advice and assistance in these matters. Generally, East Anglia supported the Conservative Party and the role the U.S. Air Force bases played in the NATO framework.[25] In the areas of Britain which lacked sizeable U.S. military bases, the British were less aware of and less concerned with the U.S. military. All could take the U.S. presence for granted because the American forces had never been used in anger. Eldorado Canyon, however, placed the capability of the U.S. Air Force units and the American military presence in Britain in the spotlight.

The raid produced three distinct emotional responses. The first was surprise that U.S. forces in Britain, ostensibly committed to NATO, could seemingly be employed unilaterally. The second was shock that the Thatcher government had approved the use of the British bases for the air raid. Third was the perception that British communities were now potential targets for terrorist retaliation. The British media's sensationalism, the critical coverage of the raid, and the increased security measures at RAF bases where American personnel were stationed intensified local anxiety. The various opinion polls conducted by British news media within a day of El Dorado Canyon produced reports that between 60 and 80 percent of the British public opposed the raid.[26]

Beyond polls, the British public expressed its disapproval through several avenues, especially letters either to newspapers or officials at Third Air Force bases and through protest demonstrations. In the two weeks following Eldorado Canyon, British national and regional newspapers carried an impressive number of letters to the editor which condemned the air raid and the Conservative government's approval to launch the strike from British bases. Most came from individual citizens, but some signs existed of an organized letter-writing campaign. Members of the Campaign for Nuclear Disarmament, for example, seized the opportunity to espouse their anti-American and unilateral disarmament viewpoint. Prior to the raid, public support for the CND had declined substantially from the peaks experienced during the deployment of ground-launched cruise missiles in 1983. Eldorado Canyon gave the CND an opportunity to regain media attention. Initially, just over half of the letters and phone calls received by Third Air Force bases opposed the raid, but after a period of time, the letters and calls became more supportive.[27]

British antinuclear groups, primarily the CND, staged demonstrations in London and at many of the U.S. Air Force bases in Britain following the raid. The antinuclear movement tied its hobby horse to Eldorado Canyon by rationalizing that if Britain could not trust the U.S. when they conducted a unilateral, non-NATO attack, could Britain trust the U.S. not to do the same with nuclear weapons?[28] "We are all in a state of shock," Mrs. Mavis Middleton, leader of the Cambridge CND, was quoted in the April 16th *Cambridge Evening News*. "It is the most appalling example of bully-boy tactics and shows up the NATO alliance for what it is—an empty shell."[29] The CND-organized demonstrations drew a large number of people who were not normally outspoken on nuclear disarmament. Rather, these people participated in the demonstrations to express their opposition to the raid and their emotions were influenced by the news coverage. The largest demonstrations occurred outside the bases directly involved in the raid: RAF Lakenheath, RAF Mildenhall, RAF Upper Heyford, and RAF Fairford. For the most part, the demonstrations were peaceful, but British Ministry of Defence (MOD) police arrested some of the demonstrators for trespassing and causing damage to property. By April 22nd, a week after Eldorado Canyon, the demonstrations had declined to preraid levels. The charged emotions within Britain had cooled down, and the media found other stories to report.[30]

The British communities surrounding Third Air Force bases feared they were at risk of terrorist retaliation for the air strike against Libya. They saw the high degree of security at the bases, and perceived the same threat leveled, at no fault of their own, to themselves and their families. But they had no such additional security. If terrorists could not attack U.S. personnel or facilities because of the increased security, the terrorists might choose to target British civilians. This caused both fear and frustration that Americans were guarded by armed personnel while British citizens were not.[31]

Local Anglo-American committees provided one avenue to address these concerns, and base officials maintained close contact with the British members of their committees to reassure them, answer questions, and most importantly, to allay fears. Many British officials distinguished themselves in this effort as well. Sir Eldon Griffiths, the Conservative MP for the Mildenhall and Lakenheath area, for example, was a spokesman in support of the raid and proved instrumental in maintaining strong ties between the British and American communities. He voiced his support both at the local level and in Parliament. Sir Eldon met with town councils and stressed that there was no need for alarm. Moreover, he reminded his constituents that Britain had been on the front line of terrorism even before Eldorado Canyon. The Irish Republican Army had waged a long terrorist campaign against Britain, and Libyan radicals had also conducted attacks against Libyan dissidents living in Britain. The latter had even killed a British policewoman during a demonstration by Libyan dissidents outside the Libyan embassy in London. Eldorado

Canyon might have increased the risk, Griffiths asserted, but only a little, and he further emphasized that Libya's ability to retaliate against targets in Britain had been significantly curtailed because of the raid and British efforts to monitor the activities of Arab communities and to expel Libyan radicals.[32]

The negative stories carried in the British media generally unsettled the U.S. military community in Britain. American military members and their dependents suddenly found themselves in what appeared to be a hostile environment, exposed to the same emotion-laden reports as the British public. To counter the impact of British newscasts on U.S. personnel and to inform them that the American public at home saw things differently, public affairs offices prepared and distributed fact sheets which described the raid and summarized public statements made by senior U.S. officials. Additionally, local security measures which HQ USAFE had implemented were also explained to the service members and their families. Wing and base commanders held town meetings to answer questions and quell rumors. At RAF Lakenheath, medical personnel issued guidance on how base personnel could cope with the stress caused by the negative media coverage and increased security. Moreover, video tapes of U.S. news coverage were shown to base personnel to counter the negative tone of the British newscasts. Clippings from U.S. newspapers were also compiled to show the positive response to the raid displayed in the United States.[33]

This effort was especially important for the aircrews. They had successfully completed an unprecedented air operation only to be confronted with television, radio, and newspaper commentaries that questioned the need for the raid and were confronted with televised reports that concentrated on wounded civilians and collateral damage. The fact that the crew members had to maintain anonymity for security reasons aggravated matters. Air Force officials believed that identifying and honoring the crews could make them and their families potential targets for terrorist retaliation. The U.S. Navy aircrews received public recognition when they returned to the United States; the U.S. Air Force crews in Great Britain had to remain anonymous.[34]

Generally, peacetime threats to U.S. Air Force bases in Britain receive comparatively low priority, and several lack the normal security features of bases on the European continent. Public highways, for example, run through RAF Mildenhall, RAF Upper Heyford, RAF Fairford, and RAF Bentwaters. While the operational areas on these bases are fenced and entry strictly controlled, the community support areas are unfenced and nothing impedes civilian traffic through these "soft target" areas. Further, military family housing areas are scattered throughout the countryside because there is insufficient space on the bases in which to build homes. Forty-five percent of the U.S. military families in Britain live in government housing while the remainder either bought or rented housing in the local communities. With the large number of families scattered in outlying government housing areas and the widespread

dispersion of families on the economy, security for these areas is difficult at best.[35]

The U.S. military community in Britain was under tremendous stress after Eldorado Canyon because of fear of terrorist retaliation, something it had not really faced before. Commanders tried to reduce the impact of the British news reports through town meetings, newsletters, and rumor control hotlines. The increased presence of armed personnel guarding and patrolling soft target areas gave the military community some peace of mind. People were more alert to out of the ordinary events and reported unusual events to security police. The peace of mind for those who lived offbase was not as easily provided. There was no practical way to provide security for such a large number of people living in widely dispersed locations. General McInerney stressed to his people that they should not develop a fortress mentality during the period of increased security and urged them to continue their normal close relationship with British friends and neighbors.[36]

Traditionally, most U.S. Air Force bases in Britain held air shows during the summer which were open to the general public. Following the Eldorado Canyon raid, the air shows became a highly charged political issue. The RAF Mildenhall air show, "Air Fete '86," scheduled for May 24–25, 1986, was of special concern. Local parish councils in the area surrounding RAF Mildenhall and RAF Lakenheath passed resolutions supporting the cancellation of Air Fete '86, not, they claimed, because of potential terrorist attacks, but in response to their constituents' concerns.[37] Local CND supporters and Labour party members also advocated the cancellation of Air Fete '86. A leader of the East Anglia's CND called the air show "offensive to all who respect human life," and claimed that: "It will provide a major target of up to four hundred thousand civilian visitors for any retaliatory attack from the Libyans or their friends."[38]

While there was significant fear within the populace that terrorist attacks were imminent, the threat was significantly reduced when British security agencies deported potential Qaddafi supporters from Britain and increased its monitoring of the activities of the Arab enclaves. British civil police stepped up their patrols within the nearby towns and villages too. Over the next several weeks, U.S. and British officials held high-level talks to assess the terrorist target that Air Fete '86 would pose and determine whether the air show should be canceled outright. These officials also used the uneventful officers' club bazaars held at RAF Bentwaters and Mildenhall—conducted only weeks after Eldorado Canyon—to gauge the security threat. RAF Lakenheath held its air show, albeit under very heavy security. After a thorough review of the threat, and because no incidents occurred at these events, British officials agreed to go ahead with Air Fete '86, but only with substantially more security than in previous years. The general consensus of American and British officials was that canceling the air show would be giving in to terrorism.[39]

U.S. Air Force Security Police (SP) and British MOD police had a long history of cooperation in maintaining security for RAF bases with USAF units. The security provided at RAF Greenham Common and RAF Molesworth during the deployment of the ground-launched cruise missiles was only the latest in a long line of joint efforts. The SPs and MOD police drew upon their past cooperation to plan and execute very stringent measures for Air Fete '86. RAF Mildenhall was taken off the increased security alert in effect since El Dorado Canyon and placed on normal security status approximately two days before the air show, although an augmented joint security force consisting of the entire RAF Mildenhall SP squadron and approximately 350 MOD police provided additional safety. Also, U.S. Air Force members attending the show were encouraged to wear their uniforms to provide additional military presence and ease the minds of those attending the air show. The security forces focused on keeping automobile parking areas and portable toilet areas, logical places for bombs to be left, segregated from pedestrian traffic areas. Also, additional bomb detection dogs were brought in from other U.S. bases to screen the air show area.[40]

There was an inordinate increase in the number of British, American, and international media representatives at Air Fete 86, apparently in anticipation of the carnage that would surely occur as a result of a terrorist attack. Undoubtedly to their disappointment, only two incidents marred an otherwise normal air show: the mid-air collision and crash of two British vintage aircraft during an aerial display, and a demonstrator who defaced an F–111 on static display with spray paint. Despite these occurrences, the show was generally considered successful. British leaders such as Sir Eldon Griffiths and Lord Trefgarne, Minister for Armed Forces, attended the air show to show their support, and, all things considered, people enjoyed themselves. Although the crowd, estimated at three hundred thousand, was down from the four hundred thousand who attended in 1985, it was still the second largest crowd in the event's history. While the fear of terrorist attack might have been a factor in the lower attendance, alternative activities probably were just as significant. Approximately two hundred and fifty thousand people, for example, attended a fund-raiser for starving people in Africa held that same weekend.[41]

Headquarters Third Air Force felt that the "public outcry against the raid [would] continue for several weeks, but will eventually wane." This proved to be an accurate assessment. The success of the Mildenhall air show relieved much of the stress on the American military and British communities, and with its conclusion, the amount of attention that the terrorist threat received in the media and number of protests activities quickly dissipated.[42] The chief of public affairs at RAF Mildenhall aptly concluded that, as far as the threat of terrorist retaliation was concerned, Air Fete '86 was the "point in which we passed the kidney stone."[43] The new challenge for U.S. air base commanders was how to resume normal community and media relations. The public affairs approach to

this problem was to move cautiously to a "business as usual" atmosphere with the gradual resumption of base tours and providing speakers to civic groups. U.S. service members, however, were advised to treat discussions with their British friends about Eldorado Canyon and its aftermath sensitively. During the "period of renewing relations, it was important to talk out concerns and not permit them to linger and isolate the communities."[44]

In summary, the Eldorado Canyon bomb raid lasted only about eight minutes but its immediate impact on Anglo-American relations was profound. In the short term, between 60 and 80 percent of the British public expressed disfavor for the air raid. Those traditionally on the political left were generally suspicious of U.S. power and influence in the world and could not be expected to applaud El Dorado Canyon. They were joined, however, by others who believed that the Thatcher government had slavishly followed U.S. foreign policy and failed to stand up for British interests and by even larger numbers afraid of Libyan reactions. Those, primarily from the right, who approved the raid without hesitation were in a minority, at least initially. The negative reaction in Britain thus went beyond habitual left and right wing politics. The raid also reemphasized the importance of the 1952 Truman-Churchill protocol for joint consultation on the use of British-based U.S. forces. The protocol had proven to be an effective tool and consultation between the U.S. and British governments had occurred prior to El Dorado Canyon. After the raid, however, the British government brought up the subject of joint consultation on the use of U.S. forces in Britain more often.

Despite some change in emphasis at the government-to-government level, however, the long-term impact of the Libya raid on American and British relations was transient. The fear of terrorist reprisals soon disappeared, and the public attitude within the communities near the U.S. bases returned to near normal following the uneventful air show at RAF Mildenhall.

It is possible for both Britons and Americans to take for granted the presence of the U.S. Air Force in Britain. The impact of the Eldorado Canyon raid shows that at the larger international level, the unilateral use of American air power must be considered in the domestic political environment of Britain. At the local level, commanders must be prepared to deal with the impact of this domestic political and public reaction on their people, the security of their installations, and the relations with the communities in which they live.

Notes

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6. Freitag intvw, pp. 73-75; Msgs, Third Air Force/PA to USCINCEUR, *et. al.*, subj: US EUCOM JIB Mildenhall Reports, 151600Z Apr 1986, 161600Z Apr 1986, 171500Z Apr 1986, and 181500Z Apr 1986, Docs 12-14 attached to "EC Study."
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39. Sprowls intvw, pp. 103-107; Intvw, MSgt. Mark A. Bryant, 48 TFW Historian, with CMSgt. Thomas Norvelle, 48th SPG, Sep 2, 1986, Appendix VII to "EC Study," p. 121; "Mildenhall American Airshow Still to Go Ahead," *East Anglian Daily*, Apr 18, 1986; Venkus, *Raid on Qaddafi*, pp. 125-27.
40. Sprowls intvw, pp. 103-104; Author's observations while assigned as historian of 501st Tactical Missile Wing, RAF Greenham Common, and Deputy Command Historian at Headquarters Third Air Force.
41. Kennett intvw, pp. 69-71; Freitag intvw, pp. 85-86, 95-96; Sprowls intvw, pp. 103-107.
42. Msg, Third Air Force/PA to USCINCEUR, *et. al.*, subj: US EUCOM JIB Mildenhall Report Day Four (Final), 181500Z Apr 1986, Doc 14 attached to "EC Study."
43. Freitag intvw, p. 85.
44. *Ibid.*, pp. 89-90.

Some Additional Comments on Crisis Response During the Falklands War

Air Marshal Sir John Curtiss*

We have heard once or twice during the course of these last two days, "If you wish for peace, prepare for war." What is never said is, "What war do you prepare for?" The British defence forces have been structured almost since the end of World War II along the lines of the North Atlantic Treaty Organization, and we have had an instinctive understanding that we would never go to war except with allies.

Well, of course, when the crisis started in the South Atlantic with the invasion of the Falklands, as usual, we did not have a contingency plan that covered anything like this. Not only that, I do not think we had an up-to-date air order of battle for the Argentine forces. And, to be quite honest, we did not even have any decent up-to-date maps of the Falkland Islands. So we were completely, if you like, unprepared.

Of course, General Galtieri was unprepared for the "Iron Lady." I am quite convinced that had we not had Maggie Thatcher at the helm, we would have probably dithered and sat around and made protestations and all the rest and done absolutely nothing. But I think she saw very clearly that if dictators were able to get away with such actions—yes, maybe Argentina was a long way away and maybe the Falkland Islands were a very small portion of the globe—then the invasion had very important lessons for the future. And so, within days of the invasion, the Royal Navy had orders to put together a task force.

We talk about crisis management and command and control, but in those days—it has been changed since—we did not have any combined operational headquarters. Fortunately, for some years—I think something like seventeen years—the Royal Navy's Commander in Chief, Fleet, had lived side-by-side with the commander of the Royal Air Force's Maritime Air Forces, and

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* Air Marshal Sir John Curtiss served as the air commander during the Falklands War. Although he was not originally scheduled to speak, the Air Force Historical Foundation and the Royal Air Force Historical Society took advantage of his presence at the symposium and asked him give a picture of crisis response during that conflict from his special viewpoint.

Air Marshal Sir John Curtiss, Royal Air Force, retired, is a distinguished veteran of RAF Bomber Command during World War II who has served in every operational command at home and overseas, as well as in many important staff positions. Among his duties, he was a pilot during the Berlin Airlift, Group Captain for Operations at Headquarters, Strike Command, Senior Air Staff Officer of No. 11 Group, Director General of Organization for the RAF, and Commandant of the RAF Staff College Bracknell. In 1982, while serving as Air Officer Commanding 18 Group, Air Marshal Curtiss was appointed Deputy Commander in Chief and Air Commander to Admiral Fieldhouse during the Falklands Campaign. From 1984 to 1989, he was the Director of the Society of British Aerospace Companies. Air Marshal Curtiss retired from the RAF in 1991 after forty-one years of service.

at that time, that was myself. At least we had a two-service headquarters, but it wasn't organized as a war headquarters except in a strictly NATO and Maritime sense. Now we have heard today, that the Americans used NATO aircraft against Libya. Well, we, of course, in the end, had to put in NATO assets that we owned to regain the Falkland Islands. Not only that, but we actually had to use some of the NATO offices in our operations center because we simply did not have room to operate otherwise.

It quickly became clear that the ships would sail, although it was not clear when they sailed exactly what we were going to do. There was no real plan when they set out, and they had to be assembled and sent so quickly that they were not even loaded tactically. However, and happily, as you heard yesterday from Ron Dick, there was Ascension Island with its runway and its facilities which the United States Air Force allowed us to use. We were able to have a pause in crisis management at Ascension Island, a pause we had to have so the ships could be revamped logistically. A lot of work was done over a number of days, reforming those ships so that once we got down to the Falkland Islands—if the crisis still existed and if we got our orders—we would be able to go ahead and do a landing.

In the early days, of course, my command mainly consisted of the Nimrod long-range maritime patrol aircraft and a number of helicopters used for air-sea rescue work. As the days progressed, it became quite clear that we were going to have to add to the Navy's aircraft order of battle. While they had a number of Sea Harriers, we had no Sea Harriers; indeed, we had no Harriers which had ever operated off the decks of carriers. But within three weeks, No. 1 Squadron in Germany—which was there under NATO supporting the army—had been reassigned and sent down to Ascension Island and put on the various carriers. I think that is one of the examples of the marvelous flexibility of air power, how you can switch aircraft from role to another.

As far as command and control is concerned, I think that was a very interesting development, which, again, depended very much upon the personality of our Prime Minister. I always reckoned her to be a lot like Queen Elizabeth the First. She did not believe in dealing through committees and things like that. She came straight to the commander in chief who was in charge of the operation. We got to see Margaret Thatcher quite a lot down at Northwood telling us what to do, but not how to do it. I have the most immense respect for the lady. She was exceptionally sharp about the various problems we faced and things that had to go on, but she knew that the people in charge, in uniform, were the people who had to decide how to do it. There was also, of course, the chiefs of staff. I got called in front of them a number of times to explain exactly what we were doing down at Northwood on the air side. It worked remarkably well, despite the way it was put together.

When the fleet sailed from Ascension Island towards the Falklands, we still had no decision from the War Cabinet as to whether we were to invade or

not, and, indeed, all this time U.S. Secretary of State Al Haig was doing his diplomacy and shuttling around.* I suspect that even at our war headquarters we thought by the end of the day those efforts would succeed. We did not, perhaps, estimate how obstinate dictators can be and how they hate to lose face.

Many people thought that there was not much chance of our succeeding. We were operating eight thousand miles from the United Kingdom, which posed all sorts of problems, and then our aircraft had to operate four thousand miles from any area where we wished to operate. Every aircraft that we owned was converted in immensely quick time, giving them in-flight refueling capability. That conversion in that amount of time was very remarkable.

Coming back to crisis management, the decision, quite clearly, had to be taken, and we had impressed on the Prime Minister the one thing we could not do was hang around off the Falkland Islands waiting for a decision. The weather, of course—it was winter down there—was pretty lousy. We had a very small amount of assets, and the Harriers we had were absolutely vital. We could not allow for any real losses, especially not in accidents, rather than in warfare. So, having put together our plan for the landing, we then went and briefed the Cabinet.† It was very interesting listening last night to what General Horner had to say about briefing President Bush and the degree of lack of knowledge amongst a lot of Cabinet people. We had the same problem, with the exception of one man who was very important. The Deputy Prime Minister was William Whitelaw, and he had had a fairly distinguished career in the army during the last war and had an instinctive understanding of things military, especially the question of casualties. That was the question that was thrown at us constantly by the Prime Minister and the members of the Cabinet and not just for political reasons. Maggie was often accused, wrongly I think, that she did not really regard human life as being quite that important. Well, that is entirely wrong. She was very concerned that our troops suffer a minimum of casualties, and, in the same way, she wanted to get the thing over so that the Argentine forces had a minimum of casualties. And, as you well know, in a war fought thousands of miles from home, the British forces only suffered 253 killed. That is too many, in all conscience, but low when you look at what has happened in some other wars.

Command and control under this sort of crisis management was strange simply because you never go and fight the war which you planned for. Here we had a war which nobody ever imagined we would fight, but that was actually over in twelve weeks. We heard earlier this morning about another war in

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* Prime Minister Thatcher directed overall strategy through a small group of senior ministers which included Deputy Prime Minister William Whitelaw, Defence Minister John Nott, Foreign Secretary Francis Pym, and Chairman of the Conservative Party Cecil Parkinson. Although called a War Cabinet, it never officially used that title.

† The chiefs of staff formally presented plans for Operation Sutton, the landing on East Falkland Island, to the war cabinet on May 18, 1982.

Malaysia, which, perhaps, was more easy to foresee, yet which actually took twelve years to resolve. When people talk about contingency planning and crisis management, you really do have to be prepared for just about anything. Again, and this was said yesterday and I would endorse it entirely, somehow our political leaders have to be trained in operating under a war or crisis environment. I well remember, and I know my colleagues here will remember also, very often during some of our major paper exercises in London—when you would have expected the man or woman who is going to actually have to give the orders to appear, at least to look at what these exercises were, what was happening, and how to behave. They would not do it for political reasons, which I do not pretend to understand. But crisis management is important and we must to be prepared to exercise it properly.

Questions and Answers

Malcolm Postgate: The first question concerns something I did mention, but, perhaps, not strongly enough: Did the weather and tropical climate have a significant effect on British air operations during the Malayan Emergency? I don't think I am best qualified to answer. Probably, someone with us today who flew during the campaign can tell us what the weather was like. But the fact is, yes, it was a major factor. It was a very heavy, rainy, tropical climate. You must remember from the offensive air point of view, you had a narrow window in the early morning, for a start, then the ground fog rose and could build up and last all afternoon. In terms of maintenance, it's extraordinary that the Lincoln bomber squadrons maintained 75 percent serviceability throughout the war; the Canberras only averaged just over 50 percent. There was a great strain on the ground crews to keep these aircraft in the air, especially when the helicopters came in. They were brand new and were flying toward the limits of their operational capability, particularly with regard to the seven thousand feet mountains in Malaya. Of course, toward the end of the operations they would get up to about eight or nine thousand feet. But the early Dragonflys, when they came in had, of all things, balsa wood and cloth motor blades which rapidly came unstuck. So there were endless problems based on the climatic conditions. I can't really answer much more on that; just imagine how it was. And for those of you who were there, I'm sure you can need no further explanation.

The second question is To want extent did the RAF rely on forward air controllers, either friendly ground forces or airborne? It continues, If they were not used fully, why not? Well, the simple answer to that is that it wasn't like the Second World War where forward air controllers were used very effectively. The problem in Malaya was you had very fleeting contacts with the enemy, and after 1952 when they were trying to avoid contact at all costs, you couldn't circle around and come up on them. They were off. So whatever form of target identification you put in, you had about one and a half minutes to get your bombs on target, otherwise they'd be gone. The other real problem was that the best techniques of target identification and target marking were evolved too late to come in to proper effect for the campaign. In the early part of the campaign, the airmen relied very much on dead reckoning and visual aid. The pilots actually got a detailed knowledge of the land, quite useful it was.

Another question is, Please describe, if you know, the application of Malayan military and police experiences to the Mau Mau confrontation in

Kenya, or vice versa. I can't really answer that, because I not an expert on that subject.

In the Malayan Emergency, did air crews have an established tour? The answer is that they were not normal Far East tour duties, and it was extremely arduous. I think I told you that particularly supply dropping crews lost one and a half or two or three pounds of weight every time they flew. I think it was extremely difficult. The Australian air crews wanted to have tours of two and a half to three years which some of our people had to do, because that gave them, under the joint agreement, the right to have six months off for rest and recreation.

Finally, Were there many air crew taken prisoner of war? No, I don't think there were. There weren't that many crashes and the rescue helicopters were usually in there straight away. And the communists weren't, quite frankly, in the business of capturing prisoners.

Donald Welzenbach: I'll start with the easy questions first: Can you tell us anything about the 1950 reconnaissance operations out of West Germany called Project Heart Throb? No, for two reasons: I know very little about it, and I think it is still classified.

With regard to the U.S. Air Force/RAF reconnaissance coordination, were RB–45 Tornadoes used by either air force for reconnaissance flights over the eastern Soviet Union prior to the Canberra/U–2 entry into service? RB–45s in RAF livery were photographed at the time without much further information. In response, I was only tangentially interested in this aspect of the subject. I really limited my research to the CIA's U–2 program and A–12 program—the Oxcart Program. I know that those flights did take place, but I never saw the documentation from them or anything on how frequently they took place. I just know they did occur.

Why does the CIA not admit to thirty-year-old air flights, when the overflown governments know of such flights? Well, I understand that the only thing keeping the CIA's official history of the U–2 program—it runs about 350 pages—from being totally declassified and released is the British government's refusal to admit that it participated in the program. One of the pilots on the 7th of October mission was quoted recently in *Jane's Air Defence Weekly* as participating in the program, told where the flights he made and everything else, so, if we can break that logjam with the British government, then this history can come out and will answer a lot of unanswered questions.

Please expand on Dr. Land's technical participation on B–57/U–2 systems. Dr. Land was ubiquitous; he was everywhere. It was a strange time. When the U–2 came about and when overhead reconnaissance was being discussed, it was mostly discussed outside of the government. And Dr. Land headed this panel on intelligence, the Technological Capabilities Panel, and that was a very critical panel. As I told you, they had *carte blanche* on everything. When Land found out about an aircraft design by Kelly Johnson called the

CL–282, he undertook a lot of investigations on his own. He would invite people up to his Cambridge office and laboratory. He would talk with Perry Pratt from Pratt & Whitney engines, Dr. Lessing from Kodak; and Kelly Johnson, himself; he'd have them come up and they'd talk the project. Garrison Norton, who was an Assistant Under Secretary of the Air Force then, later told me: "Gee, when some of those discussions were had, I was the only government person in the room." So Land was intimately involved. Then, of course, he was very good at photography; his knowledge of the subject was tremendous. At the time, late 1954 or early 1955, Lessing came and reported that Kodak was working on a very thin film based in mylar, but that they couldn't see much application for it and that they thought they were going to discontinue it. Land, however, impressed upon him the urgency of continuing that research. He said, "You'll be selling that film before very long; you'd better keep it up!" And they did. Thin film was very important as payload. The thinner it is, the more you can get aboard an aircraft. Until about 1969, Land was the most influential of all the scientific advisors to the government, because he always favored that technological leap. He was always willing to take it when nobody else was. Systems in existence today all rely on something that you all know and I can't mention, that was sold to President Nixon in 1969. Jim Land convinced him to spend $10 billion dollars in 1969 dollars. Not just any common citizen can walk up to the President and convince him to take a gamble like that. That is what Jim Land did. He was given a medal in 1985 for his participation in this project, but he was too ill to come to Washington and accept it. The Air Force and the Agency have declassified some papers, especially the letter that Mr. Land wrote to Alan Dulles telling Dulles, who was terribly reluctant, why Alan Dulles had to undertake the U–2 project. Dulles did not want to do it. Dulles was the classic intelligence man. He had political problems with the Intelligence Advisory Committee, and he didn't want to get into any projects that the Air Force had turned down. He didn't need that problem, but he was just sort of told that he had to do it by this fellow up there at Cambridge.

How did General Curtis LeMay help or hinder the development of the U–2? I interviewed a retired Air Force colonel who, as a major, brought the news to General LeMay about this airplane designed by Kelly Johnson. At that time, in that design stage, the airplane had one engine; it had a reinforced belly rib on which it would land; and it didn't have any guns. During the interview, he told me that LeMay took his cigar out of his mouth and said, "I don't need a plane with, one engine, no wheels, and no guns! When I want a picture, I'll send a B–29!" And that was the end of it. Well, this really illustrates the real problem that any type of reconnaissance aircraft had in getting into the Air Force inventory. If it didn't have two engines, it didn't qualify.

Jerome Schroeder: I have a question here that stresses what, I believe, General Bernard Rogers, the SACEUR, said at the time of the raid on Libya: "Thank God for Maggie Thatcher, the only leader in Europe with balls!" It

continues, You might want to comment on the leaks in our own press prior to the raid. Someone in the Pentagon leaked some sensitive information to a reporter which was published, thus threatening the raid's success. Well, I was able to look at some American press releases and articles during the time period. I didn't have access to all of them because in Britain we didn't get all of the newspapers. But there was as much speculation in the United States as there was in Europe, especially around some of the bases. If every KC–10 tanker in the U. S. Air Force fleet takes off and the word goes out that, "Oh, by the way, we are going to England," it tells the local populace and the local press in the United States that something is going on and fuels speculation. It did not really take a leak to the press out of the Pentagon; there was speculation on both sides of the Atlantic as to what was going on.

Another question is, Why did France deny the U.S. aircraft permission to fly in French air space? First, the French had a lot of economic ties with Libya and, basically didn't want to upset the Libyans. Second, France has a fairly large Arab enclave and they didn't want riots in the Paris streets. Those are two of the reasons I can see for French leaders denying us permission to cross their territory.

What diplomatic actions, if any, did the U.S. and U.K. governments take against the French government? In President Reagan's recent autobiography, he indicates that there was at least one terse phone call with the French. I think there may also have been some behind the scenes moves and discussions regarding French actions which I didn't have access to. However, events in Europe refocused less than ten days after the Libyan raid when the nuclear accident at Chernobyl occurred. Diplomats, the press, everybody focused their attention on this new major event.

Recent speculation suggests that the raid on Libya took Kaddafi out of the terrorist and political arena. I know as a result of some of my research that Kaddafi did not want to sleep in the same place twice in a row, and statistics showed that terrorism activity over the next few years did subside. This, I believe, was at least partly the result of a feeling that maybe the U.S. would strike Libya, or whoever is propagating terrorism, again.

Has the media in Britain and the people near the bases changed their position on the raids? Well, it is sort of having a minor spat with your wife. You know, you hem and haw for a little bit, you make up, and you go about your business together. Another thing that has to be taken into consideration is the rotation of U.S. military personnel and their families in and out of the bases. Right now, most of the people who participated in the raid are no longer in Britain. You have new people, new experiences, new friendships that have developed.

Another one: While France's refusal for over-flight is well known, why is the there little mention of Spain? During General Walters' trip around the European continent, from what I have been able to determine, he queried each

of these countries: Britain, of course, France, Spain, and Italy. France was the one that was the most adamant about its refusal to help, but the Spanish also declined. I think in the case of Spain that there was a political and public move within the country at the time to reexamine its role in NATO. The political situation was thus a bit tenuous.

Sir John Curtiss: I have one question to respond to: Was it pretty difficult to have Prince Andrew in the Falkland Islands campaign as a flight officer? Well, the Royal Navy has a way of handling these things, and I think they handled it very well. He was kept out of direct action, though the flying was still hazardous. But the Navy enjoyed it, he enjoyed it, and the public enjoyed it, so it was quite a good thing.

General Bryce Poe II and Air Marshal Sir Frederick Sowrey
after the concluding session of the symposium.

Closing Comments

Air Marshal Sir Frederick Sowrey: All that I need to say is a big "Thank You!" for everyone who has come from the United Kingdom to all of the organizers who put this symposium together, and to the participants who have done a tremendous amount of hard work in their research. They have taken facts, looked at them, synthesized them, analyzed them, squeezed them, and come out with results which sometimes differ from traditional knowledge, all good and all stimulating. It has been a wonderful experience for us. Thank you very much for your comradeship. Thank you very much for the way you received us. Let us hope that we can do it again. The important message that has come across to me is that the relationship between people is so important. Thanks to the men and women, leaders and led, who have been involved, the relationship between these two air forces is unsurpassed in history. Thank you all.

General Bryce Poe II: This symposium has been very special for us. We have looked forward to it for a long time. I cannot think of anything I would change, except one thing, Freddie, and that is that we have too many gray hairs in the Air Force Historical Foundation and, probably, that may apply to the Royal Air Force Historical Society, also. I would be glad to see us bring some younger people in here and see if they cannot do these kind of things. If twenty years from now, they do not have those relationships that we have celebrated here, the world will be less safe place because they will not be able to do the kind of things we did.

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