D G MACKAY

i

SCOTLAND THE BRAVE?

US STRATEGIC POLICY IN SCOTLAND 1953-1974

To April and Lorraine

ABSTRACT

During the Cold War, American strategic policy was exercised and implemented on a worldwide basis; decisions taken by Presidents and their advisers were eventually implemented at some other location. Scotland was one of these other locations and this research project will examine the implementation of the US strategic doctrine and its eventual delivery in Scotland. The research covers the following four questions.

Why were the Americans present in Scotland during this period in such strength?

What were they doing there?

How did this change over time?

How does this study of policy implementation help us to understand the American motives?

The research is split into six separate chapters. The first chapter sets the scene and poses the research questions noted above. The purpose of the remaining chapters is to examine activities that had a physical presence in Scotland and interrogate the research sources to find answers to the contextual questions.

Chapter Two examines how the US established and maintained an intelligence gathering system at Edzell and Thurso, apparently regardless of any larger strategic imperatives. Chapter Three deals with the creation of the US Polaris submarine base at Holy Loch, the most high profile base in the UK. Chapter Four, anti-submarine warfare (ASW) strategy addresses the strategic importance of the Scottish base at Thurso for this purpose. Chapter Five concentrates on the communications, navigation and logistics tasks carried out by the US forces in the UK, and especially in Scotland. The final chapter draws the systematic study together along with the conclusions reached in each chapter to the research questions.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF MAPS

LIST OF TABLES

GLOSSARY OF TERMS

ACE High	Allied Command Europe integrated command and control system.
AJCC	US Alternative Joint Command Centre
AD-70	Allied Defense into the Seventies NATO programme
AMTW	Aeromedical Transport Wing
AN/FRC-39A(V)	Intelligence gathering antenna
ANMCC	Alternate National Military Command Center
APCS	Air Photographic and Charting Service
ARPA	Advanced Research Projects Agency
ARPANET	Defense Department nuclear resilient communications system
ARS	Air Rescue Service
ASW	Anti-submarine warfare
AUTOVON	Automatic Voice Network Telephone System
AGI	Soviet Auxiliary Intelligence Gathering Boat
AWS	Air Weather Service
BMEWS	US Ballistic Missile Early Warning System
GCHQ	UK Government Communications Headquarters
C3	Command, control and communications system
CDAA	Antenna system for Wullenweber radios
CIA	Central Intelligence Agency
CINCEASTLANTMED	US Navy Commander in Chief Eastern Atlantic and Mediterranean
CINCEUR	US military Commander in Chief Europe
CINCLANT	US Navy Commander in Chief Atlantic
CINCUSAFEUR	US Commander in Chief US Air Force Europe
CANS	Civil Air Navigation School
Clarinet Pilgrim	Component of US naval navigation system
CLASSIC WIZARD	US SIGINT programme
CNO	US Chief of Naval Operations
COMASWFORLANT	Commander ASW Force Atlantic
COMINT	Communications Intelligence
CRITICOMM	US critical communications for nuclear launch orders
Crystal Palace	Presidential emergency facility in Virginia
DCI	Director of Central Intelligence (head of CIA)
DDE	Radio Destroyer Escort
DEB	Digital European Backbone communications system
DER	Radar picket ship
DEW line	US Distant Early Warning system
DIRNSA/ CNCSS	Director National Security Agency/ Chief National Central Security Services
DOD	Department of Defense
DPC	NATO Defence Planning Committee NATO Defence Planning Committee (DPC
EAM	Emergency Action Messages from US national command authorities

ELINT	Electronics Intelligence
ELF	Extremely Low Frequency radio transmission system
EOD	Explosives Ordnance Disposal Group, US Atlantic Fleet
EDIP	European Defense Improvement Program
FBM	Fleet Ballistic Missile
Flexible Response	US strategic doctrine in the late 1960s
GIUK Gap	Greenland-Iceland-UK naval zone
HFDF	High Frequency Direction Finding radio system
ICBM	Inter-continental ballistic missile
IDF	US Defense Force in Iceland
JCS	Joint Chiefs of Staff
JIC	UK Joint Intelligence Committee
LF	Low Frequency radio transmission system
LORAN	Long Range Navigation system (naval)
MAC	US Military Airlift Command
Massive Retaliation	US strategic doctrine mid-1950s to mid-1960s
MATS	US Military Air Transport Service
McMahon Act	US law prohibiting the sharing of nuclear secrets with other countries.
MEECN	Minimum Essential Emergency Communications Network
Minuteman	US inter-continental silo-launched ballistic missile
MIRVs	Multiple Independently Targeted re-entry Vehicles (ICBM warhead)
MLF	NATO multilateral force
MOU	Memorandum of Understanding
NARS	North Atlantic Radar System
NATO	North Atlantic Treaty Organisation
NCA	US National Command Authority
NAVEUR	US Navy Europe
NPG	NATO Nuclear Planning Group
NC3	Nuclear Command, Control, and Communications
NCA	US national command authority
NEACP	National Emergency Airborne Command Post
Night Watch	Presidential airborne command post
NMCC	National Military Command Center
NMCS	National Military Command System
NOACT	Navy Overseas Air Cargo Terminal
NORAD	North American Air Defence System
NSA	National Security Agency (intelligence agency)
NSC	National Security Council (presidential advisory group)
NSG	US Naval Security Group
ORSE	Operational Reactors Safeguards Exam
Project Sanguine	ELF programme
Project VENONA	US counter-espionage operation 1940s-1950s
REFORGER	Reinforcement of Germany annual exercise
RSVN	Soviet Strategic Missile Forces
SAC	Strategic Air Command (USAF)

| SACEUR	Supreme Allied Commander Europe
SACLANT	Supreme Allied Commander Atlantic (US Navy)
SALT	Strategic Arms Limitation Treaty
SAM	Special Airlift Mission
Seafarer	US Navy ELF programme
SIGINT	Signals Intelligence
SIOP	Strategic Integrated Operational Plan
SHF	Super High Frequency radio transmission system
SILK PURSE	Strategic command network system.
SIS	UK Secret Intelligence Service (MI5)
Skybolt	US air-launched tactical nuclear missile
SLBM	Submarine Launched Ballistic Missile
SLOC	Sea Lines of Communication
SOSUS	Sound Surveillance System (US Navy)
SPECCOMMS	Naval Special Communications system
SPO	Special Projects Office
SSBN	Ship Submersible Ballistic Nuclear (nuclear powered submarine with underwater-launched nuclear missiles)
SSK	Attack Submarine
SSN	Attack Submarine Nuclear-Powered
TACAMO	Take Command and Move Out aircraft
Troposcatter	Radar system (US)
UKMS	UK Wideband Microwave System
ULTRA	World War 2 SIGINT
USCIB	United States Communications Intelligence Board
USAF	United States Air Force
USAFSS	USAF Security Service
USCG	United States Coast Guard
USMC	United States Marine Corps
USNAVSECGRUACT	US Naval Security Group Activity
VLF	Very Low Frequency radio transmission system
WWMCCS	Worldwide Military Command and Control System

CHAPTER ONE

INTRODUCTION

Background

During the Cold War, American strategic policy was exercised and implemented on a worldwide basis; decisions which were taken by Presidents and their advisers were subsequently implemented at some other location. Scotland was one of these other locations and this research project will examine the implementation of the US strategic doctrine and its eventual delivery in Scotland.

Scotland can claim to have been in the front line of the Cold War due to its strategic location and the presence of the US nuclear ballistic missile submarine fleet in the Holy Loch, the signals intelligence stations at Edzell, Thurso, Kirknewton and Mormond Hill, and the strategic reinforcement airfields at Prestwick and Machrihanish. The research will examine these activities in the context of changing American strategic defence policy during the mid-Cold War period, i.e. from 1953 to 1974, covering the presidencies of Eisenhower, Kennedy, Johnson and Nixon. These dates have been chosen as they encompass the establishment of the first US strategic base in Scotland at Kirknewton in 1953 and the end of the landmark strategic policy of the Nixon presidency in 1974 when he had ended the Vietnam War, changed US-Chinese relations and built détente with the USSR.

Scotland has been chosen as the focus of the research as it contained all of the major components of US policy – intelligence gathering, strategic retaliation, anti-submarine warfare and command and control facilities. These features were also present at other bases in the UK, but only Scotland had the major intelligence gathering and strategic retaliation bases. This factor makes it worthy of research. This limited focus will necessarily exclude other important activities that were carried out at these UK locations.

Map 1 – Scotland's Geographical Importance 1953-1974
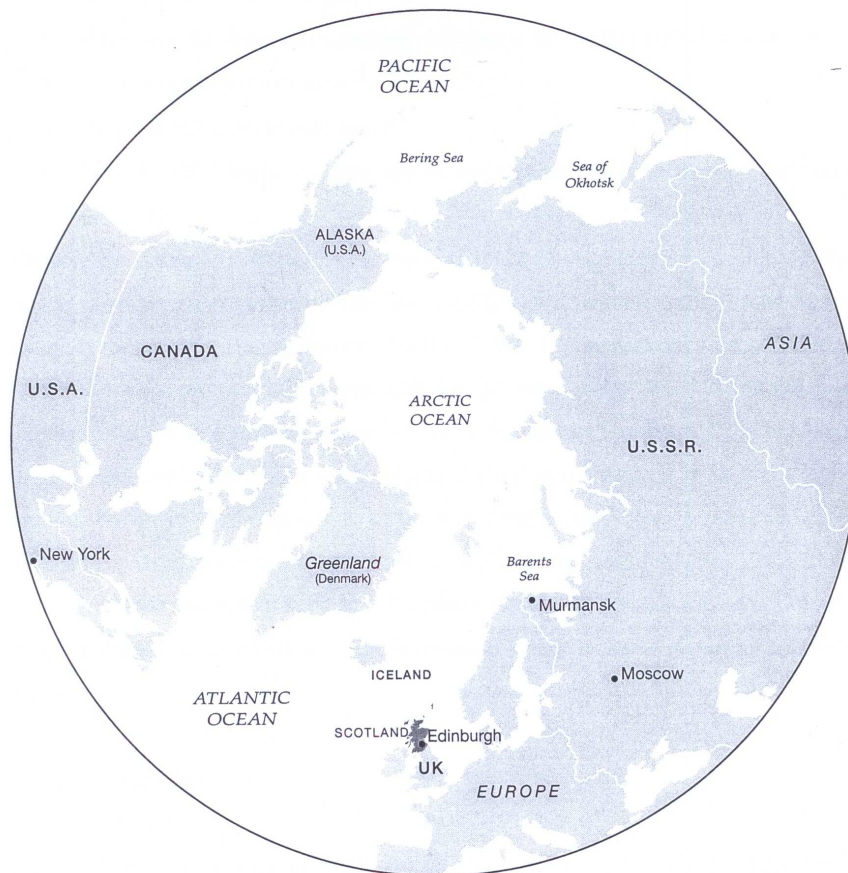
However, the topic of US strategic presence in Scotland during this period has not been covered in any detail and therefore the research will cover new ground.

The research questions in this paper are as follows:

- Why were the Americans present in Scotland during this period in such strength?
- What were they doing there?
- How did this change over time?
- How does this study of policy implementation help us to understand the American motives?

The sources used are from the US National Archives College Park, the UK Public Record Office, the National Archives of Scotland, the Foreign Relations of the United States and a variety of online primary sources from US and UK government declassified sites. Almost all of the relevant information has been provided solely from US and UK primary sources, as there is a limited amount of translated Soviet/Warsaw Pact primary source material available. There is a wide-ranging collection of material, with some excellent detailed coverage, but also some areas have little primary source material currently accessible. As a consequence of these limitations, the research does not address in detailed fashion the full history of US actions during the period. However, there is an adequate supply of information available to construct a reasonable picture of the events of the time.

Review of the Literature

The Cold War dominated international relations activity of its time. There has been plenty of reporting on policy matters, but practical implementation measures have been somewhat neglected, especially in the case of US strategic activities in Scotland. Presidential actions have been well observed, but there has been less coverage for the 'lower, practical' activities. The project will attempt to link the high level decisions with the lower level activities, and relate them to actions in Scotland.

Three main schools of thought exist about American bases in the UK. The first of these emphasises American unilateralism and technically-driven defence matters. The second concerns itself with US multilateralism, with references to relations with NATO and the importance of the political relationship. The final school takes the US/UK relationship as its focus and examines this from a political viewpoint.

This research focuses on the American development of strategic policy and examines its implementation in its Scottish bases; this aspect has a limited supply of detailed literature. School One is dominant in this field as it considers all American actions as unilateral, and School Three, the UK/US political relationship, also has support. Related events will be examined through the US strategic doctrine, the Anglo-American Relationship and the use of American bases in Scotland. There is a variety of literature and original sources on these matters, but there is a shortage of original Soviet information in sharp contrast to the non-Soviet reports on the same matters.

American Strategic Doctrine

The principal change to America's strategic doctrine in this period was the move from military involvement in strategy to complete civilian control and the subsequent effort to reduce dependence on the use of nuclear weapons. The research project deals principally with American strategic policy, which moved from Massive Retaliation in the 1950s to Flexible Response in the 1960s. It has considerable interest for historians and has resulted in a consistent tension in their views. Denis Healy, former UK Secretary of Defence is of the opinion that 'Soviet intransigence' shaped US policy and was accelerated by American and UK officials who had worked together during the war.[1]

Michael Korda notes that Eisenhower did not believe that there was a 'single, simple answer to defending the United States', and although Gaddis does not rate Eisenhower as a great president, he acknowledges that his 'strategy was coherent' and in overall terms

---

[1] Healey, Denis, *The Time of my Life,* (London: Politicos, 2006), p.102

was 'more considerate than detrimental to the national interest.' This, Gaddis reckons, was a better legacy than what had preceded it, as well as what followed it.[2] In simple terms, Eisenhower was faced with an American doctrine of all-out nuclear response to any Soviet aggression and he worked to alter this situation.

Lawrence Freedman believes that the use of nuclear weapons by NATO was established by the New Look policy of the mid-1950s and in January 1954, Secretary of State John Foster Dulles stated advanced the concept of Massive Retaliation; the US would 'retaliate, instantly, by means and at places of our own choosing'. However, Massive Retaliation had its critics from its start in 1953, principally General Ridgeway, General Taylor, former Secretary of State Dean Acheson and Paul Nitze.[3] In 1958 Dulles wrote to Macmillan 'our entire military establishment assumes more and more that the use of nuclear weapons will become normal in the event of hostilities.'[4] Despite this belligerent attitude, Eisenhower still did not commit himself to the use of nuclear weapons in any of the crises of his presidency. Dockrill holds that Eisenhower's New Look strategic policy was heavily reliant on collective security as its mainspring, with the USA providing the nuclear capability and the other NATO allies providing the regional conventional defences

American strategic policy was predicated on two factors; first, the relentless advance of the 'military-industrial' complex as publicly identified by Eisenhower in 1961 and development of nuclear weaponry, and second, the imperative that the US must remain the sole nuclear power in the NATO alliance.[5] All commentators agree on these points.

---

[2] Michael Korda, *Ike: The American Hero*, (New York: Harper, 2007), p.701. John Lewis Gaddis, *Strategies of Containment: A Critical Appraisal of American National Security Policy during the Cold War*, Revised and Expanded Edition, (New York: Oxford University Press, 2005), p.196

[3] Beatrice Heuser, *NATO, Britain, France and the FRG*, (London: Macmillan, 1999), pp.38-41.

[4] Lawrence Freedman, *The Evolution of Nuclear Strategy*, Third Edition, (New York and Basingstoke: Palgrave Macmillan, 2003), p.85. R. Harkavy (1982) *Great Power Competition for Overseas Bases*, (Oxford: Pergammon,1982), p.216.

[5] George W Baer, *One Hundred years of Sea Power: the US Navy 1809-1990*, (Stanford: Stanford University Press, 1996). pp.340-2.

Map 1A – US Bases in Scotland 1953 -1974

Legend:
- intelligence collection site
- intelligence courier station
- communications station
- naval communications station
- communications relay station
- LORAN station
- reinforcement airfield
- SSBN base
- SSBN crew rotation station
- naval fuel depot
- weapons storage site
- nuclear weapons storage site
- site of other naval facilities
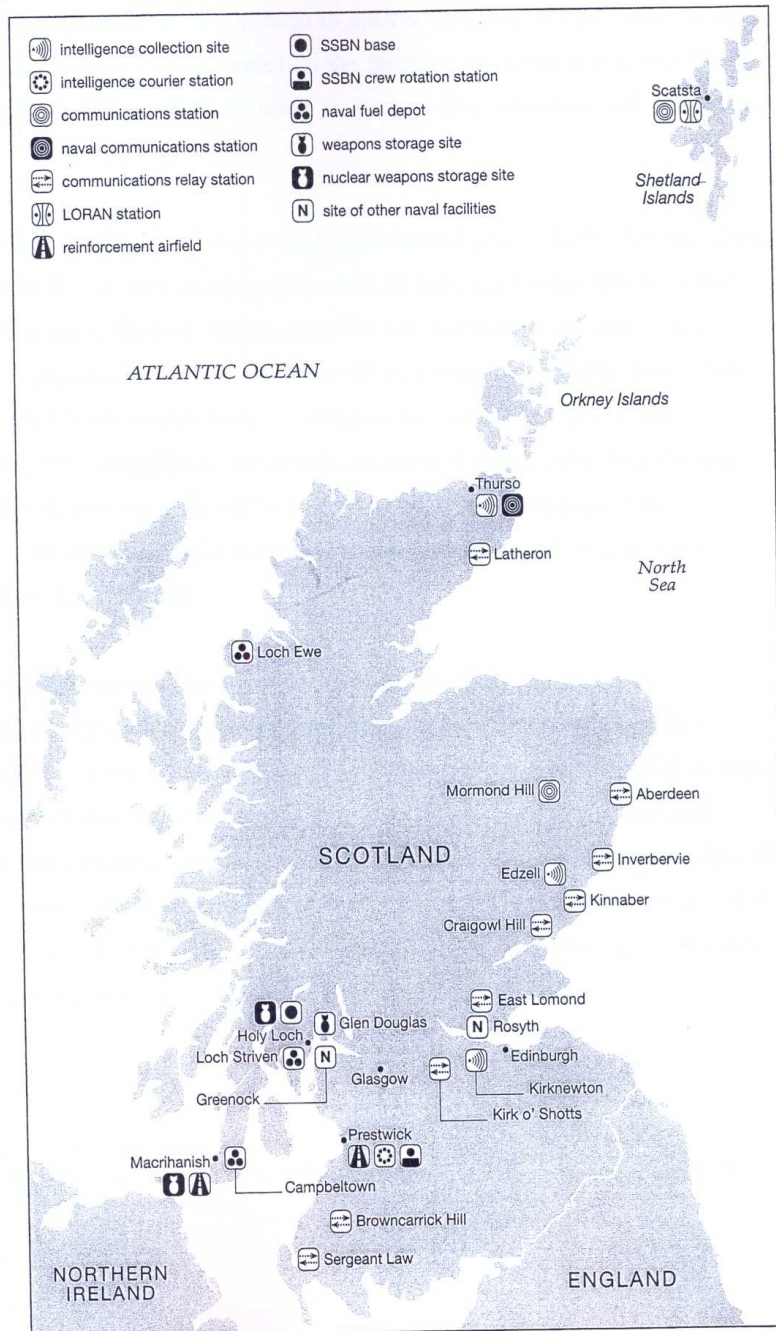
Eisenhower was determined to avoid wars after his experiences in World War 2 and Korea. He fully backed the development of nuclear weaponry as a prominent feature of US strategic doctrine, mainly centred on the Strategic Air Command (SAC) However, this strategic outlook could only result in huge civilian casualties and needed to be changed.

George W Baer and Donald Cameron Watt point out that prior to 1947, each individual service ran as an autonomous organisation, with its dedicated Cabinet Secretary; after this, the Secretary of Defense was the controller and only Cabinet member. [6] This resulted in a growth of civilians in the Office of the Secretary of Defense from 1,865 to 21,457 in 1962. Each service, however, attempted to continue its own research programme, and constant rows erupted between chiefs of staff over the rights of their own services to have the main part in the delivery of American strategic policy.[7] However, with the arrival of the Polaris submarine fleet, control of strategy was in the hands of the US Government.

George W Baer points out that after WW2 both the US Army and the US Air Force laid claim to the strategic role; both could deliver the atomic/nuclear weapons in the US arsenal and this left the US Navy on the outside, being robbed of its long reach strategic philosophy of Mahan. However, the Navy managed to secure a strategic role with nuclear-armed seaplanes. This was, however, a contradiction of the belief that a short all-out nuclear war could be avoided by having a longer, conventional-based conflict. This was the basis for the 'fire-break' strategic doctrine.[8] It also formed the crux of the inter-services arguments over strategic direction.

---

[6] Baer, p.370-2. D C Watt, *Succeeding John Bull: America in Britain's Place 1900-1975*, (Cambridge: Cambridge University Press, 1984), p.8.

[7] Watt, p.8.

[8] Baer, pp.1-5.

There was a huge increase in missile production in the late 1950s; the purpose of US nuclear forces was to be able to survive a Soviet first strike and therefore the importance of submarine-based missiles became obvious. [9] The USSR, he notes, had a similar view, notes Freedman, and General Pokrovsky was able to proclaim, truthfully, that 'the future belongs to long-range ballistic rockets.'

Dockrill maintains, because of the simple fact of the Soviet nuclear capability, relatively unsophisticated that it may have been, which could still reach the continental USA, Eisenhower was forced to concede that 'for the first time in its history the United States is now fearful.' By 1960, note both Stromseth and Dalder, the Soviet Union's increased capability of striking the United States meant that the policy of massive retaliation lacked credibility.[10] All the SAC sites were vulnerable to Soviet first-strike attack. On the other hand, Polaris submarines were almost impossible to find and attack and introduced the concept of 'finite deterrence'. This concept was adopted by Eisenhower's administration as it limited force levels and was obviously an alternative to massive retaliation. Kennedy accelerated the Polaris programme.[11]

The SAC planners refused to target any smaller targets, notes Beatrice Heuser, and their 1962 SIOP still provided for an immediate simultaneous release of all nuclear weapons at the outbreak of war. By this time, Kennedy and McNamara were in the process of regaining control of military actions from military officers; their only strategic option available during the Cuban missile crisis was to have initiated an immediate nuclear holocaust. [12] The question for Kennedy and his successors was how to deal with this

---

[9] Lawrence Freedman, *Kennedy's Wars: Berlin, Cuba, Laos and Vietnam*, (Oxford: Oxford University Press, 2000), pp.46, 103, 143, 248.

[10] J Stromseth, *The Origins of Flexible Response: NATO's debate over Strategy in the 1960s*, (New York: St Martin's Press, 1988),p.29. Ivo Dalder, *The Nature and practice of Flexible Response: NATO Strategy and Theater Nuclear Forces since 1967*, (New York: Columbia University Press, 1991),p.1.

[11] Baer, pp.350-76.

[12] Heuser, *NATO, Britain, France*, pp.38-41.

blunt reality and develop a second strike capability. The SSBN fleet fitted this requirement perfectly. [13]

On taking office, Daalder notes that Kennedy identified three priorities – to strengthen the nuclear deterrent, to create more flexible non-nuclear options and to establish central control over nuclear weapons. Former Secretary of State Dean Acheson produced a report which was the core of Kennedy's strategic thinking. [14] Kennedy, Johnson and McNamara were against the proliferation of nuclear weapons to anyone; their aim was a single NATO nuclear force, the USA and a return to the doctrine of 'Symmetrical Response' of Truman's time. But, as noted by Heuser, this was never welcomed by the European allies because of their deep-rooted suspicions of desertion by the USA in the event of a nuclear conflict. [15]

McNamara's principal role, as claimed by Freedman, was to ensure that the USA built up a guaranteed second-strike capability as 'the president's hand should not be forced by lack of alternatives.' McNamara's strategy had a 'plentiful supply' of the necessary weapons 'in each major category…to ride out a Soviet attack and still be available for retaliation.' [16] One of these was the newly developed SSBN fleet and this was a major policy change from Massive Retaliation. Freedman points out that there were many senior officers within the US Navy who did not support the SSBN project in its early days, because of a fear that 'it was diverting funds away from the large surface ships they preferred.' Military opposition continued from the sceptical SACEURs, Generals Greunther and Norstad, the latter being eventually sacked by McNamara for his opposition.

---

[13] Saki Dockrill, *Eisenhower's New-Look National Security Policy, 1953-61*, (Basingstoke: Macmillan, 1996), p.284. Freedman, *Nuclear Strategy*, pp.158, 319-20..

[14] Dalder, p.30.

[15] Heuser, *Russia, the Soviet Union*, pp.43-6.

[16] Freedman, *Nuclear Strategy*, pp.107, 220-6.

Kennedy inherited the SIOP with all of its absurdities; in retrospect it gives the impression of a 'Dr Strangelove' scenario; this prompted Kennedy and McNamara to institute serious strategic changes. By this time, Burke had ensured that the Polaris fleet would not come under the command of SAC. The Defense Reorganisation Act of 1958 gave operational command and control to the Secretary of Defense, instead of the military chiefs. This gave McNamara great strength in his programme of change and the Berlin Crisis of 1961, notes Baer, exposed Kennedy's lack of conventional options and brought great focus on the flexible response concept.[17]

Duffield shows that America faced two strategic problems, the threat of a direct attack against the USA by the Soviet Union and the Soviet threat to Europe. These problems were never resolved to the complete satisfaction of the USA or the European allies.[18] There was constant tension over NATO's ability to implement measures, as these depended on the numbers of conventional forces available, with the Europeans demanding an earlier release of nuclear weapons than desired by the USA. The Soviet General Staff believed that 'military operations would begin in 'the heart of the warring countries', by nuclear means, [19] but McNamara devised a counter strategy that responded to real events, giving the USA a retaliatory capability.

NATO's underpinning bargain was that the US would assist with Europe's post-war defence and reconstruction, according to Stanley Sloan, [20] but the US Congress constantly demanded less American involvement in the defence of Western Europe; there

---

[17] Baer, pp.365-7, 379.

[18] John S Duffield, *Power Rules: The Evolution of NATO's Conventional Force Posture*, (Stanford: Stanford University Press, 1995), pp. 11-12.

[19] Speech to the Supreme Soviet, Pravda 16 January 1960, in Thomas M Nichols, *The Sacred Cause: Civil-Military Conflict Over Soviet National Security 1917-1992*, (Ithaca and London: Cornell University Press, 1993), pp.63, 69, 94-5, & 101. Freedman*, Nuclear Strategy,* pp.220-6.

[20] Stanley R Sloan, *NATO, the European Union, and the Atlantic Community: the Transatlantic Bargain Reconsidered,* (Lanham: Boulder, New York. 2003), pp.1 & 41.

was never any lessening of the American presence and strategic capabilities in Scotland.[21] However, Lyndon Johnson's Great Society programme was starved of finance and ultimately did not make the advances it otherwise could have done.

According to Freedman, the Flexible Response agreement of 1967 did not result in the increases in European conventional forces implied, because the defence expenditures declined.[22] The year 1969, was a 'major turning point…in the Cold War' according to John Lewis Gaddis, as the USSR had now achieved nuclear parity.[23] There were also armed confrontations between Soviet and Chinese forces, and the USA was beginning to withdraw from Vietnam. America's overstretched policy had to change and this change was viewed as a retreat by the Soviets.

Nixon and Kissinger radically changed US strategic policy after this time; Robert Dallek points out their positive achievements as they ended the Vietnam War after long talks, overturned international relations regarding the treatment of China and strengthened the détente already under way between the USA and the USSR.[24]

The US/UK Special relationship

There is plenty of literature available on the US/UK special relationship dealing with Eisenhower, Macmillan, Kennedy and Johnson, but not very much for the Nixon/Heath era. This is probably explicable by the change in America's worldwide superpower status during the 1970s as opposed to the still strong wartime bonds in the 1950s and 1960s.

---

[21] Richard K Betts, *Soldiers, Statesmen and Cold War Crisis*, (New York: Columbia University Press Morningside Edition, 1991), p. 91: Stephen E Ambrose, *Eisenhower Soldier and President*, (New York: Simon & Schuster, 1990), p. 44.

[22] Freedman, *Nuclear Strategy*, p.271.

[23] John Lewis Gaddis, *Russia, the Soviet Union and the United States,* (New York: John Wiley and Sons, 1978), p.256: David Miller, *The Cold War: Military History*, (London: John Murray, 1998), p.422: Jonathan Samuel Lockwood and Kathleen O'Brien Lockwood, *The Russian Views of US Strategy: Its Past, Its Future*, (New Brunswick and London: Transaction Publishing, 1993), p.136.

[24] Robert Dallek, *Nixon and Kissinger: Partners in Power*, (London: Penguin Books, 2008), p. x.

The 'special relationship' between the USA and the UK, as noted by Rasmussen and McCormick, was a broad and complex network of links; trade, investment, communications, military; there were three layers – personal ties between leaders, mass sentiment and elite cooperation. [25] The commonly expressed views are that American actions were fully supported by the UK, and that the USA acted in its own interests at all times. The only historical debate appears to be the extent to which the UK benefited and this will be examined by the research sources in later chapters.

Robin Harris points out that from 1944 onwards, Harold Macmillan kept up the constant illusion that the British were actually the Greeks (smooth and sophisticated) and the Americans were the Romans (strong); by such string pulling he believed that he could guide the 'Atlantic community'. [26] American policy towards Britain believed that, under their guidance, the UK could reassemble a friendly coalition. Harris believes that this was not accomplished, but acknowledges the definite advantages of the 1947 US/UK intelligence gathering agreement.

John Baylis believes that the 'special' relationship was identified as a positive and essential matter by the JCS in November 1951, pointing out that the UK could host the US strategic bomber force. This was essential as the US strategic missile force had limited range and required operational bases close to the USSR; it also covered the strategic imperative of establishing targets for the Soviets away from mainland USA. [27]

---

[25] Jorgen Rasmussen and James M McCormick, British, Misperceptions of the Anglo-American Relationship, *Political Science Quarterly*, Volume 108, No. 3, (Autumn 1993), pp.515-541. <http://www.jstor.org/view/00323195/di980441/98p0471a/1?frame=noframe&userID=817710123@gla.ac.uk/01cc993399b9010caac63987&dpi=3&config=jstor> [accessed 15 May 2006].

[26] Robin Harris The State of the Special Relationship, *Policy Review*, <http://policyreview.org/jun02/harris_print.html> [accessed 14 June 2006].

[27] John Baylis, *Anglo-American Defence Relations 1939-1984: The Special Relationship*, Second Edition; (London: Macmillan, 1984), pp.40-1 & 78.

Eisenhower acknowledged the importance of the UK's support and strategic position in providing forward bases for the development of any flexible response concept.[28] Britain was an 'indispensable partner' that needed American backing in political, military and economic matters. However, Britain's tendency to ignore American opinion was not ignored. Frank C. Nash, Assistant Secretary of Defense, produced a report in November 1957 which recommended that the possible closure of some UK bases would not be well received and urged caution on such actions; the realities of the US/UK partnership required constant fine tuning, despite American dominance. This approach suggests that the US recognised that the UK needed some tangible benefits from the relationship and this was something which Eisenhower tried to accomplish, even after his great rage after the Suez crisis in 1956.

Moreover, this British conception of a special relationship (it was always much more a British idea than an American claims David Reynolds) served to differentiate the "English-speaking peoples" from continental Europe – ravaged by war and wracked by political turmoil.[29] The United States had much more to offer in power, wealth and ideology and Britain's absence from the European Economic Community until the 1970s reflected this pervasive sense that the Atlantic was narrower than the Channel.

The Soviet technological advances of the time ensured that the UK was essential to the home defence of the USA and Kennedy strongly promoted the 'special relationship' when Harold Macmillan visited Washington in April 1962.[30] Nevertheless, John Baylis also notes that the US regarded itself as immeasurably the senior partner, 'the only nuclear power' as stated by McGeorge Bundy, the National Security Advisor, and wanted the UK to concentrate on conventional forces within the NATO alliance.

---

[28] Appendix to Frank C. Nash's White House report on U.S. Overseas Military Bases, Country Studies: Great Britain. Miscellaneous, 1 November 1957. Reproduced in *Declassified Documents Reference System.* Document Number: CK3100288057. [accessed 25 June 2006].

[29] David Reynolds, *Rich Relations: the American Occupation of Britain.* (London: Phoenix Press, 2000), p.439.

[30] John Baylis, *Anglo-American Relations since 1939: The Enduring Alliance,* (Manchester: Manchester University Press, 1997), pp.97-121.

David Reynolds holds the opinion that during the entire Macmillan premiership the Anglo-American relationship worked well, particularly to create the success of the Marshall Plan and NATO. Britain was a major ally that could share America's burden in Europe, and elsewhere; Britain also housed the SAC B-47s, and in Cold War terms, the 'convergence of interests' were more in Europe than elsewhere. However, he states that there was a 'pronounced decline' in the UK relationship and value to US after 1963, partly due to personalities, but above all, to the reality that British power had reduced during this period and fundamental economic weakness had caught up. According to Robert Dallek, the UK did not have any real influence in the SALT negotiations, despite warning the US to ban MIRVs 'to prevent a new phase in arms competition'; the UK was right, but was ignored, thus illustrating its marginal influence in the relationship. Britain was beginning to recede from its importance as a world power because it had withdrawn from East of Suez. [31]

A ruthless exposure of the relationship was vigorously elucidated by D C Watt, in 'Succeeding John Bull…', examines the blunt facts of the 'replacement' of Britain's influence in the world by that of the United States during the twentieth century, confirming the growth of America's worldwide influence.[32] He does not think that the US managed this as well as they ought to have done and in particular, the admirals of the US Navy have been held to have overtly influenced the designs of the president and his associates, an echo of the strategic policy situation. However, he also believes that Britain's decline was accelerated by the Americans who did nothing to prevent it and dismisses Macmillan's 'Atlantic community' as nonsense, with marginal benefit to the UK.

---

[31] David Reynolds, A 'Special Relationship'? America, Britain and the International Order Since the Second World War, *International Affairs* Vol 62, Number 1, (London. Royal Institute of International Affairs 1985), pp.1-20. Robert Dallek, *Nixon and Kissinger: Partners in Power*, (London: Penguin Books, 2008), p.141.

[32] Watt, *Succeeding John Bull: America in Britain's place, 1900-1975: a study of the Anglo-American relationship and world politics in the context of British and American foreign-policy-making in the twentieth century*, (Cambridge. Cambridge University Press, 1984);

He points out that Macmillan skilfully handled his American counterparts and achieved three notable 'coups'; the amendment of the McMahon Act in 1958, the promise of the Skybolt missile in 1960 and finally, the replacement of the cancelled Skybolt by the Polaris missiles: these were undoubted benefits for Britain. [33] Macmillan and Eisenhower had agreed that Thor ICBMs would be stationed in the UK in 1957; these missiles would be carried by the RAF Vulcan fleet, but they were on the verge of obsolescence. By 1960, the UK had abandoned its development of the Blue Streak missile and Skybolt was proposed as part of the agreement to permit the USA to base its Polaris submarines at Holy Loch.[34]

But, as shown by Peter Nailor, by 1962 Macmillan regarded Skybolt as a 'dubiously effective, rather expensive airborne missile system.' The UK had become aware of the Skybolt problems and had sensibly prepared a proposal to receive Polaris instead. At Nassau little time was spent on SKYBOLT; the American case for cancellation was clear enough and the conference took place under tension, particularly regarding lack of consultation during the Cuba crisis.[35] The UK desperately needed a quid pro quo and Macmillan extracted the Polaris submarine system from a reluctant Kennedy. They had a fundamental disagreement over the UK's true role in the NATO alliance and the possession of an independent UK nuclear weapon was contrary to the American hopes of a united European force under US command. Macmillan's efforts at Nassau ended with the UK obtaining a far better weapon, i.e. Polaris. This is probably the only time the UK actually gained a benefit which the USA did not want them to have, but the UK media was not supportive because of the heavy American influence on weapon system.[36]

---

[33] D C Watt, 'Demythologising the Eisenhower Era', in *The Special Relationship: Anglo-American Relations Since 1945*, (Oxford: Clarendon Press, 1986), p.95. Eric J Grove, *Vanguard to Trident: British Naval Policy Since World War II*, (London: Bodley Head, 1987), pp.237-8.

[34] Dominic Sandbrook, *Never Had It So Good: A History of Britain from Suez to the Beatles*, (London: Little, Brown, 2005), p.228.

[35] Peter Nailor, *The Nassau Connection: The Organisation and Management of the British POLARIS Project,* (London: HMSO, 1988), pp.5-7

[36] Sandbrook, p.230.

The Vietnam War and Britain's lack of involvement dismayed the Secretary of State, Dean Rusk, whose opinion was that the US should not have assisted the UK 'even if Sussex were invaded.' This comment well illustrates the deterioration of the relationship amongst those at the highest political level during the Johnson-Wilson years. It also demonstrates the 'master/slave' relationship expected by the USA, despite there being no possible benefit to the UK by such assistance. Similar abuse of the British media's coverage of Vietnam was expressed by Nixon to Kissinger in 1971. [37]

Edward Heath became prime minister in 1970: he was not interested in courting Richard Nixon and his own policies were aimed at gaining Britain's entry into Europe.[38] Relations were so fragile that during the Yom Kippur War in 1973 the US government did not ask for permission to use British bases for aircraft carrying armaments to Israel, as they knew it would have been refused. Watt regards the Nixon election as a disaster for Anglo-American relations, as Nixon paid 'lip-service' to the 'special relationship'. [39]

However, in the words of Admiral Sir James Eberle, the 'full account' of the relationship cannot be written for many years because of the 'high security value' of most of the defence and intelligence activities.[40] The research project will examine these as closely as is possible. Firstly it will search the relevant national archives for information relating to these two sensitive topics, defence and intelligence, which were the bedrock of the Cold War. Other primary sources, such as the online declassified document libraries, will be examined to discover the little incidents and developments which produced gradual changes in operational matters, particularly in the implementation activities necessary to carry out US strategic policy in Scotland. Finally, personal memoirs will be used to

---

[37] Baylis*, Anglo-American Defence Relations*, p.155. Watt, *Succeeding John Bull*, p.138. Dallek, p.261.

[38] Watt, *Succeeding John Bull*, pp.155-6.

[39] Watt, *Succeeding John Bull*, pp.150-3.

[40] Admiral Sir James Eberle, 'The Military Relationship', in *The 'Special Relationship'; Anglo-American Relations Since 1945,* ed by WM Roger Louis and Hedley Bull, (Oxford. Clarendon Press, 1986), p.151.

discover interesting and informative facts about day-to-day, but significant, attitudes regarding various activities. However, it is unlikely that there will be any great breakthroughs as the vast majority of such official knowledge is still classified and will not be released for many years. Nevertheless, there is every likelihood that there is enough information available to the research project to conclude accurately the underlying actions of officials and military officers during this period.

The Use of American Bases in Britain

Since World War 2, American bases have been a fact of life in the UK. In overall terms, there is a useful body of literature available for the American bases in the UK, but most of the useful detail regarding Scotland is missing and can only be provided by reference to primary sources. Most of the opinions expressed regarding their purpose are either neutral, or that the bases were always part of the overall American/NATO strategic requirement, or, that the bases were kept in the UK because of American national security requirements.

There is a selection of literature which deals with America's overseas bases; some of this is in compendium form, such as the works by Anni P Baker, Paolo E Coletta, and Jack Bauer, Simon Duke and Christopher T Sandars, and covers a worldwide range and a period of 100 years.[41] These list various locations, activities and some prominent actions associated with them; the information is well researched and reliable, but they do not cover the Scottish bases in any detail.

Duncan Campbell, author of the influential work, *The Unsinkable Aircraft Carrier*, believes that these bases were in the UK principally for US security purposes. He claims 'US warmongering as part of a plan 'to focus public perceptions on the risks of war' and

---

[41] Anni P Baker*, American Soldiers Oversees: the global military presence*, (London: Praeger, 2004). Paolo E Coletta, and Jack Bauer, *United States Navy and Marine Corps Bases, Overseas*, (London: Greenwood Press, 1985). Simon Duke, *United States Military Forces and Installations in Europe*, (Oxford: Oxford University Press, 1989). Christopher T Sandars, *America's Overseas Garrisons: the Leasehold Empire,* (Oxford: Oxford University Press, 2000).

highlighted the 'common distrust of the United States.'[42] He even argues that any attempt to force US military withdrawal from the UK, would have led the CIA to organise military obstructionism to 'destabilise' the British Government. It is difficult to see any specific instances that were anything other than American unilateral strategic decisions that the UK had to accept.

Campbell's work has received great acclaim and is used as a source for many opinions on the presence of US bases in the UK. In general terms however, the book is very detailed and lists all known and suspected US bases in the UK. This aspect is accurate, but the information is not academically-sourced and most information comes from unattributed sources and magazine publications. Therefore, its conclusions, perhaps correct in many cases, need to be better examined and sourced before any conclusions can be provided in this research project.

Another section of the available literature deals with the political aspects of the US/UK relationship regarding the placement of US bases in the UK. The main authors in this matter are Simon Duke and David Reynolds; Duke covers the political processes behind the establishment of various US facilities in the UK since World War 2, but only really covers the Holy Loch in reasonable detail. Reynolds, on the other hand, is able to have a broader look at the issue and examines the topic over the period of the twentieth century; once again, however, there is little detail on places such as Edzell, Thurso, Kirknewton, Machrihanish, Prestwick and any of the other smaller locations.[43] Similar detail is given by Christopher T Sandars, with the customary broad brush approach to Scottish bases.[44]

---

[42] Duncan Campbell, *The Unsinkable Aircraft Carrier: American Military Power in Britain,* (London: Paladin, 1986), pp.12, 13, 337.

[43] Simon Duke, *U.S. defence bases in the United Kingdom: a matter for joint decision?* (Basingstoke: Macmillan, 1987). David Reynolds & D Dimbleby, *An Ocean Apart: the Relationship between Britain and America in the Twentieth Century,* (London: BBC/Hodder & Stoughton, 1988). David Reynolds, *One World Divisible: a global history since 1945*, (London: Allen Lane, 2000). David Reynolds, *Rich Relations.*

[44] Sandars.

There are also other books regarding the presence of US bases in the UK, and some of these are very detailed, but all have the same limitation in that they do not concentrate on Scottish matters; this omission ensures that further research is necessary to illuminate the topic of the American activities in Scotland during this period. Some publications, such as Simon Duke's two excellent books, contain much information in a compendium style and provide basic details of the Scottish facilities. However, with the exception of the high profile Holy Loch base, all relevant publications skip over Scotland and its role in US strategic policy implementation.

The US was able to set up bases and a full operational infrastructure in the UK on a 'gentleman's agreement', basically for the specific security of the USA.[45] Simon Duke notes that the American bases in the UK initially stemmed from the requirement to base the very heavy bomber (VHB) force within range of the Soviet Union, in order that it could deliver its nuclear bombs.

In Scotland the Holy Loch, with the SSBN submarines, was the forward defence of the United States. Opinions is divided between those writers who believed that the USA was responding to Soviet manoeuvring, and others who believe that it was merely another example of the American relentless imperial expansion policy.

There is, however, a reasonable body of literature regarding Holy Loch and this gives both detail and political actions; some of this material, such as by Brian Jamison and Brian Lavery, contain useful information regarding the establishment of the base.[46] Others such as Peter Nailor and another book by Brian Lavery deal with the bigger UK naval matters on the Clyde.[47]

---

[45] Duke, *US defence bases,* pp.1-4, 19-20.

[46] Brian Jamison, *Scotland and the Cold War*, (Dunfermline: Cualann Press, 2003). Brian Lavery, The British Government and the American Polaris Base in the Clyde', (*Journal for Maritime Research*, September 2001).

[47] Peter Nailor, *The Nassau Connection: The Organisation and Management of the British POLARIS Project,* (London: HMSO, 1988). Brian Lavery, *Shield of Empire: The Royal Navy and Scotland*, (Edinburgh: Birlinn, 2007).

The UK has a unique 'strategic location' with regard to US security interests, particularly for intelligence and communications; these activities were operated from Scottish bases throughout the Cold War. This cooperation became even more important when intelligence gathering facilities were lost in Turkey and Pakistan in the late 1960s. [48]

The matters covered by Edzell and Thurso have better coverage, despite the secrecy which surrounds all intelligence gathering subjects, and both James Bamford and Rhodri Jeffreys-Jones provide some good detail in their works.[49] In particular, detail is provided of the technical equipment used at both bases. Some useful, low-level information has been found from a military magazine series, Cryptolog, which deals with the service of personnel and their families at Edzell.[50] Military airfields have a small literature and have provided facts, but no detailed behind the scenes information regarding the use of airfields for US bases.[51]

The Americans believed that the other NATO allies needed to take on a greater cost of their own defence. This point was emphasised by Senator George Aiken in 1971, who pointed out that there were 'more than enough American troops in Europe to serve our objectives.'[52] Dr Henry Kissinger, Nixon's Secretary of State, states that the purpose of having American troops based in Europe was to 'lend credibility to the nuclear strategy'

---

[48] Duke, *US defence bases*, p.190: Paolo E Coletta and Jack Bauer, *United States Navy and Marine Corps Bases, Overseas,* (London: Greenwood Press, 1985), p.vii.

[49] James Bamford, *The Puzzle Palace: A Report on America's Most Secret Agency*, (Boston: Houghton Mifflin, 1982). Rhodri Jeffreys-Jones, *Cloak and Dollar: A History of American Secret Intelligence*, (New Haven: Yale University Press, 2002).

[50] *Cryptolog*: (Magazine of the US Naval Cryptologic Veterans Association), Edzell Special, August 1998, Vol 19, No 4, Corvallis Oregon.

[51] Peter Berry, *Prestwick Airport and Scottish Aviation*, (Stroud: Tempus, 2005): Robert Jackson, *Strike Force: The USAF in Britain since 1945*, (London: Robson Books, 1986): David J Smith, *Action Stations: 7. Military airfields of Scotland, the North-East and Northern Ireland*, (Cambridge: Patrick Stephens, 1983).

[52] Duke *US defence bases*, pp.182-4.

and to 'keep the nuclear risk to the continental USA at the lowest possible level.'[53] This was another echo of a constant European fear and the USA's fundamental determination.

Scotland's US bases have not been widely researched; the available research mainly concentrates on the political opposition from various sectors of Scottish, and British society to the presence of US nuclear weapons on Scottish soil, such as that produced by Brian Jamison. This shortage of information is surprising, as the presence of the United States in Scotland during the research period was significant; in fact, the main news feature was when Elvis Presley landed at Prestwick in 1959 on his way to military service in Germany.

A small detailed study was produced by Brian Lavery on the details behind the selection of Holy Loch; there are first-hand accounts of the operations and lifestyle of US military personnel in Scotland during this period. These personal memoirs add detail to the picture of the impact of US foreign policy on local life. However, there is no in-depth academic analysis of the American bases in Scotland and the ramifications of their operations. There are also useful memoirs by Andrene Messersmith and Arthur Clark Bivens which provide excellent hands-on material, as well as a local library history of the US presence at Dunoon.[54]

Another two publications have been found which contribute useful detail; these are a published PhD thesis by George Giacinto Giarchi containing much excellent local research carried out in 1975, and a long list of military installations recorded by Michael

---

[53] Henry Kissinger, *The White House Years*, (London: Weidenfeld & Nicholson 1979), p.215-220.

[54] Andrene Messersmith, '*The American Years, Dunoon and the US Navy,* (Glendaruel: Argyll Publishing; 2003): *The History of Submarine Squadron Fourteen*, (Argyll and Bute Libraries, 355.941423 LC): Arthur Clark Bivens, *Of Nukes and Nose Cones: A Submarine Story*, (Gateway Press Inc, 1996): *The History of Submarine Squadron Fourteen*, (Argyll and Bute Libraries, 355.941423 LC.).

Spaven for CND Scotland.[55] The latter is accurate with its geographical locations, but most of the text is too politically extreme for useful application.

Research Design

The aim of this investigation is to examine these changes to American strategic policy during the period 1953-74, and observe how it was manifested in the US bases in Scotland. Four main strands of thought have to be examined by the research, namely:

- Why were the Americans present in Scotland during this period in such strength?
- What were they doing there?
- How did this change over time?
- How does this study of policy implementation help us to understand the American motives?

The review of the literature suggests that American strategic policy was driven by American requirements, with little involvement by NATO or the US/UK special relationship. The research sections will examine this and comment accordingly.

The research is split into six separate chapters. The first chapter has set the scene and posed the academic questions noted above. The remaining chapters will examine activities that had a physical presence in Scotland and interrogate the research sources to find answers to the contextual questions.

Chapter Two examines how the US established and maintained an intelligence gathering system at Edzell and Thurso, apparently regardless of any larger strategic imperatives. Chapter Three deals with the creation of the US Polaris submarine base at Holy Loch, the most high profile base in the UK. Chapter Four concentrates on the communications,

---

[55] George Giacinto Giarchi, *Between McAlpine and Polaris*, (London: Routledge & Kegan Paul, 1984): Malcolm Spaven, *Fortress Scotland: a guide to the military presence*, (London: Pluto Press/Scottish CND, 1983).

navigation and logistics tasks carried out by the US forces in the UK, and especially in Scotland. Chapter Five, anti-submarine warfare (ASW) strategy addresses the strategic importance of the Scottish base at Thurso for this purpose. The final chapter draws the systematic study together along with the answers already provided in each chapter to the research questions.

CHAPTER TWO

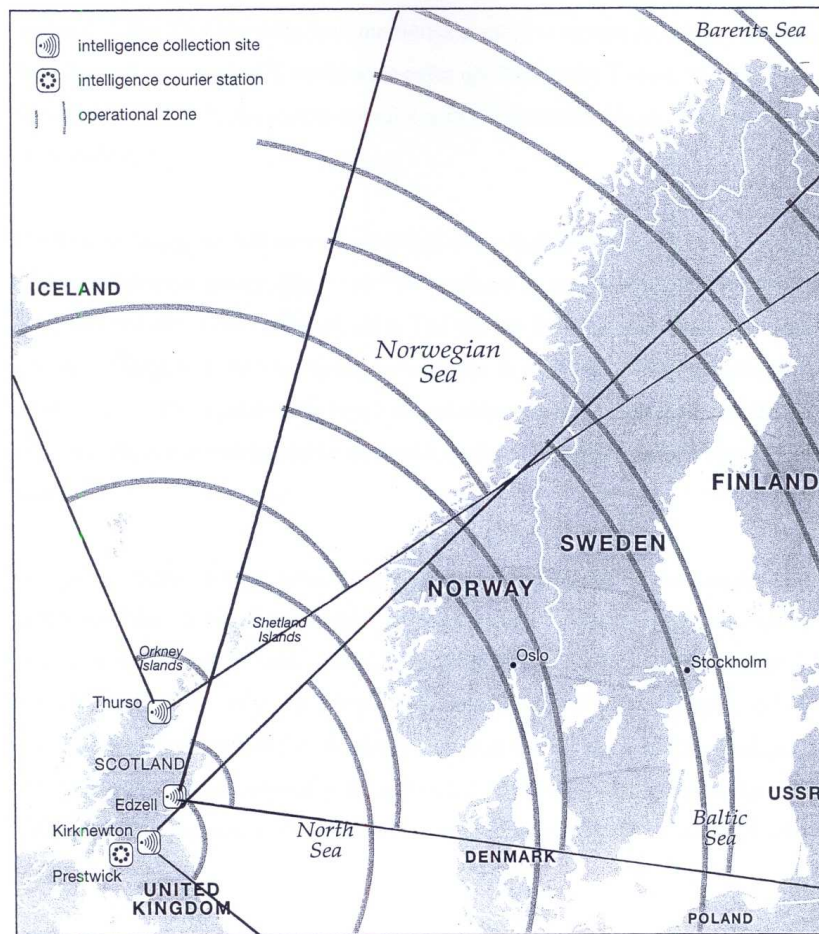**INTELLIGENCE GATHERING**

US Requirements

Once World War 2 had ceased, the USA became the world's policeman, with vital interests in all corners of the globe. They needed to be able to gather intelligence from all of these areas and this led to the remorseless, at times chaotic, growth of the US intelligence industry. The interception of enemy communications has always occurred, but the Cold War produced a quantum leap in this activity. The rapid advances in technology enabled greater use of diverse new telecommunications media and produced growth in the number of intelligence staff, with more than 95,000 staff working for the American government on signals intelligence (SIGINT), by the 1970s. The rapid growth in intelligence requirements meant that each of the US Armed Services wanted to expand their own operations after the war. This occurred, with predictably chaotic results over the next 25 years as each service fought its own turf war.

US intelligence failed to predict Pearl Harbor and emphasis was subsequently placed on the importance of SIGINT.[56] A secret US government report concluded that 'ULTRA may well have had a decisive influence on the war against the U-boats and the air war over Britain.'[57] General Patton's rapid advance from the Normandy beachhead in 1944 was possible because of the accurate intelligence on German forces provided by the ULTRA operation.

---

[56] Jeffreys-Jones, *Cloak and Dollar*, p. 158.

[57] Bissell Report of 18 February 1965, Review of Selected NSA Cryptanalytic Efforts, Top Secret, Limited Distribution, SC-01287-65, p.25. *National Security Archives*, [accessed 14 February 2006]. In 1940, the British designated as ULTRA the material recovered from the German Enigma machine. Later, the term was applied to all intelligence recovered from cryptanalysis, regardless of its national origin, including the American MAGIC intercepts of Japanese diplomatic communications: *GCHQ* (accessed 5 September 2007).

Map 2 – US Intelligence Gathering Bases

Post-World War 2, the US military, State Department and FBI established the United States Communications Intelligence Board (USCIB) to coordinate intelligence gathering policy. The UK was included in the 1947 UK/USA intelligence agreement, an example of multilateral and special relationship activity, although driven primarily by US national interests. [58] This formalised the wartime situation and also included Canada, Australia and New Zealand, to give the US world-wide coverage. Eventually Turkey, West Germany, Norway and Denmark also joined: overall control was entrusted to the National Security Council (NSC).

The United States needed many 'communications facilities' to support and shape US foreign and defence policy. These facilities provided an intelligence-gathering capability and command and control network links. The US/UK intelligence gathering cooperation is a unique feature of the relationship between the two nations; it has strengthened since World War 2.[59] Intelligence gathering was probably even more important than the nuclear weapons link, it was indispensable and it was essential to British, and American, national security.[60].

The United States did not have adequate intelligence on the Soviet Union's military capabilities; the US based its strategic defence posture on the fact that they had the A-bomb and the Soviets did not. This complacency disappeared in 1949 when the USSR detonated its first A-bomb, years ahead of the American intelligence estimate, and mainly through information provided by Soviet spies within the US and UK governments. These espionage rings were uncovered as a result of SIGINT analysis that showed the extent of Soviet penetration of many civil and military establishments. Project VENONA led to the

---

[58] Lawrence Freedman, *Kennedy's Wars: Berlin, Cuba, Laos and Vietnam,* (Oxford: Oxford University Press, 2000), p.82: E R May & G R Treverton, 'Defence Relationships: American perspectives', in *The 'Special Relationship'; Anglo-American Relations Since 1945,* ed by WM Roger Louis and Hedley Bull (Oxford: Clarendon Press, 1986), pp.161, 68-9).

[59] Nigel West, *GCHQ: The Secret Wireless War 1900-1986*, (London: Weidenfeld and Nicolson, 1986).

[60] Robin Harris, *'The State of the Special Relationship', Policy Review, [accessed 14 June 2006].*

arrest of Soviet spies, including the Rosenbergs, David and Ruth Greenglass, Klaus Fuchs and Harry Gold. [61]

This espionage furore highlighted the need for a better integrated intelligence network, with a longer reach across the globe to better identify Soviet activities.[62] Until the U-2 spy planes began operations in 1956, the only American source of information about the Soviet Union was from SIGINT. Such US flights from the UK were fully supported by Macmillan in the House of Commons in 1959.[63]

The UK's geographical position was essential for the US intelligence units to test Soviet air defences; probe flights would leave from Prestwick and cross into Soviet air space. Occasionally these flights would discover a new signal from a previously unknown source, such as radar.[64] These missions could be designated as unilateral, NATO or even US/UK activities.

SIGINT, according to Richard Aldrich, 'remains the most secretive aspect of Cold War espionage and was probably the most important'; the British Government Communications Headquarters (GCHQ) received a budget larger than that of the Foreign Office.[65] Such growth fed interdepartmental warfare between the various agencies.

The management of intelligence gathering was constantly problematic for the US government and more reorganisation was carried out. In 1950 COMINT was defined as

---

[61] VENONA documents: messages exchanged by the KGB and GRU with their agents in the Western hemisphere directed at the US atomic bomb program and provided the FBI with leads that identified the Rosenberg atomic espionage ring and others. CIA Press Release 11 July 1995, *CIA* (accessed 5 September 2007).

[62] 50th Anniversary Brochure, *National Security Agency,* [accessed 16 February 2006]: The Venona Story, *National Security Agency,* [accessed 6 March 2006]

[63] Korda, p.713.

[64] Jackson, pp.71-3: Jussi Hanhimaki and Odde Arne Westad, *The Cold War: A History in Documents and Eyewitness Accounts,* (Oxford. OUP, 2003), pp.462-4.

[65] Richard Aldrich, 'Intelligence', in Saki Dockrill and Geraint Hughes, (eds), *Palgrave Advances in Cold War History,* (Basingstoke and New York: Palgrave Macmillan, 2006), pp.229-32.

being 'outside the framework of … general intelligence activities'; this meant that other restrictions or directives did not pertain to COMINT activities.[66] Ever since, the NSA and other agencies have claimed exemption from legalistic restraint. After the intelligence failure in Korea, COMINT became the direct responsibility of the Secretary of Defense and there were 13 separate agencies by the 1960s. [67]

 A trading pattern developed between them for the exchange of intelligence information, but American intelligence was inadequate on the international crises of the time, such as the Chinese moves in Korea and the testing of the first Soviet atomic bomb.

When Kennedy took office, the NSC was a structured, military-style bureaucracy, designed to suit Eisenhower's military experience. It was not Kennedy's preference and he changed the emphasis, to small-scale meetings with his intimates to examine the information provided by the NSC and then make decisions. Johnson used it more as a confirmation mechanism for decisions that had already been taken by him. The NSC became the conduit for the targeting of intelligence requirements for the government, instead of the individual approach favoured by the separate services.

SIGINT has two constituent elements, Communications Intelligence (COMINT) and Electronics Intelligence (ELINT). COMINT was the information obtained by intercepting foreign communications transmitted by radio, wire or any other electromagnetic media. All other information procured from foreign electromagnetic sources, excluding nuclear explosions and radioactive sources, was known as ELINT; these electromagnetic signatures were transmitted by radars, fire control systems and various other sources. [68]

---

[66] NSCID 9, "Communications Intelligence," 10 March 1950, *National Security Archives*, [accessed 3 February 2006]

[67] A revised version of NSCID No. 9 was issued on 24 October 1952.

[68] National Security Council Intelligence Directive No 6, Signals Intelligence (Effective 17 February 1972). (Intelligence) Basic Duties and Responsibilities (directive supersedes SIGINT, COMINT and ELINT). National Security Council Intelligence Directive No. 6. Feb. 17, 1972. 1 p CONFIDENTIAL. Issue Date: Feb 17, 1972. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100360073, [accessed 22 January 2006].

SIGINT was the source of 95 per cent of all finished intelligence data for the US intelligence community and the UK Government had more than 11,500 personnel deployed on it. [69]

The Soviets also devoted a 'significant amount of effort' to SIGINT activities.[70] Any submarine or ship leaving Russia must pass to one side or the other of Iceland; the country that controls Iceland controls the North Atlantic. With Greenland to the west and the UK to the east, it forms the GIUK Gap. The Soviets deployed both military and civilian aircraft, and a surface fleet of more than 60 Auxiliary Intelligence Gathering (AGI) vessels.[71]

US Activities

The USAF established a communications intelligence station at RAF Kirknewton, near Edinburgh in 1952; it covered the area from the east of Scotland to southern Scandinavia. There is very little source material available for this base. There were NSA operatives on site from the early days, and in the other Scottish bases in later years. Kirknewton's functions were eventually transferred to the purpose-built NSA intelligence station at Menwith Hill, Yorkshire, in 1966. [72] There are very few sources on Kirknewton, but Campbell claims that it was operated as a radio intercept centre with a target of 'commercial radio links' to other cities in Europe. He also states that it 'supervised the

---

[69] Mathew M Aid 'The National Security Agency and the Cold War', *Journal of Intelligence and National Security*, Vol 16, No 1 (2001) p 46: Richard Aldrich (2001) 'GCHQ and Sigint in early Cold War, 1945-70' in *Journal of Intelligence and National Security,* Vol 16, No 1 (2001) p 91.

[70] For the SIGINT and related information see: Jeffrey T Richelson*, Sword and Shield: The Soviet Intelligence and Security Apparatus*, (Cambridge, MASS. Ballinger Publishing, 1986), pp.97-107. Also, Miller, p.123.

[71] Origins of the NSA, JCS Directive 2010, 20 May 1949, *National Security Agency*, [accessed 21 December 2005].

[72] Jackson, p.173: History Perspective*, Air Intelligence Agency;* [accessed 27 August 2006]: *USAFSS*, [accessed 10 August 2006]: West, pp.249, 253.

Washington/Moscow direct radio link.' These claims sound credible in the light of other evidence.[73]

In 1959 the US Navy communications station at Bremerhaven was having technical problems and the US Navy looked for an alternative site in the UK. Other SIGINT bases had already been commissioned (Keflavik in April 1959). The Edzell site had been used as a fighter training airfield in 1918 reopened in 1940 as an RAF maintenance unit. It accommodated more than 800 aircraft into the early 1950s, but by 1957 a gliding school was established, as there was little traffic on the base.[74]

Edzell was identified as the most suitable site in the UK in May 1959 and a Memorandum of Understanding was completed to permit the use of RAF Edzell as a naval communications centre. The US proposed that the costs be part of the 1953 arrangement, being part of 'the joint Western defense effort.'[75] The base was used solely for US Navy operations.

Edzell was part of a 'package' of actions between the US and UK, and was part of the US Navy SIGINT group that included Keflavik and Bremerhaven.[76] Its purpose was to support the intelligence gathering activities in northern waters, specifically in the zone patrolled by fully armed Polaris SSBNs which had now arrived at their Scottish base at Holy Loch.

---

[73] Campbell, pp. 154, 160-1.

[74] Smith, *Action Stations,*. pp 94-96.

[75] Foreign Service Despatch, Secret, From American Embassy London to the Department of State Washington, Ref: Embassy D-1193, November 27, 1959, dated 21 January 1960. NARA 15 September 2005. Also Letter from William E Lang, Director Office of Foreign Military Rights Affairs, Office of the Assistant Secretary of Defense to Russell Fessenden, Deputy Director Office of European Regional Affairs Department of State, dated 19 July 1960, Reference I-13651/60. NARA 15 September 2005.

[76] Duke, *U.S. defence bases*, pp.147-8.

On 11 February 1960, Commander Pelletier USN took command and the US Naval Security Group Activity (NAVSECGRUACT) Edzell began operations on 1 July 1960. [77] From the outset, the activities and purpose of Edzell have contained many ambiguities, the tone being set by the original commander who claimed that there 'would be no missiles, planes or radars' at Edzell; although technically accurate, it misled the public as to the activities planned for the base, which had an initial strength of 100.

Thurso had been a World War 2 SIGINT station and the new base was established to service the USA's requirement for radio stations in the Northern Seas zone; this was specifically, but unstated, to support the Polaris fleet. America did not have any manned bases in Norway and therefore the Northern Atlantic was not covered; this meant that Thurso was an important facility. It was assumed that Thurso played a part in the ballistic missile early warning system (BMEWS), as the site was surveyed in 1958 and the US later pledged expenditure to provide 'a scanning and tracking capability, a central-computer and display facility, and communications.'[78]

Thurso's mission was: 'to manage, operate and maintain those facilities, equipment and devices and systems necessary to provide requisite communications for the command, operational control and administration of the Naval establishment.'[79]   It was part of the US/UK package which located US Polaris submarines in the Clyde and provide other facilities. The US achieved its own strategic needs, a straightforward example of unilateral action.

SIGINT's growth continued; a Director, Naval Security Group (DirNSG) was appointed in 1961 and by 1968 there was a direct line of reporting to the Chief of Naval Operations

---

[77] *Cryptolog,* p. 2.

[78] Telegram from Dean Rusk, Secretary of State to American Embassy London, Top Secret, 9 June 1961, Embtel 3479, Joint State-Defense Message.' Any public statements on Thurso would place emphasis on role in early warning system.'. 711.56341/7-1961. *NARA* 13 SEP 2006.

[79] OP Nav Report, 5750-1 (Command History) Thurso, 26 January 1970, cited in Duke, *U.S. defence bases*, p.148.

(CNO); this included Edzell.[80] These changes accentuated the ever-growing importance of SIGINT despite the budget cuts that were applied to many US military units after 1968.

Table 1 describes in detail the number of units and activities that the US deployed in Scotland to assist in its intelligence gathering activities.

Table 1

US Intelligence Bases in Scotland

Base	Functions	Units
USAF Kirknewton **1952-1966**	• COMINT	NSA; USAFSS; 6952nd Radio Mobile Squadron; 7535th Air Base Squadron; 37th Radio Squadron Mobile.
USN Edzell **1960-1992**	• SIGINT • NSA Intelligence Collection Site • Full support for the main US Navy communications system base at USN Londonderry • Part of the HFDF network; HFDF Facility in support of the Navigational Aid and Search and Rescue (SAR) missions	NSG; NSA: GCHQ; Co B USMC Support Battalion;

---

[80] Al Grobmeier, Naval Security Group History, *Cold War*, [accessed 26 March 2005]. Also, History of the Naval Security Group, *Federation of American Scientists*, [accessed 22 March 2006]: Department of the Navy, Office of the Chief of Naval Operations, Washington, DC 20350-2000, OPNAV INSTRUCTION 5450.191B, N2, 1 April 1994, From: Chief of Naval Operations, To: All Ships and Stations, Subj: MISSION AND FUNCTIONS OF THE COMMANDER, NAVAL SECURITY GROUP COMMAND. Navy Electronic Directives System, *Navy Directives* [accessed 20 October 2005].

	▪ Project White Cloud - satellite reconnaissance programme; ▪ Provided communications and related support to Navy and other DOD elements. ▪ Project Clear Sky - part of the Atomic Energy Detection System to monitor atmospheric nuclear tests. ▪ Classic Wizard Ocean Surveillance Satellite Control System and the Bullseye target location activity; ▪ Monitoring Soviet submarine forces; ▪ Part of the Mediterranean/North American DF Net; ▪ Special Communications (SPECCOMMS) service to US fleet; ▪ Tracked all movements of Soviet warships, including submarines.	UK Petty Officer Academy. 6321st Courier Transfer Station under direct command at USAF Prestwick;
USN Thurso **1963-1992**	▪ NSA Intelligence Collection Site; ▪ Direction-finding; ▪ HF/LF Fleet Broadcast; MEECN; ▪ Fleet support; ▪ Intelligence-gathering as part of the HFDF network; ▪ Downloading of satellite communications; ▪ Project Clarinet Betty, the latest version of the LORAN-C naval navigational system; ▪ Provided command and control transmission to US Navy vessels in the Northeast Atlantic and Norwegian Sea; ▪ Main US Navy VLF (submarine communications) transmitter in Europe; ▪ USN Londonderry was closed in 1975 and its operations relocated to Thurso.	NSA; Royal Navy; US Navy; GCHQ; Detachment Edzell;

The US Congress fully supported intelligence gathering activities [81] and in 1960 President Eisenhower appointed another commission to examine co-ordination of the multiple intelligence organisations. This discord later led to McNamara's remark that 'there was no unity in our intelligence service.'[82] In October 1961 he created the Defense Intelligence Agency (DIA) to integrate the military intelligence effort of all the Services. It was given the mission to continually collect, process, evaluate, analyse, integrate, produce and disseminate military intelligence for the Department of Defense (DOD).[83] There was no consultation with the UK or NATO on this major change.

By 1962 the SIGINT Committee of the United States Intelligence Board (USIB) was created; each constituent member of USIB nominated a representative to the committee. [84] This was another attempt to ensure that the importance of SIGINT was managed in the most effective fashion, but it had to overcome the deep-rooted self-interest shown by the various intelligence agencies. Robust efforts were made by interested parties to protect their own operations, such as when the USAF Chief of Staff, General LeMay, was urged to resist attempts to divest some USAF activities to the CIA in 1963.[85]

SIGINT was vital and was the first means to alert the White House to the placing of Soviet missiles in Cuba in August 1962; all available intelligence activities moved into

---

[81] Joint Study Group Report on Foreign Intelligence Activities of the United States Government: Chapter IV - National Security Agency. Miscellaneous. CENTRAL INTELLIGENCE AGENCY. OFFICIAL USE. Issue Date: Dec 15, 1960. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100274457, [accessed 3 October 2005].

[82] Cold War Project, Interview with Robert McNamara, *National Security Archives,* [accessed 15 February 2006].

[83] Organization Relationship of DIA and the JCS/J2, Defense Intelligence Agency, DoD Directive 5105.21, *Defense Intelligence Agency*, [accessed 21 December 2005]

[84] SIGINT Committee [functions, responsibilities, organization, and procedures of the committee that will oversee both COMINT and ELINT matters]. Directive No. 6/1, John A. McCone, Dir. of Central Intelligence. May 31, 1962. CONFIDENTIAL. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100424041/42, [accessed 15 December 2005].

[85] Letter from General BA Schriever USAF, Commander Air Force Systems Command to General Curtis E LeMay, Chief of Staff USAF, Secret, dated 26 December 1963, Subject: CIA Foreign Missile and Space Analysis Centre, *National Security Archives* [accessed 14 February 2006].

action and the NSA despatched its DER radar picket ships to Cuban waters.[86] SIGINT provided the first indication that the Soviet ships had stopped in mid-Atlantic and enabled Kennedy to handle the crisis; SIGINT had proved its value yet again.

In April 1962 the Deputy Director for Research and Engineering in the DOD, Mr Rubel, visited, accompanied by Sir Solly Zuckerman, the UK Government's Chief Scientific Adviser.[87] This illustrated the close collaboration between the USA and the UK in intelligence and nuclear strategy. Intelligence gathering was a cooperative effort and not one that was driven solely in the US interests, although they predominated. RAF Kinnaber, a radio facility, was added to Edzell on 11 October 1962 and was fully operational by 1968.

The information collected at Edzell had to reach Washington DC by secure means as swiftly as possible and a Courier Transfer Station was established at USAF Prestwick on 1 January 1963. This unit was under the direct command of the Commanding Officer Edzell and the final part of the US complement at Edzell arrived on 20 April 1963 when cryptographers of Company B Marine Support Battalion USMC began operations.[88]

SIGINT contained the National Reconnaissance Office (NRO), an organisation so secret that its existence was not formally acknowledged until 1992, despite later newspaper reports.[89] Its structure was formalised in 1962 and flights were undertaken in the UK by aircraft from the '1st Weather Reconnaissance Squadron (Provisional)', passing through Prestwick.

---

[86] 50th Anniversary Brochure, *National Security Agency,* [accessed 14 December 2005]: West, p.241.

[87] 'US Defence Mission in London Talks', *The Times,* 27 April 1962, Issue 55376, Page 10, Col G; also, Duke, *US Military Forces,* p.307.

[88] Coletta and Bauer, p 105.

[89] Memorandum from Joseph Charyk, Director NRO, Organisation and functions of the NRO, Top Secret, 23 July 1962, *National Security Archives*, [accessed 7 January 2006]: Analysis of "A $1.5 Billion Secret in Sky" Washington Post, 9 December 1973, *National Security Archives*, [accessed 7 January 2006]: West, p.232.

The NRO was formed to enforce 'permanent and institutionalized collaboration between the CIA and Air Force' and establish a reconnaissance organisation that could coordinate the new satellite and aerial photography requirements. In August 1962, Louis Tordella, the Acting Director of the NSA, agreed that the NSA would 'provide advice and consultation' to ensure that the requirements of the USIB could be satisfied by the NRO. [90] But this did not produce a seamless intelligence system and there is no evidence available that the USA consulted the UK on this matter.

These intelligence-gathering locations – or 'listening posts' - were easily identified by their gigantic antenna systems that monitored high frequency (HF) traffic from all directions and then linked with other sites to provide direction finding on the source – a crucial part of the SIGINT process. The US Navy operated these sites and by 1964 they had facilities in England (Chicksands), Italy, Turkey, the Philippines, Japan, Spain (Rota), Bremerhaven, Guam and Edzell.

At Thurso, West Murkle receiving station was completed in 1963 and Forss transmitting station became fully operational in 1965. It had equipment for low frequency (LF) transmission and very low frequency (VLF) for communications to the US nuclear submarine fleet. [91]

SIGINT's value to the USA was noted by Senator Milton Young, a member of the appropriate Senate Committee, in 1966: 'I think the National Security Agency and the intelligence it develops has far more to do with foreign policy than does the intelligence developed by the CIA.'[92] This showed that US intelligence gathering policy was focused on American interests.

---

[90] Memorandum of Agreement concerning NSA Participation in the (S) National Reconnaissance Office. Top Secret, 1 August 1962. *National Security Archives* [accessed 10 January 2006]

[91] Spaven, *Fortress,* pp. 71-2.

[92] Mathew Aid & Cees Wiebes, 'The Importance of Signals Intelligence in the Cold War', in *Journal of Intelligence and National Security,* Vol 16, No 1 (2001) p7.

The US Navy established a Petty Officer Academy at Edzell in 1966, 'a sound training concept', to assist with the requirement for highly-trained, naval personnel at Edzell. The cryptologists' career path needed to be strengthened, a point emphasised by the Director of Central Intelligence (DCI) and later by President Nixon. [93]

President Nixon ordered a review of the effectiveness of the intelligence-gathering effort in 1971 and stressed that 'the need for timely intelligence becomes greater.'[94] He directed that intelligence community reviews were to be carried out at frequent intervals and emphasised that the DOD programmes needed to be better integrated with the other agencies. He made the DCI responsible for 'planning, reviewing, co-ordinating, and evaluating all intelligence programs and activities.' A new NSC Intelligence Committee (NSCIC) was created, under the chairmanship of the Assistant to the President for National Security Affairs (Dr Kissinger). Nixon also stressed the need for better career structures for the cryptanalysists who worked for the various agencies. This was a confirmation of the crucial importance of intelligence-gathering to the US government and these experts were subsequently deployed to Edzell and Thurso.

Yet again, the high-level management of intelligence gathering was judged to be 'vague and ill-defined.' Change was required and the DCI Richard Helms suggested, unsurprisingly, that the DCI was best placed to have overall supervision of the intelligence activity.[95] A high-level report in September 1967 acknowledged the problems caused by the multiplicity of competing agencies.

---

[93] Commander Naval Security Group Command, SECGRUNOTE 2573 of 4 April 1968, *Cryptolog* p 23.

[94] White House memorandum from President Nixon, To: Secretaries of State, Treasury, Defense, Attorney General, Director Central Intelligence, Director of Office of Science and Technology, Chairman Joint Chiefs of Staff, Chairman President's Foreign Intelligence Advisory Board, Chairman Atomic Energy Commission, Top Secret, 5 November 1971, Subject: Organisation and Management of the US Foreign Intelligence Community, *National Security Archives,* [accessed 12 August 2005].

[95] Letter from Director of Central Intelligence Richard Helms to Clark Clifford, Chairman of the President's Foreign Intelligence Advisory Board, 20 September 1966, Subject: Discussion of Adequacy of DCI Authority to Coordinate the US Intelligence Effort, in Department of State, Foreign Relations of the United States, 1964-1968, Volume XXXIII, Organisation and Management of Foreign Policy, United Nations, Document 253, (Washington DC. US Government printing Office, 2004), [accessed 11 January

This produced the requirement for a 'long-range national Intelligence Plan.' Its most important recommendation, for Edzell and Thurso, was that 'military tours of duty at the NSA should be extended' and that cryptologist within the Armed Forces should have proper career paths. President Nixon also supported this point in 1971. The report concluded that 'there must be no slackening in the US cryptologic effort if essential and other national needs are to be met.' There was no mention of working with allies. For Edzell and Thurso, their intelligence staff became more representative of the overall American national intelligence plan structure. In Scotland there were agents from the National Security Agency (NSA), the United States Air Force Security Service (USAFSS), the US Navy Security Group (NSG) and the GCHQ operating on American sites.

Edzell listened in to the incidents involving the *USS Liberty* during the 1967 Six Days War and the capture of the *USS Pueblo* by North Korea in 1968.[96] These illustrated the involvement of Edzell in the overall intelligence-gathering mission of the US; similar radar picket ships (DERs) operated off the Scottish coast and received maintenance in Scottish ports.[97] A memo to Secretary Rusk in July 1961 stated that 'The US Navy has a requirement for a fleet communications project at Thurso, Scotland and facilities for destroyer escort radar (DER) at Rosyth, Scotland and in the Clyde. The DERs would be employed on radar and anti-submarine work.' This was a reminder of the front-line nature of SIGINT work and there was no linkage to any NATO or UK activities. The request was fully acceded to by the UK government.

2006]. Letter, Frederick M Eaton to Richard M Helms, Director of Central Intelligence, 16 August 1968, Top Secret Codeword w/TS Codeword Attachment, *National Security Archives*, [accessed 14 February 2006].

[96] *Cryptolog*, p 8.

[97] State Department internal memorandum from EUR William R Tyler to The Secretary, Secret, 21 July 1961, Subject: Circular 175: Request for Authorisation to Negotiate and Conclude and Agreement Concerning Certain Facilities for the US Navy in the United Kingdom. NARA 13 September 2005. 711.56341/7-1961.

Coverage of the Soviet Union and Eastern Europe enabled the US to detect the Soviet combat divisions during the invasion of Czechoslovakia in 1968.[98] Accurate intelligence now contrasted sharply with the failures during the Korean War and indicated that intelligence gathering was better directed and analysed. This continued into the 1970s and the use of West Berlin as a forward listening post deep inside Soviet territory, enabled US intelligence to identify the entire East German Army Order of Battle.[99]

Apart from Edzell and Thurso, Norway and Denmark also participated in their own fashion. Both were signatories to the UK/USA SIGINT system and were able to monitor military communications from the Kola Peninsula; they were also able to cover Soviet and Polish naval forces in the Baltic and Barents Sea.[100] Foreign troops were not permitted on Danish soil during peacetime, a similar attitude to that of Norway, and there were also no foreign nuclear weapons permitted in the country. In reality, Denmark provided air bases for the USA which could accommodate more than five fighter squadrons during wartime.[101]

Congress granted $104,000 for an ELINT boat in the Barents Sea to monitor Soviet naval activity: the monitoring was done by the Norwegians and was paid for by the CIA. Simon West notes that the U-2 spy flights were able to regularly refuel at airfields in Norway.[102] These aircraft could not have been refuelled at any UK bases without attracting attention from various sources; Norway provided totally remote locations, well away from prying eyes. Campbell's 'unsinkable aircraft carrier' was now attracting too much attention.

---

[98] Aid, p 43.

[99] Aid, p 44. The author of this dissertation also witnessed this operation at first hand as a British Army officer engaged in signals intelligence in Berlin during 1975-76.

[100] Cost Reduction Program, FY 1966 - FY 1967, Central Intelligence Agency, 1 September 1965. DDI-3077-65, *National Security Archives*, [accessed 6 December 2005].

[101] Duke, *United States Military Forces*, p. 48.

[102] West, p.232 .

In 1973 the Senate Appropriations Committee described Edzell as performing 'an antisubmarine warfare support mission vital to the security of the nation', as part of the 'high-frequency direction-finder network.'[103] More funds were expended on Edzell the following year: 'We are requesting $571,000 for NAVSECGRUACT Edzell, Scotland. This station provides communications essential to the defense of the United States.' No mention can be found of any NATO or UK involvement in these matters.

This expenditure may have been part of Project WHITE CLOUD as Edzell was also involved in the satellite reconnaissance programme; this had begun in the early 1960s with the use of small USAF 'Ferret' ELINT satellites to track the movements of foreign ships. These located the position of stationary installations, but were incapable of following moving targets such as ships. The US Navy therefore developed its own ELINT satellites and the first WHITE CLOUD was launched in 1971.[104] The existing network of UK/USA ground stations was given the task of receiving the down-loaded data from these missions. WHITE CLOUD was the US Navy's principal over-the-horizon reconnaissance, but the USSR was well-informed about its abilities.

In 1974, CNO approved the relocation of all activities at US Londonderry to Thurso. The Scottish Office could 'see nothing but advantage from the proposed development,' [105] and US Forces Headquarters Europe confirmed that the site was technically suitable: Thurso was given a clean bill of health for activities connected with Project CLARINET BETTY, the latest version of the LORAN-C naval navigational system and NRS Thurso

---

[103] Military Construction Appropriations for Fiscal Year 1974, Joint Hearings Before the Subcommittee... by United States. Congress. Senate. Appropriations Committee, Congress. Senate. Appropriations Committee - 1973 - Page 244, *Google Books*, [accessed 4 February 2006]: Military Construction Appropriations for Fiscal Year 1975, United States. Congress. Senate. Committee on Appropriations, 1974, U.S. Govt. Print. Off, Page 608. Page 451, *Google Books,* [accessed 4 February 2006].

[104] The U.S. Navy's "White Cloud" Spaceborne ELINT System, [Kosmicheskaya Sistema Radiotekhnicheskoy Razvedki VMS SShA "Uayt Klaud"] by Major A. Andronov Zarubezhnoye Voyennoye Obozreniye [Foreign Military Review] (ISSN 0134-921X), No.7, 1993, pp.57-60. Translated by Allen Thomson, Surveillance, *Federation of American Scientists*, [accessed 2 February 2006]

[105] Scottish Office memo to GS Murray and Muir Russell (SEDD?), Secret, 31 July 1975, Subject: US Naval Communications expansion near Thurso. NAS. SEP4/2692

was then redesignated as the US Naval Communications Station UK (NAVCOMMSTA UK).[106]

Rumours and accusations regarding the use of Edzell's facilities by 'spying' organisations were rife and in 1976, Tom Litterick MP, claimed in Parliament that 'the American National Security Agency has been using its communications facilities at Edzell… to monitor the communications of British commercial organisations.'[107] The Minister of State for Foreign Affairs, Roy Hattersley, pointed out that it was 'a long established practice of the House and Government not to comment on matters such as this.' The long history of US unilateral activity on the site lends credence to this accusation.

Not surprisingly, there is little declassified material available regarding Edzell. However, a declassified document concerning the Mission, Functions and Tasks of Edzell, states that it was 'an integral part of a worldwide network developed by the US to serve as a part of a program to provide communications for defense of the US and the free world. Additional functions include monitoring transmissions procedures and research into electronic phenomena.' It is likely that Edzell's mission was similar to that of Keflavik, namely to 'operate an HFDF Facility in support of the Navigational Aid and Search and Rescue (SAR) missions. It also provides communications and related support, including communications relay, communications security, and communications manpower assistance to Navy and other DOD elements within the area.'[108] There is no mention in these documents of any Allied involvement.

---

[106] See Loran History, *United States Coast Guard*, [accessed 10 December 2005].

[107] 'Messages of UK firms "being monitored", *The Times*, 29 July 1976, Issue 59768, Page 7, Col A.

[108] OPNAV Report 5750-1, Command History for Calendar Year 1974, paragraph 1(3) 'Mission of the Command. Pursuant to NAVSECGRUINST S5210.3...' *US Navy Historical Center*, [accessed 20 October 2005]. USNAVSECGRUACT Keflavik, *Navy CT/SECGRU,* [accessed 21 February 2006).

The arrival of USAF Detachment 370 in support of Project CLEAR SKY in May 1970 was described as a 'weather research and radio propagation project'; Detachment 370 was a ground filter unit and part of the Atomic Energy Detection System (AEDS) that had been created to monitor atmospheric nuclear tests. [109]

By 1979, Edzell was under the operational control of the DIRNSA/ CNCSS (Director National Security Agency/ Chief National Central Security Services), emphasising its continuing high value and it is unlikely that its functions had been otherwise during the previous 20 years.[110] The mission was to 'provide cryptologic support to commanders and units of NAVEUR', with an obligation to provide to CINCUSNAVEUR 'SIGINT, interpretation, advice and assistance.' Edzell's mission was explained to the US Congress in 1980 as being a radio station that could 'listen for American or foreign broadcasts', a direct confirmation of Mr Litterick's accusation in 1976. [111]

The equipment used and other information provides a good estimate of its range of activities. Company B USMC Support Battalion's known role would support claims that they were monitoring Soviet submarine forces; the CLASSIC WIZARD Ocean Surveillance Satellite Control System and the BULLSEYE target location activity, both used the CDAA Wullenweber equipment and this equipment was installed at Edzell. [112]

---

[109] See *Cryptolog*, p 23. For AEDS see; Memorandum from Col. Frank Griffith, Deputy Chief, Air Force Technical Applications Center, to Special Assistant for Atomic Energy and Outer Space, "20-4 System Expansion", 4 January 1962, and State Department Circular Telegram 1444 to Various Embassies, "Project Clear Sky," 6 February 1964 Source: *National Security Archives*, [accessed 3 March 2006].

[110] Department of the Navy Naval Security Group Command Headquarters, NSGINST 5450.53A, Ser G142/133?/7272, 3 Dec 1979. From: Commander Naval Security Group Command. Subj: Mission and Functions of US Naval Security Group Detachment, London England/ US Naval Current Support Group, US Naval forces Europe, *US Navy Historical Center, [accessed 14 December 2005].*

[111] Campbell, p.170: note: NAVSECGRUDET – US Navy Security Detachment.

[112] Duke, *United States Military Forces* Appendix 13A. OPNAV NOTICE 5450, Ser DNS-33/5U838417, From Chief of Naval Operations, Unclassified, 27 October 2005, '…designed to divest NAVSECGRU of Classic Wizard front end mission sites.' *Department of the Navy Issuances*, [accessed 17 November 2005].

According to former members of the unit, Edzell had a specific radio intercept role and was part of the Mediterranean/North American DF Net. Cryptographers operated NAVSECGRU and general service communications circuits and fleet broadcast for North Atlantic and Mediterranean commanders. Others provided a Special Communications (SPECCOMMS) service for 'afloat units' in North Atlantic and Mediterranean, and there were other staff who tested, evaluated and operated new equipment as part of NAVSECGRU's role. Edzell was regarded as the NSG's 'European showcase.'[113]

In the 1960s, all HFDF resources in the UK/USA Agreement were modernised and interlinked in 'Operation BULLSEYE.[114] This tracked the movements of Soviet warships, including submarines. During the 1970s there were 21 Bullseye stations operated by the NSG, plus another eight by individual UK/USA nations. The equipment used was AN/FRD-10 Wullenweber Circularly Disposed Antenna Arrays/Circular Dipole Antenna Arrays (CDAA) and Edzell was fitted with this and the other European station was at Rota, Spain.

The Wullenweber site was spectacular and covered 40 acres; it had four concentric circles of poles and wires, between two metres and 30 metres in height, covering low band radio frequencies used by submarines.[115]

The incoming signal source was 'fixed' in conjunction with other Wullenweber stations such as Keflavik and Rota. They were part of the US strategic high-frequency direction-finding net (HFDF), with other stations located in the Pacific region (seven) and the East Coast of the USA (five). Edzell was an important player in a major US-only operation.

---

[113] *Cryptolog*, p.15.

[114] *CFS Masset*, *Hyperbolic Radio Navigation Systems*, [accessed 3 April 2006]. Aid, p 45: Al Grobmeier, 'End of an Era, USN CDAAs', *A Secret Landscape, America's Cold War Infrastructure,* [accessed 22 February 2006].

[115] For technical description of the Wullenweber system see: Bamford, pp 161-63: *Cryptolog*, p 8; also Wullenweber/CDDA Antenna Homepage. *Columbia Amateur Radio Association*, [accessed 14 December 2005].

The CDAA equipment was installed at Edzell in 1962 and Section 2 HFDF, which was responsible for DF operations, moved inside the Wullenweber complex. The operators worked a '2/2/2 and 80' shift of 2 evening watches, 2 day watches, 2 mid-watches and then 80 hours off.

Thurso's role was to provide command and control transmission to US Navy vessels in the Northeast Atlantic and Norwegian Sea; principally to deliver communications requirements to SSBNs operating in the northern waters and act as support to US Londonderry which had the lead role in this activity. Thurso was able to '…meet the essential high and low frequency radio coverage requirements in the northern North Atlantic,' and had a subsidiary role to 'transmit some surveillance intelligence and early-warning data collected overseas' to USA.[116] Part of the information would have been nuclear launch instructions. Thurso was thus a crucial link in the delivery of US strategic policy, especially orders from the national command authority (NCA).

Radio transmissions ranged from Extra Low Frequency (ELF) to Super High Frequency (SHF); the lower the frequency, the greater distance the signal can travel and, very importantly for strategic submarine communications, the greater depth beneath the ocean. ELF communicated with submarines and could be received at depth of 110 metres by using short burst messages; Very Low Frequency (VLF) can penetrate down to 15 metres and Thurso was the main US Navy VLF transmitter in Europe.[117] Like Edzell, its operational history is still shrouded in classified secrecy.

UK Activity

The locals welcomed the US servicemen and involved them in local matters, such as choosing the winners of a 'factory girls' competition.[118] It became involved in the

---

[116] CINCEUR letter to Political-Military Attaché US Embassy London, Confidential, 16 October 1975. Subject: US Naval communications Station United Kingdom (Clarinet Betty). NAS. SEP4/2962

[117] Duke, *United States Military Forces*, p.332.

[118] *Cryptolog*, p. 18; see also *People's Journal,* 1 April 1961.

demonstrations held as part of the campaign against the existence of US bases and nuclear weapons in Britain. The locals did not share these concerns and protesters 'received a chilly reception at Edzell… with booing and hissing from some Edzell folk.'[119] This was symptomatic of the overall project and there are no recorded instances of any sustained UK or Scottish opposition to the intelligence gathering bases.

The plans for the construction at Thurso followed the usual process of obfuscation and minimum information. In July 1961, McNamara approved the requirements and agreed that details should not be made public or informed to the UN.[120] 'The UK has proposed, and we agree, that in view of military security requirements it is not intended that the agreement regarding these facilities should be registered with the UN or otherwise be made public.' This indicates that both the US and UK governments wanted secrecy on the matter.

The public announcement ignored sensitive issues, with the media reporting on 27 July 1961 that Thurso would be another link in the distant early warning (DEW) line and would provide 'ship-to-shore communications'.[121] The agreement on DER (radar picket ships) use of Rosyth and the Clyde were also mentioned at the end of the article. Such collaboration over any sensitive announcements shows that the UK government was a positive partner in this mission.

In 1964, McNamara decided to 'close eight United States bases in Western Europe and the Atlantic areas'; the three UK bases were Brize Norton, Upper Heyford and Kirknewton which would be closed down and its function transferred to Menwith Hill.

---

[119] Foreign Service Despatch, Confidential, From American Consulate Edinburgh to Department of State Washington, 24 October 1960. Scottish Youth Peace Campaign protest March at US Navy Communications Center, Edzell.' *NARA* 15 September 2005.

[120] Department of State memo from EUR William R Tyler to The Secretary, Secret, 21 July 1961. Subject: Circular 175: Request for authorisation to Negotiate and Conclude and agreement Concerning Certain Facilities for US Navy in the United Kingdom. (Thurso, Rosyth Clyde – DERs) 711.56341/7-1961. NARA 13 SEP 2006.

[121] 'US Base for North Scotland; Another Link in DEW Line,' Glasgow Herald, 27 *July 1961.*

Brize Norton and Upper Heyford were obsolete strategic bomber bases due to the new SAC policy of retaining its strategic squadrons in the USA and sending them on three-month tours to Europe.[122] There was 'a gradual winding-down of SAC operations in the United Kingdom', and more than 100,000 US personnel were withdrawn from Europe, 1966-73.[123] The US defined its own interests and then acted accordingly.

The American Embassy in London requested a 'year's notice of the closure of the bases in the United Kingdom', and this was granted.[124] Because of Kirknewton's demise, claims have been made that Edzell was now undertaking its former tasks, with the remainder being provided at Menwith Hill. It has not been possible to substantiate this, but other indicators give some support to this view.

Exceptionally tight security was maintained at Thurso and local electricians could only supply power to the perimeter fence but not inside the base.[125] Edzell base strength rose to more than 700 servicemen and civilians (both US and British), with the rumoured involvement of personnel from both the NSA and GCHQ. Both NSA and GCHQ were kept from public knowledge during the 1960s, when authors agreed, as matters of national security, to remove references to either organisation from their books.[126] Even in the 1990s, the UK government denied the very existence of the Secret Intelligence Service (SIS) and the Joint Intelligence Committee (JIC), despite clear evidence to the contrary.

Navy Secretary John Chafee visited Edzell in 1971 and no fewer than 15 officers of admiral rank or equivalent visited in 1974; these included CINCUSNAVEUR, Chief of

---

[122] Jackson, pp17-8, 179-80: Duke, *U.S. defence bases*, pp.138-40.

[123] Duke, *United States Military Forces*, p.67.

[124] Foreign Office Letter from Miss PM Hutchinson to WH Nelson, Air Ministry, Secret, dated 7 April 1964, Subject: Closing of United States Bases. PRO, FO 371/174305, 4 November 2005.

[125] Interview with local electrician 15th March 2006.

[126] West, p.247-8: Dockrill and Hughes, p.5.

the Defence Staff and others from many top military organisations. [127] Thurso was also visited by senior officers, including Admiral Thach, CINCUSNAVEUR, who in 1965 visited both Londonderry and Thurso as part of an inspection programme linked to the US Navy strategic communications network in Europe. [128] Almost without exception, all of these VIPs were Americans, another sign of the exclusivity of the US strategic policy being operated at these sites.

Thurso had many rumours regarding its activities and evidence of British involvement at the base was provided by a 1968 request to the Atomic Energy Authority at Dounreay for a lease of the authority's housing stock for personnel from the Royal Navy, US Navy and GCHQ.[129] Further attempts to uncover evidence of the base's activities have been fruitless, and local interviews merely produce statements that 'there were various UK civil servants working on the base.'[130]

Conclusion

All persons engaged in handling SIGINT matters have a 'lifelong commitment to secrecy' about their activities. It has therefore been difficult to obtain any primary source information and many 'statements' are unsourced claims. Finding details about the specific operations carried out at Edzell and Thurso has been difficult owing to the cloak of secrecy around all NSG and NSA activities. Notwithstanding, some of these claims can be regarded as true, based on a combination of observation and related technical and military knowledge. A strict management system applies to special intelligence

---

[127] OPNAV Report 5750-1, Command History for Calendar Year 1974, paragraph 1(3) 'Mission of the Command. Pursuant to NAVSECGRUINST S5210.3.' *US Navy Historical Center*, [accessed 27 November 2005].; note: CINCUSNAVEUR – Commander in Chief US Navy Europe.

[128] 'US Commander's Visits', *The Times*, 16 August 1965, Issue 56401, Page 10, Col G.

[129] Letter from Scottish Office to Mr Fotheringham, unclassified, 2 July 1968, Ref: H/NDS/THS, NAS DD6/3298, H/NDS/THS Part A.

[130] Interview on 15 March 2006 with electrician from Thurso, who carried out contract work on the two bases during the period 1965-90.

communications records in the US Armed Services.[131] These constraints have therefore limited the research project, but not to any damaging extent as activities in general have been adequately established and referenced.

What, therefore, was Edzell's role? There is little doubt that Edzell was a very important component in providing SIGINT for the US 'national interest'. It produced SIGINT and strategic operations support for both the US Navy and the NSA. It was a radio intercept station, gathered SIGINT and liaised closely with Keflavik and latterly, Thurso. It supported the US Navy fleet communications network in the Northern Atlantic and the Norwegian Sea. It is a listed NSA Intelligence Collection Site and by 1976 received a major upgrade to become the European collecting station for the CLASSIC WIZARD system after the US Navy Ocean Surveillance Satellite (NOSS) was launched as part of Project WHITE CLOUD. [132]

Thurso offered 'significant advantages through collocation of high frequency radio facilities … This realignment of high frequency radio facilities will permit an economic transition into the satellite era with no degradation to fleet support.'[133] This confirms that Thurso was part of the HFDF network, as well as taking part in the downloading of satellite communications. The latter activities could well have been part of the US Navy's WHITE CLOUD programme, as at Edzell.

The US bases at Edzell and Thurso offered advantages in intelligence gathering and fleet communications. Both were part of a world-wide network of US military establishment. They had added value for the US as they could perform various functions satisfactorily from a single site; this is the reason why they attracted much high-level attention. They

---

[131] SECNAVINST 5212.SD, 22 April 1998, Chapter 2, Telecommunications Records, pp III-2-1 to III-2-24. *Navy Directives* ,[accessed 3 March 2006].

[132] See Duke, *United States Military Force:* Spaven, pp 111-15; Campbell, pp 116 & 225-6; CT Sandars, p.98.

[133] United States Embassy letter Head Defense Department Foreign and Commonwealth Office, Secret, dated 17 July 1975. NAS, NAS SEP4/2692.

were welcomed by their local communities, although they only used local labour for low-level tasks, relying totally on American units and contractors to carry out all important work. They were successful and were retained while similar facilities in Europe were closed.

Sources show that the UK fully supported American requirements and that the US was indubitably the senior partner. Britain's 'unique strategic location' for US strategic interests was fully exploited for intelligence and communications activities. The three Scottish intelligence gathering bases supported US foreign policy, and provided support for forward forces, namely the SSBNs and other naval missions. The bases at Edzell, Thurso, and Kirknewton were regarded as 'essential' and no attempt was made to 'discard' them.

All of the US actions and decisions were driven by American requirements, which were integrated into the overall defence of Western Europe. The Soviet Navy's biggest fleet, with all its SSBNs, was being assembled in northern waters throughout the 1950s and 1960s and therefore the US needed to upgrade its presence at Edzell and Thurso to assist its ASW strategy.

There are no signs of any damage to Anglo-American relationships by the US operations at Edzell, Thurso, or Kirknewton; the evidence suggests that these operations strengthened the liaison at official level. There were no impediments to the implementation of US strategic policy operations and there are no obvious differences with NATO on intelligence gathering; at the same time, there is also little evidence to suggest that the US fully involved its allies. The Americans were able to operate their Scottish bases for intelligence gathering without being impeded by the UK government.

Despite the high level mismatch over US intelligence gathering, there is no evidence of these problems at Scottish bases. Their task was to gather information, analyse it and pass it up the chain to the Washington-controlled HQs where the trading activities occurred. It has been difficult to fully examine the complete range of activities carried out at

Kirknewton, Edzell and Thurso because of the paucity of declassified information. A sufficient amount is available to form some general conclusions, but there is a lack of any central declassified source for US Navy intelligence gathering that would provide sufficient detail. The 'closed-shop' mentality of former intelligence operatives is also another stumbling block and there is very little personal memoir material available that would assist with the topic.

In summary, the USA had an essential intelligence gathering requirement in the Northern Seas region and Scotland was the ideal location. They made their plans and the UK government fully accommodated all of their requests.

CHAPTER THREE

STRATEGIC RETALIATION – THE HOLY LOCH SUBMARINE BASE

**US Strategic Policy Requirements**

The turning point during the Cold War arrived with the introduction of the US Polaris submarine fleet in 1961. This sophisticated new weapon, which could reach targets in the USSR, totally changed the Cold War deterrent calculus. For America it gave them the guarantee of a second-strike capability, combined with stealth, virtual invulnerability, and most importantly, a forward operating base in Scotland, far from the shores of the USA. The use of a Scottish base was fully in tune with the American zeitgeist of being as close as possible to the enemy while remaining as far as possible from the continental USA. Arms-length warfare had now become a reality.

Technological advances reduced the of nuclear weapons, enabling submarines to become suitable for the strategic role; nuclear propulsion made a submarine virtually undetectable, and a pressurised water nuclear plant meant that it did not need to surface to recharge batteries; these characteristics made them the ideal platform for a seaborne nuclear deterrent force. Admiral Burke, CNO, moved the Navy to the 'strategic center' by championing the Polaris fleet. His Naval Warfare Analysis Group reported in 1957 that the Polaris mission was 'national deterrence'. This decision did mean that cruise missiles were not developed until the 1980s. It also put the Navy 'into the forefront of the central national strategy.'[134] The FBM was described as the 'optimum launching vehicle' for survivability and 'its mission should be one of deterrence.' [135] In April 1958, Burke

---

[134] Baer, pp.347-77.

[135] Department of the Navy, Office of the Chief of Naval Operations, Naval Warfare Analysis Group Study Number 1, Introduction of the Fleet Ballistic Missile into Service, (OP 93), 0011P03 dated 15 January 1957, Secret, *Digital National Security Archives,* [accessed 16 February 2006]. Also, Polaris Chronology, History of the Fleet Ballistic Missile System Development Program 1955-1967, 00031, 1967/00/00, *Digital National Security Archives*, [accessed 15 April 2006].pp.13-23.

Map 3 – US SSBN Operations
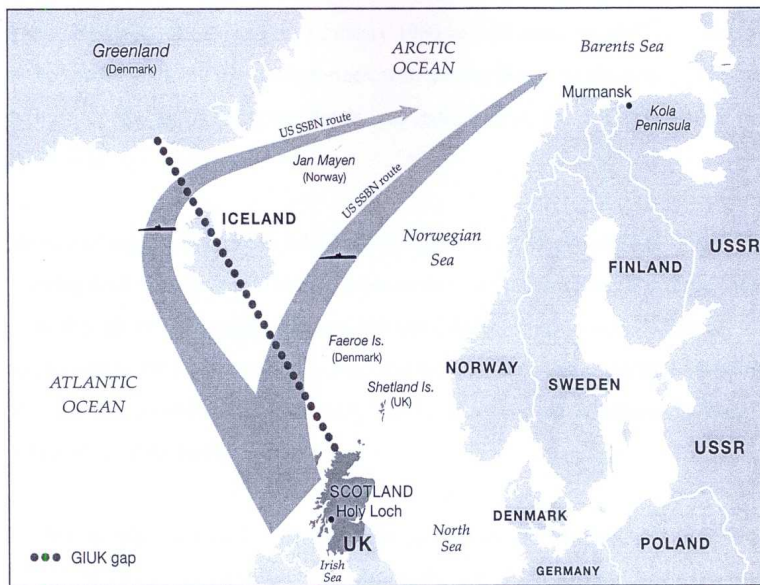
established Submarine Squadron 14 (SubRon 14) to research and implement the operational concept.

President Eisenhower described FBM submarines as 'mobile missile bases …and seaborne bomber bases' and on 7 January 1960 he authorised the NSC to proceed with the construction of 14 Polaris submarines, with another five to be planned. [136] This was an increase on the previous agreed totals and indicative of the prominence that Polaris SSBNs had now achieved.

Because of arguments between the Air Force and the Navy, the Joint Staff Target Planning Staff was created in 1959 to produce the first SIOP for nuclear war; this had an 'optimum mix of high priority military, industrial and government control targets.' [137] It was revised in 1961 and its specific objectives were to 'destroy or neutralize Sino-Soviet Bloc strategic nuclear delivery capability' and to 'attack the major urban-industrial centers of the Sino-Soviet Bloc.'

In 1961 the SAC allotted 232 targets to Polaris SSBNs; 169 of these were in Russia and 62 were in China. As SubRon 14 was stationed in the North Atlantic area of operations, only Russian targets would have been within range, probably Moscow, other Russian cities and naval facilities at the Kola Peninsula. The Soviet SSBNs had been based within the Kola Peninsula since 1958; this targeting was confirmed to the US Congress in 1979

---

[136]Memorandum of Conversation [Dwight D. Eisenhower, Pres.; Thomas S. Gates, Jr., Secretary of Defense; Livingston T. Merchant, Under Secretary of State for Political Affairs; Gen. Andrew J. Goodpaster, Staff Secretary to the Pres.; other State and Defense officials]. Oct. 3, 1960. 6 p. SECRET. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100396714, [accessed 23 March 2006]. Memorandum. DEPARTMENT OF DEFENSE. SECRET. Issue Date: Sep 22, 1960. Date Declassified: May 26, 1982. Unsanitized. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100452975, [accessed 10 May 2006].

[137] Aaron L Freedberg, 'The Evolution of US Strategic Doctrine, 1945 to 1981', in 'The Evolution of US Strategic Doctrine, 1945 to 1981', in *The Strategic Imperative: New Policies for American Security*, ed by Samuel Huntington (Cambridge: Ballinger Publishing, 1982), pp.59-61: Miller, pp.133-5: Hanhimaki and Westad, pp. 294-6.

by the CNO.[138] The Polaris submarines 'maintained a battery of missiles ready for firing throughout their patrols'; also, the US Navy was very confident that these patrols had never been detected by Soviet ASW activities.[139]

Khrushchev was determined to correct the strategic imbalance by creating a Soviet nuclear missile force of warships and rocket launcher battalions. He formed the Strategic Missile Forces (RSVN), but in 1960 it only had four R-7 launchers and a couple of hundred very short-range missiles that could only reach Poland; the Soviet air force gradually reduced its strategic tasks.[140] When Khrushchev was removed in October 1964, Admiral Sergei Gorshkov, commander of the Navy, ordered an increased build-up of the new nuclear ballistic missile vessels.[141]

Defense Secretary McNamara fully supported the FBM programme and proposed six Polaris submarines in his first Defense Budget in September 1961. He described them as providing a second strike capability against Soviet long-range nuclear forces, with a secondary mission against Soviet cities: he stated that 'the main objective of our nuclear forces is to deter nuclear attacks on the US', and that 'the president's hands must not be tied on strategic matters through a lack of resources.'[142] An NSC memorandum of

---

[138] See; Pavel Podvig (ed), *Russian Strategic Nuclear Forces*, (Cambridge, MASS. MIT Press, 2004), p.257: Spaven, p.8: Letter from V Lansing Collins, NATO HQ SACLANT, to Russell Fessenden, Director Office of European Regional Affairs, State Department, Subject: NATO Implications of SUBLANT's Study of SSBN Deployment, 20 June 1961, Secret, 01138, 1961/06/20, *Digital National Security Archives*, [accessed 16 February 2006].

[139] *SIPRI Yearbook of World Armaments and Disarmaments 1968/69,* (Stockholm: Almqvist & Wiksell, 1969), p.108.

[140] Stephen J Zaloga, *Target America: The Soviet Union and the Strategic Arms Race 1945-64*, (Novato. Presidio Press, 1993), pp.160, 188.

[141] Admiral Gorshkov was Commander-in-Chief of the Soviet Navy from 1956 to 1988.

[142] Draft Memorandum for the President from Secretary of Defense McNamara, Subject: Long Range Nuclear Delivery Forces 1963-1967 [?], 23 September 1961, 00432, 1961/09/23, pp.1, 4, 14. *Digital National Security Archives,* [accessed 6 January 2006]: Draft memorandum for the President from Secretary of Defense McNamara, Subject: Strategic Offensive and Defensive Forces (U), Revised 15 January 1968, 00472, 1968/01/15, Reproduced in *Declassified Documents Reference System.* Document Number: CK3100242768, [accessed 6 January 2006].

October 1961 set out McNamara's concept of nuclear strategy, namely to ensure a survivable second-strike capability.[143]

McNamara's selected strategic doctrine, says Gaddis, was designed for the 'destruction of the enemy's military forces, not of his civilian population'; but he eventually shaped it to target civilian populations to ensure mutual assured destruction, the cornerstone of the strategic policy.[144]

By December 1961, both Rusk and McNamara started to discuss Flexible Response. At the NATO Athens Meeting a few months later, McNamara revealed his concept of limited war; this laid down guidelines for nuclear use and acknowledged that warfare against the Soviets might only involve limited activity.[145] Previously, the Soviets believed that war would start with a surprise attack by NATO using nuclear weapons; once flexible response was adopted, the Soviet General Staff realised that war would be conventionally-based, with the threat of an eventual nuclear exchange.[146]

The Cuban Missile Crisis in October 1962 presented SubRon14 with its operational examination and it performed effectively. By 22 October, all SSBNs had moved out to their operational station and the US had the maximum number of strategic submarines at sea.[147] Messages were passed regarding *Proteus* moving out of Holy Loch to naval Z-

---

[143] NSC, *Long-Range Nuclear Forces*, 11 October 1961: Freedman, *Nuclear Strategy*, pp.319-20.

[144] Gaddis, *Russia, the Soviet Union*, p.234: John Lewis Gaddis, *The Cold War*, (London. Allen Lane, 2005), p.79-81. Also; 'Mutual assured destruction was defined by the DOD in 1965 as the capability to destroy at least 25 per cent of the Soviet populace and 60 per cent of Soviet industry.'

[145] Heuser, *Russia, the Soviet Union*, p.12.

[146] Andrei A Kokoshin, *Soviet Strategic Thought 1917-1991*, (Cambridge: Harvard University, 1998, and Mezhdunarodnye Otnosheniia, 1995), p.124.

[147] CNO Report on Cuban Missile Crisis, *Naval Historical Center* [accessed 22 January 2006]. Also Annual Report of the Secretary of Defense: July 1, 1962, to June 30, 1963, extract. The Cuban Crisis, *Naval Historical Center*, [accessed 26 April 2006]: Vice Admiral Philip A. Beshany, USN (Ret.) Interviewed by Dr. John T. Mason, Jr. 1977/11/08, *Digital National Security Archive*, [accessed 22 February 2006].Department of State Incoming Telegram from JCS to Secretary of State, Situation Report 3-62, as of 250400Z October 1962, Operation Scabbards, Secret, *Digital National Security Archives*, [accessed 18 May 2006].

berths in West Highland sea lochs.[148] The families and locals around Holy Loch were under great stress, as they believed they were 'very close to destruction' at this time.[149] The Cuban crisis was epochal for both sides and confirmed to Kennedy, as noted by Stromseth, that massive retaliation was not feasible; the Soviet lesson was that the Americans would not risk nuclear strikes on the USA.

In March 1963 it was announced that three boats from SubRon 14 would patrol the Mediterranean; this first NATO SSBN force had been agreed at Athens in May 1962. In February 1964, a second FBM base was established at Rota, Spain.[150] This was an 'acceptable alternative' to Franco's Spain becoming a member of NATO, something which the Europeans would not allow. The naval base at Rota, meant that the FBM fleet for the Mediterranean did not have to make a 14-day round trip to the USA at the end of each patrol, thus saving millions of dollars and maintaining its strategic effectiveness.

It is interesting to note that the UK had opposed American plan to set up naval HQ in Lisbon until the mid-1960s as London regarded that sea zone as part of the Royal Navy's area of control. The CNO deployed SubRon 16 to Rota on 28 January 1964 and in December the anchorage at Guam became operational; within a year the final base, at Charleston SC, opened. America's SSBN system was now fully operational and had been deployed in the customary, businesslike unilateral fashion. Rota operated as a front-line SSBN base for 15 years before the US withdrew SubRon 16 from Spain in July 1979. This ensured that the Holy Loch base assumed greater importance in the overall US second strike strategy.

---

[148] For Z-berths see, Spaven, p.75: DD12/3076, P/SLR/19/7/1/1, From IAH More, to Scottish Home & Health Department, 14th November 1962, Confidential.

[149] Messersmith, p.63.

[150] 'Holy Loch to be NATO Base', *Glasgow Herald,* 7 May 1962, p.4; Two submarines from SubRon 16 at Rota were assigned to the NATO role in 1964, *rota.navy.mil*: *Globalsecurity:* Grove, p.105: William Chislett, *Spain and the United States: The Quest for Mutual Rediscovery*, (Real Instituto Elcano de Estudios Internacionales y Estratégicos. 2005.), http://www.realinstitutoelcano.org/ publicaciones/libros/ChislettEsp-EEUU-ingles.pdf. [accessed 14 May 2007].

On 28 September 1964, the SSBN *USS Daniel Webster* was the first Polaris submarine to go on patrol armed with the Polaris A-3 missile; the fleet of 19 boats now carried a total of 288 surface-launched ballistic missiles (SLBMs). [151] By November 1964, the US possessed 796 inter-continental ballistic missiles (ICBMs) on Alert Status, with another 82 in Emergency Combat Capability Status, many on board SSBNs from Holy Loch. The Polaris A-3 had been fully developed, each with three re-entry vehicles (MIRVs); these were small nuclear weapons that would separate from the main missile and attack separate targets. [152] In 1971, President Nixon modified the FBM commitment to NATO to take account of the equipping of the SSBN fleet with Poseidon MIRV missiles; this order made no mention of any change to the mission of the Atlantic SSBNs. [153]

In reality, the USA had unilaterally constructed a nuclear strike force of immense power to combat what was in effect a very small Soviet threat. This stemmed from the relentless advance of the 'military-industrial system' as predicted by Eisenhower, as well as the institutionalised over-estimation of Soviet strength by the poor coordination of US intelligence gathering as previously noted.

By the mid 1970s, Rota had become a strategic air base as the US had lost its airfields in Morocco in 1963, becoming one of the largest airbases outside the USA; it also handled more than 600 ships annually. However, after the US accidentally dropping H-bombs in Spanish waters, Rota's nuclear status was reduced, whereby it could 'no longer be

---

[151] Report for the President 24 November 1964,SECRET, DEPARTMENT OF DEFENSE.. Issue Date: Nov 24, 1964. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100169641. [accessed 10 May 2006]: Memorandum. DEPARTMENT OF DEFENSE. SECRET. Issue Date: Sep 29, 1964. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100448299 [accessed 10 May 2006].

[152] Nov Report for the President. Nov. 17, 1964. 30 p. SECRET to UNCLASSIFIED. SANITIZED copy. Released Sept. 19, 1977. Johnson Library, White House Central File, Confidential File, Subject Reports, DOD, Nov. 1964. Report. DEPARTMENT OF DEFENSE. SECRET. Issue Date: 17, 1964. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100404138, [accessed 19 November 2005].

[153] National Security Council, National Security Decision Memorandum 132, to Secretary of State and Secretary of Defense, Subject: Modification of SSBN Commitments to NATO, 13 September 1971, 00132, 1971/09/15, *Digital National Security Archives,* [accessed 23 April 2006].

associated with the Polaris programme.'[154] Holy Loch was untouched by any such changes. Rota eventually closed as home port to SubRon 16 in July 1979, while Holy Loch was maintained for another 13 years. The UK government never pressurised the Americans to remove the SSBNs, regardless of party policy statements; they also never had the trauma of the Palomares incident. Had they ever done so, the US would have withdrawn support for the UK Polaris/Poseidon fleet, a possibility that was always present. Once more the US controlled their major ally in a crucial strategic matter.

Nixon and Kissinger changed American strategic posture because of overstretch and Soviet nuclear parity. The SALT 1 agreement of May 1972 produced a mixed outcome; it accepted the 'mutual assured destruction' capability by restricting ABM sites to two each, but it left the Soviets with a noticeable superiority in numbers of missiles, namely 1,618 ICBMs against 1,054 and 740 SLBMs against 650. However, America still retained a substantial advantage in technological sophistication.[155] The treaty excluded the SSBNs, as well as ignoring the American possession of the MIRV technology, both vital matters for the Holy Loch operations. At the highest political level, the US maintained its vital strategic needs unilaterally.

SSBN Development

The US submarine fleet was radically redeveloped between 1945 and 1960; it introduced submarine-launched nuclear missiles and propulsion by nuclear motors. Two exceptional officers, Admirals William Raborn and Admiral Hyman Rickover achieved this significantly ahead of the Soviet Union, by using the Fleet Ballistic Missile (FBM) programme and the Navy's Nuclear Power Program.[156] In fact, Rickover was so selfishly

---

[154] Chislett, *Spain and the United States* [accessed 14 May 2007]

[155] Gaddis, *Russia, the Soviet Union*, p.258.

[156] Admiral William Raborn was director of the Fleet Ballistic Missile Program from 5 December 1955 until 26 February 1962; from 28 April 1965 to 30 June 1966, he was DCI. Admiral Hyman G. Rickover was Director of the Naval Reactors Branch in the Bureau of Ships from 1949 and led the effort to develop the world's first nuclear-powered submarine; he played the role of father to the nuclear fleet and was officially retired in 1982: Grove, p.230.

possessive of the entire concept that he initially opposed allowing Admiral Earl Mountbatten to board US nuclear submarines.

The limited range of the Polaris A-1 missile meant that forward operating bases would reduce travel and lines of communication and thus increase its deterrent capability. In December 1959, the CNO and Admiral Lord Mountbatten, Chief of the Defence Staff, agreed that Scottish bases would be suitable. This was a continuation of an agreed pattern from the 1950s. [157] Existing bases in West Germany were closer to the USSR, but were extremely vulnerable to any Warsaw Pact attack; lessons had been learned from the rapid North Korean invasion of South Korea. There was still strong opposition to the entire SSBN concept from senior US naval officers who they feared that 'it was diverting funds away from the large surface ships they preferred.' [158]

Major technological innovations such as deeper diving, underwater sonar navigation aids and quieter engines appeared and Rickover 'created and remained in charge of the most significant naval programme of all time.' The US Navy commissioned one nuclear-powered FBM submarine every two months during the period December 1959 to January 1967.[159] The acronym 'FBM' slurred into 'Boomer', becoming shorthand for a ship submersible ballistic nuclear (SSBN).

The first SSBN was the *USS George Washington* (SSBN 598), and the Polaris missile system became operational on July 20, 1960. The USA now possessed 'the most

---

157 Memorandum of conversation; present for the UK: Harold Watkinson, Minister of Defence, Admiral Mountbatten, Chief of Defence Staff… Present for the US; Thomas Gates, Secretary of Defense; General Twining, Chairman JCS...15 December 1959, Top Secret, 01105, 1959/12/15, DNSA [accessed 4 April 2006]: State telegram, from Ambassador Bruce to Secretary of State, Subject: Nitze-Rostow Visit on Nassau Agreement – Nitze, Rostow, Thorneycroft and Mountbatten, No 2705 18 January 1963, Secret, NACP 741.5611/1-1863 [accessed 15 September 2005]. Healey, p.162.

158 Freedman, *Nuclear Strategy*, p.158.

159 Francis Duncan, *Rickover and the Nuclear Navy: The Discipline of Technology*, (Annapolis. Navy Institute Press, 1990), p.vii.

powerful deterrent force imaginable, a stealth platform with enormous firepower.'[160] It carried 16 Polaris A-1 missiles, each with a range of 2,200 kilometres, launched when submerged. The targeting was under control of the SAC and the submarines were commanded by CINCUSNAVEUR and CINCLANT (both appointments held by the same US admiral).

The Americans agreed to provide Polaris submarines to the UK for Western European defence as part of the policy of 'defending NATO on a global basis.' The UK was permitted to access US nuclear information, thereby overcoming the restrictions imposed by the McMahon Act of 1946. This was one of Macmillan's coups, but there were limitations regarding the amount of information the USA would provide.

Defence Minister Harold Watkinson visited Secretary of Defense Thomas Gates in June 1960 to seek better terms, but the Americans pointed out Macmillan's assurances at Camp David and therefore the US would not consider any political conditions; also the US would only agree to supply two Polaris submarines to the UK as part of a NATO initiative.[161] Both were examples of American ruthless behaviour in pursuing their own requirements, regardless of the Anglo-American relationship or the NATO alliance. This was unilateralism in the raw.

Eisenhower and Macmillan agreed at Camp David in February 1960 that the US would provide Skybolt missiles to the UK in exchange for the UK 'making the necessary arrangements for US Polaris tenders in Scottish ports'. The USA had based their nuclear

---

[160] Technical Innovations of the Submarine Force, CNO, Submarine Warfare Division, *US Navy Office of Information,* [accessed 9 January 2006].

[161] State memorandum from Assistant Secretary for Europe, to Livingston Merchant, Subject: Polaris submarines for the UK and MRBMs for NATO, Top Secret, 3 June 1960, NACP 741.56311/6-360, 15 September 2005; also, State Memorandum from Foy D Kohler to Secretary of State, Subject: Polaris Berthing Facilities in UK, 3 October 1960, EUR: FDKohler: mt, Secret, NACP 711.5612/10-3-60, 15 September 2005.

bombers in the UK since the 1950s, as well as a generation of MRBMs, and therefore the arrival of the Polaris system was regarded as a natural progression of this 'hospitality'.[162]

This quid pro quo was the cornerstone of the US position from which they never wavered.[163] Despite the manoeuvring done by Macmillan, the Americans enforced their unilateral requirement. Britain attempted to obtain a better deal because of the political problems associated with siting a nuclear submarine base in the heavily populated West of Scotland. The area housed more than two million people, there was heavy Left Wing opposition, and Macmillan wanted to ensure that he secured full support from the leadership of the Labour Party. This latter point was particularly important in view of the 1960 the Labour Party Conference vote to abandon all nuclear-based defence measures.[164]

The preferred American location was either Holy Loch, a Royal Navy base during the war, or Rosneath, which had been a wartime US Naval Base. Bremerhaven was suggested as 'an acceptable alternative', to help focus British attention, but the State Department did not support it. [165] On 20 June, Eisenhower stated to Macmillan that the submarines needed quick access to open seas and excellent logistical support facilities, therefore the Clyde was the only place that could provide these.[166] Macmillan conceded,

---

[162] Baylis, *Anglo-American Defence Relations*, p.40-1 & 78. Reynolds, A 'Special Relationship'?, pp.1-20.

[163] Memorandum from the President to Prime Minister, 29 March 1960, Top Secret, NACP 711.56341/3-2960, 13 September 2005: State Memorandum of Conversation, Participants: President Kennedy, Secretary McNamara, Ambassador Bruce, McGeorge Bundy, Ambassador Thompson (all US) and Prime Minister Macmillan, Foreign Secretary Home, Defence Minister Thorneycroft, Ambassador Ormsby Gore, Mr de Zuleta and Mr Bligh (all UK); Subject: Skybolt, 19 December 1962, Secret Eyes Only, 20778, NACP 741.5611/12-1962, XR 711.5611, 741.56311[accessed 15 September 2005].p.2.

[164] Healey, p.242.

[165] Coletta and Bauer, 1985, p.51: Wolfram Kaiser, 'Trigger-Happy Protestant Materialists? The European Christian Democrats and the United States', in ed by Marc Trachtenberg (Lanham and Oxford: Rowan & Littlefield, c2003), p.77.

[166] State telegram From Seoul to Secretary of State, 19 June 1960, Top Secret, Presidential Handling, 20 June 1960, NACP 741.56311/6-3060, Message from President to Prime Minister, Quote, Dear Harold... Fully appreciate the political difficulties confronting you and your colleagues regarding provision of facilities for our Polaris submarines on the Clyde. .. we reached agreement in principle at Camp David, and I will look forward to hearing from you on the outcome of your Cabinet consideration. With warm personal

but mentioned the vagueness surrounding the American offer of Polaris submarines to the UK.

The British Embassy in Washington stated that Macmillan supported this 'worthwhile project'; it was a complete surrender to the US position.[167] To prevent further delay, Eisenhower informed Macmillan that 'there was no misunderstanding at Camp David on the question of location' and it was now an urgent affair, with the US Navy planning to deploy vessels by the autumn. The question of operational control was raised and Eisenhower reiterated that the US would require UK consent before firing missiles from inside British waters. The issue of assigning British Polaris submarines to the NATO project was also mentioned.

Macmillan vainly pointed out that Glasgow 'contained unstable elements…and communist agitators'; nevertheless, unrelenting American pressure succeeded and Eisenhower agreed to the deal on 27 October 1960.[168] The media uncovered the background negotiations and the *New York Times* broke the news on 18 October 1960.[169] The process was an indication that the Americans did not regard the Anglo-American relationship as a partnership, but had pursued their strategic requirements in a singularly unilateral fashion.

---

regard, as ever, Ike.': NACP 741.56311/6-3060, 15 September 2005, State telegram, from President to Prime Minister, Presidential Handling, Top Secret, 30 June 1960: NACP 741.56311/7-360, 15 September 2005, State telegram from White House to Secretary of State, Text of message from Prime Minister to President delivered here by British Embassy, Confidential, 2 July 1960.

[167] See: State memorandum of conversation between Viscount Hood, British Embassy and Foy D Kohler, Assistant Secretary for Europe and Robert H McBride, under secretary for Western Europe, Subject Polaris Base Facilities in Scotland, Secret, 7 July 1960, NACP 741.56311/7-760, 15 September 2005: State telegram to American Embassy London…text of letter from President to Prime Minister, 15 July 1960, Top Secret, Presidential Handling, NACP 741-56311/7-1560, 15 September 2005.

[168] State memorandum from Under Secretary for Political Affairs, to The Secretary of State, 27 July 1980, Top Secret, EUR:IWhite/vh, NACP 741.56311/7-2760; also, From State, Top Secret, to Embassy London, 2621, 27 October 1960, 'Dear Harold, I am delighted that agreement has been reached on the project for berthing facilities for our Polaris tender in the Clyde area..'

[169] Walter Wagoner, 'Britain will get US Polaris base', *New York Times,* 18 October 1960, p.11.

Naval communications were unreliable and the nuclear launch order needed to reach the SSBN during war and confusion; this task was passed to the Special Projects Office (SPO). [170] Communications networks had to be resilient and secure, and primary communications were provided by very low frequency (VLF) equipment, as at Thurso. The missile launch message from the NCA was also transmitted to relay stations and ships for rebroadcast to the SSBNs, thus ensuring that launch commands reached the submarine.

Secure extremely low frequency (ELF) communications were developed and submarines received VLF communications via a trailing wire antenna that was trailed behind the boat just below the surface. [171] In July 1960, the Pentagon requested a radio communications station in northern Scotland, to support anti-submarine warfare (ASW) activities and vital ship-to-shore links to the US fleet; this led to the construction of radio bases at Thurso, and Londonderry in Northern Ireland. [172]

The two-crew concept meant that one crew manned the submarine for a three-month operational period while the off-crew was back in America for training and rest. Prior to this development each submarine would only have had one crew and a lengthy turnaround in port; however, the nuclear-powered boats could run endlessly and therefore the 2-crew concept was devised. In addition, further safeguards were included to protect

---

[170] Possible items for discussion relating to whether the primary mission of the Navy, which is to transport troops and material, has been changed by the new weapons systems. Miscellaneous. WHITE HOUSE. SECRET. Issue Date: Mar 31, 1959. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100258816/17, [accessed 22 March 2006]: Proceedings of the Special Projects Office Steering Task Group, Task II – Monitor the Fleet Ballistic Missile Development Program, 43rd Meeting, 27, 28 May 1964, Top Secret, 00785, 1964/05/28, *Digital National Security Archives* [accessed 6 January 2006]. Pp.3, 7, 8, 9, 21 & 277.

[171] SPO 43rd Meeting, pp.8,9. Cycle of a typical patrol and off-crew period for a pre-trident FBM, *USS Will Rogers*, [accessed 14 February 2006]: Campbell, pp 225-6.

[172] The Bagatelle system would have cost more than $100 million: Special Projects Office Steering Task Group, 27, 28 May 1964,: Department of Defense Memorandum from William E Lang, Director Office of Foreign Military Rights Affairs, to John Y Millar, Department of State, Subject: Initiation of Base Rights Negotiations for a Proposed US Naval Radio Facility Scotland (C), I-14, 783/60, 15 July 1960, Secret, NARA 711.56341/7-1560, 13 September 1960. Polaris Chronology, History of the Fleet Ballistic Missile System Development Program 1955-1967, 00031, 1967/00/00, *Digital National Security Archives*, [accessed 15 April 2006].pp.13-23.

this strategic advance. The relief crew's return involved using two separate aircraft; if one aircraft developed problems, the other could replicate all the operational functions and could therefore take command of the SSBN.[173]

During operational build up, an SSBN put to sea and performed a series of live exercises including firing of the Polaris missile. Rickover demanded that the naval nuclear engineers focused their attention solely on the nuclear plant to the exclusion of any other operational duties. This was a radical change from the standard naval doctrine of having cross-qualified officers aboard submarines to provide resilience within the vessel's battle structure.[174]

Polaris development continued and the Polaris A-2, range 2,700 kilometres, became operational in 1962; the Polaris A-3, range 4,500 kilometres, was fitted to the *USS Daniel Webster (SSBN 626)* in September 1964, the first SubRon 14 boat to be converted.[175] The SPO was able to report by May 1964 that it was costing $42 million to refit an SSBN with Polaris A-3 missiles. The benefits of Polaris were listed by US Navy Secretary John Connally; it could retaliate on order, thus allowing peace negotiations to take place; it could be easily retargeted; the Navy operational command system could control it and, most importantly, it was not a 'magnet' that would draw enemy missiles to the mainland

---

[173] This system was used by airborne forces to ensure tactical viability after a parachute drop; all operational functions were duplicated between separate aircraft loads. (The author is a former Parachute Regiment officer.)

[174] Memorandum from John B Connally, Secretary of the Navy to Secretary of Defense, Subject: Navy Plans for the A-4 Polaris Missile, 26 June 1961, Secret, 00731, 1961/06/26, *Digital National Security Archives,* [accessed 24 April 2006]. *USS Will Rogers,*[accessed 14 February 2006]: Memorandum for the Chairman, Joint Chiefs of Staff from the Secretary of Defense, Robert S McNamara, Subject: Reliability Test Programs for the Minuteman and Polaris Missiles (U), 15 September 1965, Secret, 00810, 1965/09/15, *Digital National Security Archives*, [accessed 19 May 2006]: Bivens, pp.34, 40.

[175] *Submarine Squadron Fourteen*, p.3. Proceedings of the Special Projects Office Steering Task Group, Task II – Monitor the Fleet Ballistic Missile Development Program, 43rd Meeting, 27, 28 May 1964, Top Secret, 00785, 1964/05/28, *Digital National Security Archives* [accessed 6 January 2006]. Pp.3, 7, 8, 9, 21 & 277.

USA.[176] This was another reiteration of the fundamental advantage of basing it in Scotland, as pointed out by Arbatov and Oltmans; America's approach to national security interests always took precedence over multilateral or US/UK relationships.

By the late 1960s, May and Treverton's point about a 'superior nuclear arsenal' for the Soviets was becoming true and improvements to Soviet targets and air defence systems (ABMs) meant that missile technology needed to be upgraded; therefore the Poseidon missile was introduced to succeed Polaris.

Poseidon was developed as a counter to the SS-9 Soviet land-based system; it had a bigger warhead than Polaris, and could carry 10 MIRVs over 5,270 kilometres and was designed to reassure the USSR that the USA was not building a first-strike capability. The upgrading of the Polaris system, and its successor Poseidon, was authorised in November 1965 by Secretary McNamara, still a strong FBM supporter.[177]

In 1967, he recommended enormously costly improvements to Poseidon and this placed significant pressure on the Defense Budget which had to compete for funding against the costs of the Vietnam War and the Great Society programme. Nevertheless, McNamara specified the initial operational date for Poseidon of November 1970, with a total force of 384 missiles on board 31 SSBNs by 1975, with costs estimated at $4,998 million. Flexible response required extra funding for military matters; this was initially the case, but Johnson decided to stop the extra spending as it was crippling his Great Society

---

[176] Memorandum from John B Connally, Secretary of the Navy to Secretary of Defense, Subject: Navy Plans for the A-4 Polaris Missile, 26 June 1961, Secret, 00731, 1961/06/26, *Digital National Security Archives,* [accessed 24 April 2006].

[177] Department of Defence Memo, 19 October 1965, Secret, 00812, 1965/10/19, *Digital National Security Archive,* [accessed 27 February 2006]: Memorandum for the Secretaries of the Army, Navy and Air Force from Robert McNamara, Secretary of Defense, Subject: FY 1966 Supplemental and FY 1967 Defense Budget Recommendations, 24 November 1965, Secret, 00462, 1965/11/24, *Digital National Security Archives,* [accessed 6 January 2006 Also Draft memorandum for the President from the Secretary for Defense, Subject: Defense Department Budget for FY 69 (U), 1 December 1967, Top Secret, 00471, 1967/12/01, *Digital National Security Archives*, [accessed 15 March 2006]. Also Memorandum for the President from Secretary of Defense McNamara, Subject: Strategic Offensive and Defensive Forces (U), Record of Decision, Revised 15 January 1968, 00472, 1968/01/15, *Digital National Security Archives*, [accessed 6 January 2006].

programme. [178] These cuts did not impinge on the FBM fleet, as McNamara was 'hardening America's nuclear arsenal.'

In January 1967, McNamara reported that SSBN construction was on target; the first seven Poseidon re-fitted boats would be deployed in 1971, and the final one by the end of 1977. [179] In his opinion, the SSBN was the ideal launching platform - it was mobile, easy concealed, thus ensuring a very high probability of surviving any Soviet first strike.[180] The *USS James Madison (SSBN 627)* completed the first successful underwater Poseidon launch on 3 August 1970. [181]

McNamara's Force Structure proposals in November 1966 planned for a steady force level of 655 SLBMs for the period 1968 to 1972. The Poseidon missiles would replace 500 of the current nuclear weapons in the strategic bomber force. The SSBN was now a major component of the long-rage deterrent force.[182] It utilised enhanced navigational equipment using satellite links; this was Programme 435, formerly known as the Transit satellite and was first used by *USS Alexander Hamilton (SSBN-617)*, a SubRon 14 submarine, on patrol from Charlestown NC to the Mediterranean. The radio station at Thurso was a link in this system.

---

[178] Gaddis, *Strategies of Containment*, p.259.

[179] Statement of Secretary of Defense, Robert S McNamara before the House Armed Services Committee on the Fiscal Year 1968-72 Defense Program and 1968 Defense Budget, Secret. Pp. 72-74. 00468, 1967/01/00, *Digital National Security Archives*, [accessed 6 January 2006].

[180] Statement of Secretary of Defense Robert S McNamara before the House Subcommittee on Department of Defense Appropriations on the Fiscal Year 1969-73 and 1969 Defense Budget, Secret, 22 January 1968, 00474, 1968/01/22, p.45. *Digital National Security Archives*, [accessed 6 January 2006].

[181] *Submarine Squadron Fourteen*, p.5.

[182] Attachment to Department of State Memorandum from Jeffrey C Kitchen, Deputy Under-secretary to Secretary of State, Subject: Secretary McNamara's Five Year Force Structure memorandum on Strategic Forces Information memorandum, 8 November 1966, Top Secret – Sensitive Controlled Dissemination, G/PM/SWeiss/LSLoss/v1, 00465, 1966/11/08, *Digital National Security Archives*, [accessed 6 January 2006]. Pp.1-3.

At the end of 1969, the totals of SSBNs stood at 41 for NATO and 8 for the Warsaw Pact; however, the Soviet bloc had a significant advantage in conventional submarines, with 344 as against NATO's total of 220.[183] This equation showed that 1969 was indeed the 'major turning point' as Gaddis claimed, with the USSR achieving numerical nuclear parity. SubRon 14 provided one-quarter of America's SSBN fleet at this time.

American Activities in Scotland

FBM Refit Site One was activated on 3 March 1961 when the depot ship, *USS Proteus (AS-19)* arrived. She was fitted with a huge crane, specialist workshops, missile storage and nuclear maintenance capabilities. Some demonstrators in canoes were arrested when they tried to board the vessel: a larger protest took place the following Saturday, a polite march by more than a thousand members of the Scottish Campaign for Nuclear Disarmament (CND). [184] The protests were peaceable and the media were generally positive and welcoming in their reporting.

The first refit was carried out on *USS Patrick Henry (SSBN 599)*, the first submarine to reach Holy Loch, on 8 March 1961.[185] SubRon 14, under the command of Captain Ward, had now developed operational doctrines and procedures, including the introduction of the two-crew system (Blue/Gold).[186] This allowed the SSBN to maintain an almost constant patrol with the only down time being for crews to return to base, change over and replenish supplies. The operational patrols lasted 60 to 80 days, limited only by food replenishment limits and morale. The potency of deterrence was greatly enhanced by these long patrols.

---

[183] *SIPRI 1968/69*, p.324: *SIPRI 1974*, p.105.

[184] Telegram USIS London to USIA Washington, Subject: Press Reaction to Arrival of Proteus at Holy Loch, 13 March 1961, Official use Only, PAO/I:DKTaylor/jb, NACP 741.56311/3-1361 [accessed 15 September 2005]: Foreign Service Telegram from Amconsul Glasgow to State, Subject: The Polaris Submarine Depot in the West of Scotland, 10 March 1961, Official Use Only, NACP 741.56311/3-1061; XR 711.5621 [accessed 15 September 2005].

[185] Holy Loch, *Scotland at Work*, [accessed 16 November 2005].

[186] *The History of Submarine Squadron Fourteen*: Bivens, p.29.

The floating dry dock, *USS Los Alamos (AFDB-7)*, was towed across the Atlantic in four sections and assembled in position by Marine Construction Battalion 4 (Seabees), becoming active in November 1961. Its mission was to 'provide material and personal support for naval units associated with the Polaris/ Poseidon program.' It guaranteed the forward deployment of the SSBNs, and became in effect a 'force multiplier.' At full capacity, she was able to support one submarine in dry dock and another four berthed alongside; the crews, 1,000 in 1961 and 2,750 by 1970, lived ashore. [187] SubRon 14 reached its full complement of ten SSBNs at the end of 1963.

Where had the SSBNs been? This remains secret to this day, but examination of US Navy records shows that none of them was eligible for the award of the Cuba campaign medals. [188] This could only mean that they were on patrol in their northern launch zones.

After the crisis had abated, the Pentagon accentuated the importance of the Holy Loch when Navy Secretary Frederick Korth and the Deputy Commander Submarine Forces United States Atlantic Fleet, attended the change of command ceremony from Captain DuBois to Capt Bell on 21 November 1962.[189]

On 15 March 1963, *USS Hunley* (AS 31) arrived to relieve *USS Proteus*, which departed in marked contrast to the commotion that had greeted her arrival; she left the Holy Loch to a traditional nautical farewell. There were 'friendly waves' from the crowded waterfront, hoots and whistles from other craft and the strain of the bagpipes playing.[190]

---

[187] *Submarine Squadron Fourteen*, pp.2-3: Coletta and Bauer, 1985, p.164-5: *US Navy Historical Center*, [accessed 24 November 2005].

[188] See: Chapter 4, Campaign and Service Awards, 4-28, SECNAVINST 1650.1G, *Campaign and Service Awards* [accessed 26 April 2006]. 'We were then (1961) patrolling in the Norwegian Sea, because we had to be within range of the targets.' Admiral Harold E Shear, USN Retired; captain of first SSBN at Holy Loch, *USS Patrick Henry*, *US Navy Office of Information*, [accessed 16 May 2006].

[189] 'US Admiral on Visit to Holy Loch; Change of Polaris Command', *Glasgow Herald,* 22 November 1962: 'Visit of US Navy Secretary', *Glasgow Herald,* 18 December 1962. "Proud of Polaris" Mr Frederick Korth…

[190] 'Proteus Says Farewell; Friendly Departure', *Glasgow Herald,* 16 March 1963: Messersmith, p.66.

The *Hunley* was the first ship designed and built as a nuclear submarine tender and in December 1965, when the *USS Thomas A. Edison* was refitted, it marked 100 refits of SSBNs at Holy Loch. [191]

The *USS Simon Lake (AS 33)* entered the Holy Loch in July 1966 to relieve *Hunley* and operated in this role until May 1970 when she handed over to *USS Canopus (AS-34)*, which had been re-configured to refit the Poseidon missile system; *Canopus* remained on duty until November 1975. [192]

After refit, SSBNs had a four-day sea trial in the Firth of Clyde and Irish Sea, all conducted under busy shipping, occasionally brushing with Soviet trawlers. In November 1964, the Pentagon reported that the Soviet AGI *Deflector*, was off Guam for the purpose of observing the new SSBNs that had now been deployed there.[193] This close surveillance was a regular feature, well illustrated when the trawler *Zond* closely followed the *USS Lafayette (SSBN-616)*, another SubRon 14 boat, for ten hours in February 1965, interrupting *Lafayette's* torpedo firing exercises and routine training drills. An unconfirmed report by Jack Anderson of the *Washington Post* claimed that the *USS James Madison (SSBN-627)* from Holy Loch had collided with a Soviet trawler in November 1974.[194]

---

[191] USS Hunley (AS 31), *http://tendertale.com/* [accessed 3 December 2005].

[192] *USS Simon Lake*, [accessed 28 February 2006].

[193] Series of DOD reports covering a variety of Navy activities, including naval and amphibious exercises. Report. DEPARTMENT OF DEFENSE. CONFIDENTIAL. Issue Date: Dec 8, 1964. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100169723, [accessed 19 June 2006].

[194] 'Submarines in N Sea collision,' *Times*, 2 January 1975, p.5; Office of the Secretary of Defense Memorandum from Joseph A Califano Jr, The Special Assistant, to Mr Jack Valenti, Special Assistant to the President, Subject: Weekly report for the President – Department of Defense items, 25 February 1965, Secret, SecDef Cont X-858. Reproduced in *Declassified Documents Reference System* [accessed 14 January 2006].

According to Jeffrey Richelson, roughly one third of the Soviet Embassy staff were members of the intelligence service.[195] Their agents came from all walks of local life, including the armed services, such as Admiral Ludke of West Germany and Colonel Wennerstrom of Sweden; others were members of defence establishments, like Vassall in the UK.

Information was invaluable to the Soviet Union and in 1967 an East German man was sentenced to seven years for espionage at Holy Loch and his accomplice, an American sailor, received six months at a court martial. The sailor had passed on an instructional handbook dealing with the pipe work system of a submarine; an operation had been mounted by counter-espionage officers, posing as fishermen. [196]

Regardless of this Soviet activity, technical problems with nuclear propulsion systems were accepted by 'boomer' skippers in order to keep their patrol fully operational. If a submarine returned to port for repairs, this disrupted the strategic targeting plan.[197]

Life aboard an SSBN was likened to 'being on a spaceship - you're always in a completely hostile environment.' The boat made its own water and produced oxygen from this. The commanding officer constantly had to inspect the nuclear reactor; Rickover's relentless focus on nuclear engineering eventually became standard operating procedure throughout the US Navy. The nuclear engineers had an annual Operational Reactors Safeguards Exam (ORSE) by his specialist inspection team and if the 'nukes' did not pass this exam, the crew remained on board until the ORSE had been

---

[195] Richelson, pp. 70-85.

[196] Lyle J Goldstein and Yuri M Zhukov, 'A Tale of Two Fleets: A Russian Perspective on the 1973 Naval Standoff in the Mediterranean', Naval War College Review, Spring 2004, Vol LVII, No 2, *Naval War College Press,* [accessed 30 January 2006]: 'Seven years in gaol for a 'ham-handed spy,' Times, 24 June 1967; 'Polaris man sentenced to gaol,' Times, 28 August 1967.

[197] Bivens, p.36.

passed. [198] He also, contrary to the example of the USAF, set the radiation exposure levels for nuclear sailors at lower, civilian levels.

ORSE failure meant the patrol was aborted and the Pentagon amended the Strategic Integrated Operational Plan (SIOP); failure was a major operational problem - a 'most unpleasant experience' for those involved. Rickover tackled ORSE failure in the late 1960s by assigning a permanent training officer to each SubRon - the 'ORSE Doctor.'[199] When a submarine went into the dry dock, the propeller was covered so that Soviet spies could not photograph the blades, as these could provide a 'signature' to the submarine,.[200]

All of the SubRon 14 SSBNs were converted to Poseidon, with the Polaris A-3 boats limited to SubRon 18 in the Pacific to cover targets that were unlikely to be protected by ABMs, such as Chinese locations.[201] The refitting programme took seven years as part of the regular overhaul cycle, thereby ensuring that there was no interruption to the operational availability of SSBNs. In 1969, the new Secretary of Defense Clark Clifford gave full support to the Poseidon programme, which now cost almost $5.3 billion.[202]

Servicing and maintenance of SSBNs was a highly technical matter and produced a very high standard of technical excellence: Site One pioneered major naval maintenance and monitoring programmes. The Holy Loch had changed from the original agreement as an anchorage into an intermediate maintenance depot because of its strategic location. This

---

[198] When Rickover received the results of the ORSE tests, he would personally telephone the officers involved, as he knew them all from their selection interviews: see, Duncan, pp.262-68: Bivens, pp.5-7, 43-4.

[199] Bivens, pp.43-4.

[200] Submarine Tenders, *http://tendertale.com/* [accessed 21 January 2006]: Spaven, p.138.

[201] Statement of Secretary of Defense Robert S McNamara before the House Subcommittee on Department of Defense Appropriations on the Fiscal Year 1969-73 and 1969 Defense Budget, Secret, 22 January 1968, 00474, 1968/01/22, p.45. *Digital National Security Archives,* [accessed 6 January 2006].

[202] Draft Presidential memorandum on Strategic Offensive and Defensive Forces (U), Tentative Record of Decision, 9 January 1969, Top Secret, NH00476, 1969/01/09, p.32. *Digital National Security Archives* , [accessed 13 April 2006].

was due to a well functioning US/UK relationship, driven by a US-interests first philosophy.[203]

There were practical concerns regarding the environmental impact of nuclear-powered boats staying in the Holy Loch, but early technical information reassured the UK government that any radioactive discharge would be low-level activity.[204] The scientific measurements of the loch and surrounding waters in August 1961 reported that there was no detectable increase of radioactivity and this was confirmed by later surveys. In March 1966, Defence Secretary Denis Healey stated that the radioactivity in the loch had dropped to 'acceptable' levels. These fears were never fully allayed however, and a spillage in 1967 raised the level of Cobalt-60 in the loch to detectable levels.

SSBNs needed to test launch the gas-operated firing tubes. Secretary Maclay advised that these tests should be played down and no publicity given, provided that they 'could not be heard or seen from the shore'; in the event, the tests were innocuous. The first 'No Load Air Tests' in the Holy Loch were so mild that the witnesses, Dunoon Police Inspector Robertson (whose son George later become Secretary of State for Defence and secretary-general of NATO) and the Dunoon Town Clerk, agreed that the tests 'in no way attracts attention or disturbs local people.' [205]

[203] *Submarine Squadron Fourteen*, p.6.

[204] NAS, HH56/76, CE/7/1/10 (2), Fm DAFS, To Mr McCallum ???, 11th April 1961: NAS, DD9/281, IPB/13/1/2, fm EAB Birse, to Fisheries Radiobiological Laboratory, Lowestoft, 20th September 1961, AI/9/13/1: NAS, DD9/281, IPB/13/1/2, From MAFF Lowestoft, to Office of the Nuclear Propulsion Safety Officer, Admiralty, 9th November 1962, FM/EH: NAS, DD9/281, IPB/13/1/2, From SDD, to Fisheries Radiobiological laboratory, Lowestoft, 7th February 1967: 'Nuclear danger at Holy Loch reduced,' Times, 26 March 1966, p.7.

[205] NAS, HH56/76, CE/7/1/10 (2), Secret, From Scottish Office, To Mr McGuinness, 13th April 1961; also NAS, HH56/76, CE/7/1/10 (2), Secret, Fm DHS to OFOS, 14th April 1961. Polaris launcher tests; also NAS, HH56/76, CE/7/1/10 (2), From DHS, to SIO, 19th June 1961.

Table 2 shows the final range of US units operating at Holy Loch.

Table 2

US Facilities at the Holy Loch 1961-1974 [206]

Units	Equipment
USN;USMC	Polaris/Poseidon SSBN base; Submarine Squadron 14 (10 boats); Ballistic Missile Submarine Refit Site One; Submarine tender; Auxiliary floating dry dock; Nuclear weapons storage facility on board tender; Barges and support vessels permanently in Holy Loch.

UK Government Activity

The operational deployment of Poseidon warheads forced the British government to seek an updated MOU. It was recognised that the Americans would be unhelpful and would not provide the technical details of the reactors or warheads, unlike the 1964 agreement. The UK acknowledged that the Americans would be responsible for safety matters

---

[206] Campbell, p.288: Duke *United States Military Forces*, p317.

aboard these boats.[207] This was again a clear case of the US resolutely adhering to its own course regardless of any alliance impact.

The Foreign Secretary, Lord Home, was understandably anxious and raised the MOU question with the Prime Minister in March 1971. A new arrangement was speedily concluded and no public announcement was made as both parties agreed that it was within the scope of the 1965 Lyndon Johnson-Harold Wilson agreement. Heath acknowledged that the Poseidon boats would be covered by the same agreement, with a 'joint decision' required between the US and UK governments to permit any operational use of US bases in Britain during an emergency, as well as a commitment by the US to 'take every possible step' to consult with Britain if nuclear weapons were going to be used.[208] Behind these reassuring words was the reality that the US would always service its own interests first and consult if possible.

The Americans remained evasive regarding the Memorandum of Understanding (MOU), as it could impinge on their freedom of operation. Macmillan rightly felt that a specific agreement was important as it 'might be the only formal exchange of letters to take place in connection with Polaris submarines', but he also realised that publication of any such deal would be politically difficult. This was a good example of a 'gentleman's agreement' and showed an unusual piece of mutually beneficent agreement by the US/UK relationship. [209]

---

[207] PRO, DEFE 24/691, FOLIO E8, Letter from Naval Home Division to DS12, Subject: Poseidon – Deployment to Holy Loch, N/HO/730/1/71, 27 January 1971, Secret.

[208] NAS, DD12/3075, from JAN Graham, Foreign Office, to RT Armstrong, 10 Downing Street, 28 April 1971, Confidential. State Department telegram from SECSTATE WASH DC to RUDI CR/AMEMBASSY LONDON 8577, Subject: Nuclear Consultation with UK and use of Holy Loch by FMBS (Poseidon equipped), 4 May 1971, Top Secret, State 077586, *The National Security Archive*, < [accessed 3 May 2006].

[209] See: PRO, DEFE 13/1007, File 3, Memorandum from Minister of Defence to Prime Minister, Subject: Polaris submarines in the Clyde, 9 January 1961, Secret; also PRO, DEFE 13/1007,17/1, Letter from, Admiralty to MOD, Subject: Polaris submarines in the Clyde, 12 January 1961: PRO, FO 371/159649, Letter from MOD to Foreign Office, Subject: Memorandum of Understanding on the Polaris Submarines, 17 January 1961, Secret: PRO, FO 371/173506, letter from Minister of Defence to Foreign Secretary, Subject: Holy Loch, 8 November 1963, Secret: PRO, DEFE 13/1007, FOLIO 37, Memo from Foreign Secretary, to Prime Minister, Subject: Polaris Submarines (Holy Loch), 16 February 1961. also PRO,

As late as 16 February 1961, Foreign Secretary Home believed 'it would be damaging to Anglo-US relations' to delay the first SSBN and tender ship without the MOU, an opinion shared by Maclay and Watkinson. Eventually, in September 1962, the White House acknowledged there was a requirement for agreement covering SSBNs in the Holy Loch, but continued to avoid one. On 8 November 1963, Macmillan was urged by Defence Minister Peter Thorneycroft and Foreign Secretary Home to personally raise the matter with Kennedy: the opportunity never arose as Kennedy was assassinated two weeks later. [210]

Notwithstanding, the British government sent an 'Immediate' telegram to the Washington Embassy on 25 November, the day of President Kennedy's funeral. A laconic reply was despatched by the Embassy which was 'surprised' to receive such an instruction and pointed out that the matter would have to wait until President Johnson was able to address it. This was eventually done by the new president.

Finally, on 26 February 1964, the Foreign Office was able to notify the Ministry of Defence that 'the Exchange of Letters concerning the Holy Loch memorandum is due to be completed today.'[211] This agreement is of such secrecy that it has not yet been released by the national archives of either the US or the UK; however, matters that had been considered for inclusion included the point of control of launching missiles, whether within British navigational waters, coordinating measures to prevent mutual interference

DEFE 13/1007, FOLIO 38, Memo from Secretary of State for Scotland to Prime Minister, Subject: Polaris Submarines (Holy Loch), 16 February 1961, Secret.

[210] Memorandum from William H Brubeck, Executive Secretary, to McGeorge Bundy, White House, Subject: Briefing Notes on the Check list of United States-Great Britain Bilateral Problems, 18 September 1962, Confidential, BNA:AEBergesen, EUR:JKHolloway, S/S:ESLittle, NARA 730, NACP 611.41/9-1862, S/S 15540.[accessed 15 September 2005].p.1: PRO, FO 371/173506, letter from Minister of Defence to Foreign Secretary, Subject: Holy Loch, 8 November 1963, Secret.

[211] PRO, FO 371/173506, letter from British Embassy Washington to Foreign Office, 26 November 1963, Secret: PRO, FO 371/173506, FOLIO 183, memorandum from Foreign office to MOD, (Z4/48/G), 26 February 1964.

in movements, emergency logistics facilities and naval technical contacts.[212] Authors such as Campbell are sceptical of this agreement, as the American President would not have time for a 'polite telephone call to the British prime minister' in time of possible nuclear launch. It was really US unilateralism disguised as an agreement without any discernible British benefit.

Initially the locals feared that the radiation from the SSBNs would turn the waters into a 'killer liquid'; but, as recorded by George Giarchi, by 1975 this fear had vanished and most locals had forgotten about the radiation. In 1975 there were more than 600,000 summer visitors to the area, thus illustrating that this fear was non-existent.[213] The tourist trade had revived, assisted by the impact of the large American presence.

Maintenance matters were used by the UK government to attempt to obtain concessions from the Americans, as in December 1964 when Defence Secretary Denis Healey suggested there could be advantages in the UK agreeing to a request for the SSBNs to use a UK facility in the Gareloch, the planned base for the UK FBM fleet.[214] This implies that the relationship was unequal, as suggested by Baylis.

Opposition

The Holy Loch base unleashed the anti-American feeling on the British Left and there were anti-nuclear demonstrations by CND, and also at the US Embassy in London. Even during the Cuban Missile Crisis, US Ambassador David Bruce had concerns about the

---

[212] State Memorandum of Conversation, Subject: Acquisition of Polaris Berthing Facilities in the United Kingdom, 16 August 1960, Top Secret, NACP 741.56311/8-1660; Letter From President Johnson to Prime Minister Douglas-Home/1/Washington, February 28, 1964. *Foreign Relations of the United States,* Vol XII, Western Europe, [accessed 13 January 2006].

[213] Giarchi, pp.109-20.

[214] NAS, DD12/3075, Scottish Office London telegram from McCabe to DHS, SDD, Subject: Degaussing, 317 1245 7.12.64, 7 December 1964, Priority-Confidential: NAS, DD12/3075, from Foreign Secretary to Prime Minister, PM/64/141, 7 December 1964, Confidential,

safety of the premises and staff.[215] But there was plenty of support for the base and this has been consistently overlooked. In November 1960, the Parliamentary Labour Party decided 'not to oppose the establishment of a Polaris facility on the Clyde'; this decision weakened political opposition within Scotland. On the same day, the Convention of Royal Burghs in Scotland 'refused by 31 votes to 11' to discuss a motion which opposed the base project; only two of the six Firth of Clyde burghs, Greenock and Clydebank, both Labour strongholds, opposed the base.[216]

Eminent churchmen, including the former war hero, The Very Rev Dr George MacLeod, leader of the Iona Community, were outspoken in their opposition and tried to convince the government to limit the use of the SSBNs to 'non-war-like actions.'[217] The Church of Scotland opposed the establishment of the base and conducted a polite campaign with the Secretary of State for Scotland, John Maclay, even expressing their admiration for his courteous conduct in the matter.[218]

The Scottish CND sent a personal invitation to Macmillan to join its demonstration or send a message of support for their cause.[219] The commander of the *Proteus* also became involved in the public relations scenario and publicly stated that while he accepted the protesters' sincerity, he disagreed with their analysis.[220]

---

[215] *David KE Bruce Diaries*, 23 & 24 October 1962, Vol 40, Virginia Historical Society, Richmond Virginia in Ashton, p.26.

[216] Foreign Service Telegram from Amconsul Glasgow to Department of State, Subject: The Polaris Submarine Depot in the West of Scotland, 10 November 1960, Official Use Only, NACP 741.56311/11-1060.

[217] 'Polaris Protests Deplorable', *Glasgow Herald*, 16 January 1961: 'Church and the Bomb', Glasgow Herald, 17 January 1961.

[218] DD12/3076, P/SLR/19/7/1/1, letter from Secretary of State for Scotland to Minister of Defence, 16 March 1961.

[219] DD12/3076, P/SLR/19/7/1/1, From Chairman SCND, to Rt. Hon Harold Macmillan MP, No date; received 11/2/61.

[220] Proteus Captain and Marchers, Sincerity Not Doubted, *Glasgow Herald*, 12 April 1961,

Letters were sent to Macmillan, Eisenhower, Kennedy and Nixon, and Dunoon Burgh Council remained solidly supportive of the base and the boost that it provided for the declining local economy. When this opposition is analysed it shows that most opposition was left-wing, mainly trades unions. Dunoon, however, needed the additional employment, as the local holiday trade collapsed. One protester complained to Scottish Secretary Maclay, and the Foreign Secretary, Lord Home, about 'trigger-happy madmen' and compared Britain to a 'tenth-rate banana state under American tutelage.' [221]

The anti-Polaris agitation slowly subsided, although there were two prominent young, local protesters, namely George Robertson and Brian Wilson (who later become a Labour government minister and a staunch champion of nuclear power). At the Scottish Trades Union Congress (STUC) in Dunoon in April 1963, the delegates were generally uninterested and the vote against the base was passed in a lacklustre fashion.[222] Site One was now part of the local landscape and there was no evidence of operational problems for SubRon 14.

There has been considerable prominence given to the anti-nuclear protests, but the facts show that from 1958 to 1963, there was only 20 to 33 per cent support for unilateral disarmament among the British public; the lowest point occurred during the 1960/61 illegal actions by the Committee of 100, led by Bertrand Russell. From 1960 to 1964, public support for the Holy Loch base grew from 44 to 49 per cent, with opposition dropping from 36 to 33 per cent; the Soviet aggression during the Cuban crisis contributed to this growth of support.[223]

---

[221] NAS, DD12/3076, P/SLR/19/7/1/1,Letter from Scottish Office, to SHD, 30 November 1960, also: 'Sandbank Holy Loch petition', Dunoon Observer, 2 December 1960: NAS, DD12/3076, P/SLR/19/7/1/1, Telegram from Scottish Office to DHS, SHD, DHS; 13 December 1960, Confidential: NAS, DD12/3076, P/SLR/19/7/1/1, letter from Secretary, Craigneuk Tenants Association to Secretary of State for Scotland and the Home Secretary, 26 December 1960.

[222] Messersmith, p.10: 'STUC Opposition to Polaris Bases; Almost as many abstainers as voters', *Glasgow Herald,* 27 April 1963;

[223] Lawrence S Wittner, *Resisting the Bomb: A History of the World Nuclear Disarmament Movement, 1954-1970, Volume Two,* (Stanford; Stanford University Press, 1997).p.195.

Giarchi shows that, unlike the protesting thousands in Yokosuka, Japan, the locals 'had not been fired by the rhetoric of the CND politicians'; only 20 per cent found the presence of the SSBNs to be 'worrying.'[224] In fact, 'there was no indication of widespread fears locally' and some of the locals counter-protested the CND groups with placards proclaiming 'go home weirdies.' The CND was infiltrated by communists who adopted a pacifist approach, but 'their interests were not solely pro-peace'; pro-Sovietism remained within the Left Wing of the Labour Party, but did not succeed in causing any disruption to the Holy Loch site. [225]

Some political opposition to the Holy Loch base continued; the STUC still expressed its normal anti-American, pro-Soviet line in 1971 and its General Secretary wrote to Heath demanding the removal of the Polaris base, concluding that 'no alternative was to be offered.'[226] Similar opinions were expressed by Glasgow City Council who believed that the Holy Loch base was now a 'prime target'; even Clydebank Town Council felt that they also had to register their disapproval and did so in 1972. There was now a Conservative government in power again, a factor which usually allowed the Labour Left more scope for agitation.

Accordingly, the Labour Party conference voted to close the Holy Loch base at meetings in October 1972 and April 1973; the Wilson government had previously ignored such demands between 1964 and 1970.[227] On Site One's tenth anniversary, in March 1971, the Scottish National Party demanded that the US government pay £500m for their use of the

---

[224] Giarchi, pp.115-23.

[225] Darren J Lilleker, *Against the Cold War: the History and Political Traditions of Pro-Sovietism in the British Labour Party, 1945-89,* (London and New York. Taurus Academic Studies, 2004), pp.26, 37, 222.

[226] NAS, DD12/3075, From General Secretary Scottish Trades Union Council, to Prime Minister, 10 June 1971: 'Nuclear Base Plea', *Times*, 21 January 1972: NAS, DD12/3076, P/SLR/19/7/1/1, from Town Clerk Clydebank Town Council, to Rt Hon Edward Heath MBE MP, 11 July2:

[227] 'Demand for withdrawal of nuclear bases,' *Times*, 5 October 1972, p.7: 'Party defeats Mr Callaghan over Holy Loch,' *Times*, 19 April 1973, p.4: 'Proposed defence cuts 'a threat to communities,' *Times*, 2 October 1976, p.3.

Holy Loch base, as they were already paying Spain £250m for the facilities at Rota: in 1976 they called for the base to be closed.[228] These requests were ignored.

There were off-duty discipline problems, normally low level misdemeanours; however, in 1974, four coloured US sailors were jailed for three years each at Glasgow High Court, for mobbing, rioting and police assault; one gave the 'Black Power' salute in court.[229] Nevertheless, the relationship between the US Navy personnel and the local inhabitants has been identified as good by Giarchi's excellent research, and during the period from1961 to 1974, nearly 36 per cent of the marriages registered in Dunoon were between non-US women and US Navy personnel. [230]

Although Holy Loch was in Scotland, it was solely a UK matter; 'there really is no Scottish aspect of the question of the nuclear deterrent'; this caused annoyance to Scottish organisations, whose requests for meetings were regularly refused.[231] This undoubtedly caused political damage to the Conservative Party in the tightly-fought 1964 UK election when they lost power to Labour by a margin of only five seats. They narrowly lost two seats in Scotland, which if retained may have kept them in government.[232] American unilateralism had become a salient matter in UK domestic politics.

These seats were at Glasgow Kelvingrove and Renfrewshire West, where the previous Scottish Secretary John Maclay had stood down; the seat was won by Norman Buchan for Labour. During the election campaign, the nuclear and defence issues were accorded a

---

[228] 'Nationalists seek £500m from US for Polaris base,' *Times*, 4 March 1971, p.2: David Leigh, 'National party plan for Scots defence forces,' *Times*, 28 August 1976, p.4. Also, for Rota, see Duke, 1989, pp.254-57.

[229] 'US seaman awaiting trial 'kept in solitary,' *Times*, 4 April 1974, p.2: 'American gives Black power sign in Court,' *Times*, 2 April 1974, p.2.

[230] Giarchi, p.194.

[231] NAS, DD12/3076, P/SLR/19/7/1/1, From WSM, to Secretary of State, 19th April 1961. also NAS, DD12/3076, P/SLR/19/7/1/1, From Secretary of State for Scotland, to Secretary Scottish CND, 20th April 1961.

[232] UK General Election Results October 1964, *Richard Kimber's Political Science Resources*, [accessed 3 May 2006].

far higher national profile than at the previous election in 1959, with prominent coverage in television broadcasts and party manifestoes.

Conclusion

The research would have benefited from a wider range of detailed sources regarding the operations of the FBM fleet at Holy Loch. Personal memoir information has been limited in its scope and contains no mention of operations orders, launch positions, operational problems, etc. Because of its fundamental role in the US strategic plan, it is unlikely that this information will be declassified soon. However, there has been plenty of useful information available and this has enabled a good picture to be drawn of the Site One's overall role and range of activities.

The establishment of the Holy Loch submarine base was inevitable once the US adopted a forward defence posture for its second-strike capability from SSBNs and was a matter in which the UK government really had little choice. The true US/UK relationship was obvious, namely that the UK was a client of the US in defence matters. American unilateralism overrode all other considerations.

Successive American administrations forced the UK government to satisfy the strategic needs of the USA. They established a most potent deterrent force at a location as close to the enemy as possible and as far away from their own shores as they could contrive. As one American sailor said about Holy Loch, 'Imagine handling nuclear weapons in a residential neighborhood (sic)! Some of the Scots' complaints about us were justified. Would you allow that in your neighborhood (sic)?' [233]

The effectiveness of the FBM fleet was proved during the Cuban Missile Crisis when the Holy Loch submarines deployed to their battle stations close to the USSR. Fears over the operational use of nuclear propulsion and nuclear weapons were thoroughly addressed

---

[233] Sub Bases: Holy Loch Scotland, *Tender Tale*, [accessed 19 August 2005].

and the FBM fleet procedures significantly raised the standards of safety and engineering for the US Navy.

Holy Loch was the iconic example of the importance of Scotland to the USA for its strategic nuclear policy; it became the first FBM base when the first SSBN became available for service. Rota, on the other hand, was not available until January 1964 and was closed by 1979, while Holy Loch remained fully operational, thus emphasising its importance. [234] It was only in 1992, when the Trident missile provided the ability to hit targets in the USSR from American home waters, that Holy Loch was finally closed.

The available evidence shows no damage to the 'Special Relationship' from US operations at the Holy Loch. The UK government recognised reality and agreed to all US requests. This pliability meant that the US Navy was able to execute its strategic mission from Scotland. The US actions at Holy Loch were not directly connected with any NATO requirements, although the assigning of SSBNs to the Mediterranean helped to solve a strategic impasse between the alliance and the USA.

Despite media interest and political agitation, there was little significant opposition to the establishment of the Holy Loch base. The UK government fully supported it, as did the local population, and it became a tourist attraction after a short space of time. Holy Loch was a story of US interests from start to finish, but the UK was able to obtain the Polaris system for their own use as a consequence.

---

[234] HQ ACC/A7 Installations and Mission Support, Navy Installations Associated With the Navy's Cold War Guided Missile Program , A-6, *Headquarters Air Combat Command, Langley AFB Virginia*, [accessed 1 February 2006.

CHAPTER FOUR

ASW – ANTI-SUBMARINE WARFARE

The Soviet Threat

Submarines had a vital role in the superpower navies during the Cold War. Their crews carried out intelligence-collection operations, sought out and stood ready to destroy opposing submarines, and, from the early 1960s, threatened missile attacks on their adversary's homeland: in effect they provided the most survivable nuclear deterrent of the Cold War.

During the research period, anti-submarine warfare played a major part in US strategic policy. In simple terms, the US Navy had to penetrate the Soviet ASW defences north of the GIUK Gap and had also to track and deter Soviet submarines that were trying to reach firing positions on the east coast of the United States.

Both superpowers developed strategic submarine warfare as an essential component of their strategic policy and also contested the use and control of the same portion of the seas, namely the GIUK Gap and seas beyond. The research will now scrutinise the ASW strategic policy and the manner in which the US bases in Scotland were linked to this.

The Soviet Union's targets were the fighting materiel moving from the USA to Europe.[235] Loss of this materiel would have caused serious disruption to NATO's northern flanks and would also have had a severe effect on communications. Gorshkov favoured attacks on ships in port where they would be 'more vulnerable than merchant ships at sea.' The Soviet SSKs targeted the NATO reinforcement convoys and trade vessels.

Soviet submarine tactics had developed to protect the land from seaborne invasion. The USSR built up their submarine forces to attack NATO carrier groups and they built nuclear-powered boats in the early 1960s alongside their diesel-powered boats.[236]

---

[235] Bryan Ranft and Geoffrey Till, *The Sea in Soviet Strategy, Second Edition*, (Basingstoke, Macmillan. 1989), pp.205-11.

[236] Ranft and Till, pp.122-4, 198.

Map 4 – ASW Operations
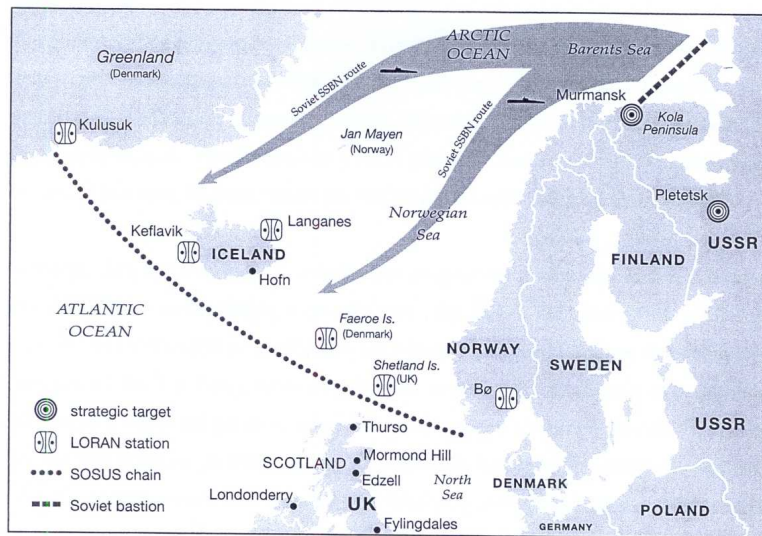
All, however, had short range missiles, but by 1969 they were able to fit longer range weapons which were excellent for attacking the surface shipping targets. There was still an expectation that the Soviet SSBNs would be used against high value targets, such as carrier groups.

The Soviet SLBM programme was started in 1949, but was not implemented with the same vigour and technical excellence as the Americans.[237] Khrushchev wanted submarine-based missile systems to exploit their lead in missile technology, gained from the Sputnik success. The Soviets had a lot of ground to make up, as in 1950, their Navy numbered less than 50 ships, while the NATO allies could count on almost 1,500.

However, they had a huge SSK construction programme during this time and because of this, NATO adopted ASW as a priority task. The Soviet submarine fleet grew rapidly from 261 in 1950 to 437 in 1960; these were mainly designed for home defence missions. This forced the US Navy to re-examine the importance once again of a sea control doctrine as it could not get close enough to Soviet targets to launch aircraft. The US Navy tackled this problem in three ways; by compiling hunter-killer groups of surface and submarine boats, by a barrier strategy, and finally by attempting to use carriers to strike at the submarine bases.[238]

The only visible build up of Soviet surface vessels were the AGIs, but by the 1960s, other surface vessels began to arrive. This was a 'fundamental reorientation of naval strategy', and the central Soviet naval mission became 'the delivery of nuclear warheads to the continental United States.'[239] The Soviets assigned a permanent AGI vessel to Holy Loch from 1965 to estimate deployment rates, time at sea on patrol, deployment schedules and readiness states. This enabled the Soviet Navy to pre-position submarines (ship

---

[237] Ranft and Till, pp.118-9: Jurgen Rohwer, 'Russian and Soviet Naval Strategy', and John Kristen Skogan, 'The evolution of the four Soviet fleets, 1968-87', in *Soviet Sea Power in Northern Waters: Facts, Motivation, Impact and Responses,* ed. by John Skogan and Arne Brundtland (London. Pinter, 1990), p.13: Miller, pp.176-78.

[238] Baer, pp.336-8.

[239] Christopher Bluth, *Soviet Strategic Arms Policy before SALT*, (Cambridge. Cambridge University Press, 1992) pp.194-5.

submersible nuclear – SSN) with electronic tracking equipment to await the FBMs: the US Navy countered this by deploying other SSNs, ASW aircraft and seabed sensors.

The American SSBNs in the Northern Seas and the Kola waters were always vulnerable to Soviet ASW operations and combating this became a major plank of US strategic doctrine. From 1964 onwards, Admiral Gorshkov operated a strategic policy of protecting the Soviet coast and these waters were heavily patrolled by ASW units; there were a total of 146 non-SSBNs in the Soviet Northern Fleet by 1968.[240] These were supported by ASW aircraft, surface ships and communications stations.

Khrushchev believed that the Soviet Union did not require large surface vessels, because nuclear-powered submarines, with their nuclear weapons would suffice. This was not fully supported by Admiral Gorshkov, as implementation would involve the degradation of the other services.[241] This contradictory point of view was also upheld by Marshall Sokolovskiy, Chief of the General Staff 1952-59, and Leonid Brezhnev, who changed the policy on coming to power in 1964; the rapid construction of the Soviet submarine fleet then followed. By 1966 Gorshkov was able to claim that 'nuclear powered submarines equipped with ballistic missiles' were now the navy's principal weapon.[242] Concurrently, the previous doctrine of limiting the navy to combating seaborne invasion forces was dropped.

The Soviet Navy could undertake all of the tasks done by the US Navy. Gorshkov improved it, firstly to counter the US carrier groups, secondly to increase its numbers for more influence in any situation and thirdly, to counter the US FBM fleet.[243]

---

[240] Rohwer, pp.3-17, 18-25.

[241] Ranft and Till, 1989, pp 68-70, 102: Beatrice Heuser, Parallel History Project: *NATO and the Warsaw Pact,* [accessed 19 July 2006].

[242] Bluth, p.196.

[243] Miller, pp.174-7.

The early Soviet ballistic missile submarines (five Project 611AB (Zulu V) boats, were not operationally viable. The first ballistic missile class was Project 629 (Golf); by 1963, 16 were deployed in the Northern Fleet, carrying the surface-launched R-13 (SS-N-4) missile, range = probably only 600 kilometres, thus the submarine had to negotiate the US ASW measures to get into a firing position near the eastern seaboard of the USA. [244] They were refitted with the underwater-launched R-21 (SS-N-5 Sark), range of 1,400 kilometres, but the Americans had deployed the Polaris A-3, with its 4,500 kilometres range. The Soviets constructed Project 658 (Hotel) nuclear-propelled ballistic missile submarines, with R-21 missiles; there were eight in the Northern Fleet. The Soviet Navy only started 'serial production' of SSBNs and surface ships armed with nuclear missiles after the Cuban crisis. [245]

The Soviet, with a stolen copy of the American 'Ethan Allen' class design, built 34 of the Project 667A (Yankee) and 22 Project 667B (Delta) class boats between 1964 and 1974; the R-29 (SS-N-8 Sawfly), was developed with a range of 7,800 kilometres. The Yankees were programmed to attack time-sensitive targets such as carriers or SSBNs in port and inland SAC bases; they also aimed to disrupt the US command echelons. These 34 SSBNs were the first serious Soviet threat and had to be confronted in the sea zone to the north of Scotland.

Although the longer range R-29D (SS-N-9 Sawfly) underwater launched missiles became available in 1972, only four of these boats were constructed for 41st Division Strategic Submarines, Northern Fleet. The Soviets worked to redress the strategic inequity caused by their low-technology assets and new R-29 (SS-N-8) missiles between 1970 and 1974 aboard the new Delta Class boats. As Soviet missiles and submarines improved, American ASW tactics needed to improve at the same rate.

---

[244] Stephen Zaloga, *The Kremlin's Nuclear Sword: The Rise and Fall of Russia's Strategic Nuclear Forces, 1945-2000,* (Washington and London: Smithsonian Institution Press, 2002), pp.270-3: Chris Chant, *Submarine Warfare Today*, (Wigston: Silvermark Books, 20050, pp.13-2: Podvig, pp.235-337.

[245] Kokoshin, p. 120.

SSBN 'bastions' were then established for these boats in the Barents Sea and the Sea of Okhotsk; both the sea and air were heavily protected within these zones. At long last the Soviets had managed to produce a viable, well protected SSBN capability. Nevertheless, regardless of any improvements, Soviet SSBNs had to come through the GIUK Gap to approach their firing positions.

Although the Soviet SSBNs could optimise their speed and manoeuvrability to escape detection, the US ASW measures were very good and posed a serious problem. It was extremely difficult for the Soviet submarines to avoid detection because of the noise generated by their diesel-powered engines, and even their nuclear power boats had a much noisier engine than the American boats. [246] The Poseidon replacement of Polaris stepped up the overall US capability from 656 warheads to 5,120 warheads by the end of 1974.[247]

The Soviets built up their 'blue water' capability from the early 1960s and their nuclear submarine force was based at Kola; this SSBN/SLBM fleet posed a threat to the east coast of the USA and was the number one target for the American ASW mission.[248] US strategists believed that the Soviet Navy would only be used for defensive purposes.

It was not until October 1962, when a Soviet naval replenishment ship was spotted in the North Atlantic, that the real problems with ASW were fully exposed. This vessel was followed and observed refuelling a Project 611 (Zulu) Class submarine near the Azores; this suggested that the submarine had probably been on patrol near the east coast of the continental USA. When this sighting was followed by another half a dozen, it was obvious that Soviet submarines were in the western Atlantic, close to the USA on

---

[246] Chant, pp.8, 9 & 13.

[247] *SIPRI 1974*, pp.115-7.

[248] Rolf Tamnes, *The United States and the Cold War in the High North*, (Aldershot: Dartmouth, 1991), p.201: Ranft and Till, p.185.

reconnaissance missions. [249] This was part of the build up to the Cuban Crisis and demonstrated that the Soviet threat was serious and active.

The Soviet Union had improved its submarine technology in response to McNamara's belief that the US SSBNs could take out the Soviet land-based missiles. Between 1961 and 1975, US had a total of 95 submarines (38 nuclear ballistic missile vessels and 57 attack boats), while the USSR had a total of 231 submarines (54 ballistic missile submarines and 177 attack submarines). This represented 40 per cent of Soviet naval construction as the new Soviet sea strategy was to match the American SSBN threat. The Northern Fleet at the Kola Peninsula received more than 75 per cent of all new Soviet SSBNs. [250] This Soviet build up brought the Scottish bases directly into the front line against the Soviet submarine strategy.

In July 1967 the US Navy reported harassment of its helicopters during ASW operations in the Mediterranean, by a *Kildin* Class Soviet destroyer. The helicopters were following an unidentified submerged target when the Soviet destroyer intervened and the contact was lost. [251] The Red Navy needed to protect its submarines and such behaviour was not unusual.

The Soviet Navy became recognised as a global power during *Exercise OKEAN-70* in 1970. It had more vessels than NATO, but observers believed that NATO still had the superior battle capability. [252] The Red Navy did not have the superior technology of the US ships, but its primary mission was the destruction of NATO SSBNs.

---

[249] Letter from CINCLANT, Subject: CINCLANT Historical Account of the Cuban Crisis (U), 29 April 1963, Serial 000119/JO9H, *DNSA*, [accessed 14 July 2006].

[250] Ranft and Till, p.132.

[251] [Summary of harassment of US ASW exercise by Soviet destroyer.] Department of Defense Report for the President. July 18, 1967. 34 p. SECRET to UNCLASSIFIED. SANITIZED copy. Reproduced in Declassified Documents Reference System. Document Number: CK3100413305, [accessed 14 June 2006].
[252] Skogan, 'The evolution of the four Soviet fleets 1968-87': Arne Olav Brundtland, 'The impact on Norway of the growth of the Soviet Navy': Clive Archer, 'Norwegian Sea and northern waters', in Skogan and Brundtland, pp. 22, 38, 70-2, 80: Ranft and Till, pp.180-1. Also, Bruce W Watson, *Red Navy at Sea: Soviet Naval Operations on the High Seas, 1956-1980*, (Westview Press. Boulder, Colorado, 1982), pp.21-38.

In 1967, the DCI, Richard Helms, issued his agency's estimate of the strength of the Soviet submarine force. The CIA assessed that there were probably 37 boats; a fully recognisable SSBN class was now under construction and was expected to be in service the following year. [253] This was accurate, as the Yankee class was deployed later that same year. He forecast that there would be 38 Soviet ballistic missile submarines in 1967, with a possible final total of 55 by 1972. According to Podvig's later statistics, the USSR had 45 in 1969 and 71 in 1972; Soviet expenditure continued under Brezhnev and there were 85 by 1977. US intelligence estimates were again awry. This is shown in Table 3 below.

Table 3

American Estimates of Soviet SSBNs 1969-1972

	1969	1972
US Forecast	42	55
Actual Soviet Total	45	71
US Underestimate	**+3**	**+16**

Soviet patrols increased against the Holy Loch SSBNs. There was a permanent Soviet submarine patrol in the Azores, with the task of intercepting the seaborne traffic from the

---

[253] From Richard Helms Director of Central Intelligence to Memorandum for Recipients of NIE 11-8-67, Subject: Extreme Sensitivity of NIE 11-8-67 Soviet Capabilities for Strategic Attack, 26 October 1967, Top Secret. P.17-20: Podvig, p.245.

US to Europe; the number of boats on this patrol was forecast to increase by 1970. Helms observed that the Soviet submarines were noisier, but their logistics and physical support systems were greatly improved by mid-1972 and they were able to undertake heavier patrol ratios. The need for effective ASW measures was given another timely reminder by this report.

In November 1967, the first Yankee class SSBN entered service, seven years behind its American counterpart; Soviet naval officers nicknamed it the 'Vanya Vashington' class, armed with the 'Red Polaris.' The US government estimated that there was only one Yankee Class submarine on station in the Atlantic; this information had come from the various SIGINT stations, including Edzell and Thurso, that had been monitoring the Soviet SSBN test missile launches at Plesetsk.[254] Notwithstanding erroneous US intelligence, the Soviets had definitely overcome the 'glaring disparity of capability', highlighted by Stephen Zaloga.

Despite the usual intelligence inaccuracies, the 1968 Defense hearings were able to establish the growing Soviet submarine threat.[255] The Soviet development programme was approximately ten years behind that of the American FBM boats, but the Soviet SSBN missiles could now come perilously close to the mainland of the USA from deep ocean firing points. This further emphasised the gravity of the ASW problem.

By 1968, McNamara could report that the Soviet Union now carried SLBMs on both their nuclear-powered and diesel-powered submarines. Their targets were known to be naval and merchant vessels, and the number of submarines involved in this mission was estimated at 368 in mid-1968 and 360 by mid-1972.[256] Again this was incorrect

---

[254] *SIPRI 1969/70*, pp.42, 96; also, Stephen Zaloga, *The Kremlin's Nuclear Sword: The Rise and Fall of Russia's Strategic Nuclear Forces, 1945-2000,* (Washington and London. Smithsonian Institution Press, 2002), pp.116-7.

[255] 00474, 1968/01/22, Statement of Secretary of Defense Robert S McNamara before House Subcommittee on Department of Defense Appropriations on the Fiscal year 1969-73 Defense Program and 1969 Defense Budget, 22 January 1968,p.58-9.

intelligence and the Soviets had 335 attack submarines in 1968 and 315 in 1975; 255 were in the Northern, Baltic and Black Sea fleets in 1968.

The Soviet threat against the FBM fleet was enhanced by the introduction of the Yankee and Delta classes and was further increased with the arrival of the R-29 (SS-N-8) missiles, with a range of 7,800 kilometres; continental USA was now vulnerable. Because of the extreme range now available to them, the USSR could keep their SSBNs in home waters and operate effectively. [257] The strategic balance was almost equal, although the US held a decided superiority in technology and capability to penetrate ABM defences.

Table 4 shows the respective submarine construction totals of the USA and the USSR during the period 1961-1975; the Soviet preponderance is obvious.

Table 4

Soviet and US Submarine Construction Totals 1961-1975 [258]

Type of Submarine	USSR	US
Ballistic missile submarines	54	38
Attack submarines	177	57
Total	**231**	**95**

---

[256] 00474, 1968/01/22, Statement of Secretary of Defense Robert S McNamara before House Subcommittee on Department of Defense Appropriations on the Fiscal year 1969-73 Defense Program and 1969 Defense Budget, 22 January 1968,p.58-9: Skogan, 'The Four Soviet Fleets', p.20.

[257] Tamnes, p.228.

[258] Ref: Ranft & Till, p.152.

The US Response

The Northern Atlantic and Northern Seas was the route from the Holy Loch to the SSBN patrol stations; it also had great importance for the Soviet submarines as it was their only route to reach the US waters. Scotland therefore had a geographical advantage that could be exploited by the Americans in both an offensive and defensive fashion.

The Soviet Navy's targets would have been carriers, convoys, American SSBNs and some shore locations. [259] Their attack submarines (SSNs) would be used for 'area defence' tasks, with a mission to destroy NATO SSNs before that could reach the GIUK Gap and close down the Soviet SSBN route. The priority for the US was to protect carriers and other seaborne forces, including convoys, as well as engaging with Soviet SSNs, laying mines and attacking coastal targets with missiles. Tactics aside, underwater warfare involves two heavily armed blind men, who can only locate their target by sounds. The North Atlantic was an unpleasant theatre of operations.

Classical submarine warfare involves two principal activities, namely offensive operations against concentrated enemy traffic and defensive operations mounted around a barrier concept.[260] The US Navy considered that a forward barrier control strategy was the best means of ASW, where they could attack Soviet submarines in the shallower seas north of the GIUK Gap before the Soviets could get south to interdict the American SLOC. At the same time they also needed to protect the American SSBN fleet.

The American ASW network and fleet communications bases in Scotland played a vital role in defending this area. The US Navy had a positive Maritime Strategy of strategically limiting its sea control posture to the area south of the GIUK Gap.[261] Its major objective was to interdict the Soviet submarines by intense ASW measures; this requirement never

---

[259] Chant, p.48-52.

[260] Jacob Borresen, 'US carrier operations in the North Atlantic and the Norwegian Sea', Skogan and Brundtland, p.112: *SIPRI Yearbook* 1969/70, p.120.

[261] Gunnar Gunnarsson, 'The Impact of Naval Developments in Iceland,' in Skogan and Brundtland, p.92.

altered and ensured that Thurso and Edzell featured prominently in the delivery of the strategic plan.

Early US submarines were better able to survive in ASW operations than their Soviet counterparts and could operate in wider areas of the ocean. As a result, the American SSBN fleet could take to the seas far easier and await their Soviet enemy.[262] In addition, the shorter rage of the Soviet missiles, and other technological disadvantages, meant that the Soviet submarines needed to be very close to the continental USA to operate effectively.

The ASW doctrine developed by the USA involved the simultaneous use of equipment, aircraft, surface vessels and submarines, as part of a combined operation; any contacts, whether surface or submarine, were passed to Commander ASW Force Atlantic (COMASWFORLANT), in Norfolk, Virginia.

American ASW preparedness was described as 'weak and ineffective' by the CNO, Admiral Burke, in 1958; this was confirmed by General Twining, Chairman JCS, and a report was submitted to the Defense Secretary Thomas Gates. The JCS proposed a wide area underwater surveillance system to detect deeply submerged submarines.[263] Funding was requested for the research and development of ASW installations, which were mission critical to the developing maritime strategy. [264] This related to the huge number of Soviet SSKs constructed during the 1950s.

---

[262] *SIPRI 1974*, p.112.

[263] General Twining emphasizes need for improved effort in the development of an anti-submarine capability. Memorandum. DEPARTMENT OF DEFENSE. TOP SECRET. Issue Date: Mar 28, 1958. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100165889. [accessed 16 June 2006].

[264] Memorandum to Dr. James Killian from Emanuel Piore regarding a request that funds be made available for research and development programs for anti-submarine warfare (ASW) installations. Memo. White House. SECRET. Issue Date: Mar 19, 1958. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100506462. [accessed 14 April 2006].

The JCS reported to the National Security Adviser, Gordon Gray, in February 1959, that the US ASW capability was superior to the Soviet, but that it lacked sufficient numbers for proper effectiveness. At the same time, President Eisenhower had been informed that the Soviet Union 'has in operation 12 atomic submarines', and that these were fully equipped with nuclear torpedoes and missiles. In reality, the Soviet Union was only in the early stages of development and construction of the Golf-class boats, with their surface-launched R-13, 600 kilometres range missiles. This was more poor quality US intelligence. [265]

In May 1959, the President's Science Advisory Committee identified ASW as a major matter for improvement. [266] It was a major strategic issue and Scotland's ideal location meant that it would be heavily involved. There is no evidence that the Americans foresaw any problems in obtaining agreement from the British government.

---

[265] Oral presentation of study on submarine weapons systems and anti-submarine warfare capabilities to be presented at NSC's Comparative Evaluations Group on 3/9/59; NATIONAL SECURITY COUNCIL. TOP SECRET. Issue Date: Feb 12, 1959. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100286859. [accessed 14 November 2005]: Synopsis of the Comparative Evaluations Group Study on submarine weapons systems and anti-submarine warfare capabilities. DEPARTMENT OF DEFENSE. TOP SECRET. Issue Date: Mar 27, 1959. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100231290. [accessed 21 January 2006]. Also, *Declassified Documents Reference System*. Document Number: CK3100506462. Also, Summary of intelligence and DOS material reported to Eisenhower: Soviet submarines; Miscellaneous. TOP SECRET, WHITE HOUSE. Issue Date: Feb 3, 1959. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100014582. [accessed 29 January 2006].

[266] Intelligence. Analysis of the US intelligence system; recommendations Science Advisory Committee, November 1957-May 1959 (summaries of work done on … anti-submarine warfare.). Memorandum, David Z. Beckler, Exec. Officer, PSAC, to Dr. J.R. Killian, Jr. May 8, 1959. 14 p. SECRET.. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100373543. [accessed 16 March 2006]: Nuclear Weapons Tests, Phased Approach to Agreement for the Cessation Warfare (ASW) [Latin America's most vital contribution in time of war would be protection of strategic sea-lanes; analysis of present aid to Latin American nations in ASW, their capabilities, potential, and failure of US to develop a LA capability; recommendations]. Brief, OP-001/lr. June 23, 1959. 4 p. Encl: Latin American Military Forces with ASW Capability [chart of forces and aircraft]. 1 p. CONFIDENTIAL to SECRET. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100382893. [accessed 29 June 2006].

The US laid down large fixed arrays of hydrophones, supported by shore stations, to counter Soviet submarine penetration of US waters.[267] This was the Sound Surveillance System (SOSUS) and gave them a great advantage as the sounds of underwater activity were transmitted to the nearest ASW headquarters. SOSUS became a vital element of the GIUK Detection Zone. The US Navy had to defend the North Atlantic at all times and in particular the GIUK Gap; ASW mines could seal any gaps in this area if required. Because of this requirement, the US Navy rapidly developed its ASW techniques.

Both Iceland and Norway were also incorporated in this strategic mission on the vital northern flank, as part of the Perimeter Strategy and the SAC bombing route. This was noted by the Soviets and from 1970 onwards, the Soviet Union began to exercise regularly around the northern seas off Iceland.[268] The US military planners recognised Iceland's ability to protect shipping in the North Atlantic, to conduct long-range air operations, to handle other air transit and its importance in the early warning system.[269]

Iceland was a main replenishment base for the huge American reinforcements to NATO in wartime. It had no indigenous security forces, and the US Defense Force in Iceland (IDF) was created for this purpose. The 1951 Agreement was deliberately vague, to allow the necessary American operational flexibility; the IDF had nine bases, covering such facilities as communications, DEW Line radar and airfields.[270] There were two local political attempts to remove this base, in 1956 and 1974, but both failed.

Norway has common borders with the Soviet Union and was therefore important for the American ASW strategy. The Norwegians guarded NATO's Northern Flank, as well as

---

[267] The SOund SUrveillance System (SOSUS) provides deep-water long-range detection capability. *Federation of American Scientists*, [accessed 20 June 2006]: SIPRI Yearbook 1974, pp.317-9: Integrated Undersea Surveillance System (IUSS), *Federation of American Scientists*, [accessed 12 July 2006]. Also, Tamnes, p.119.

[268] Tamnes, p.91: Gunnarsson, p.95: Duke, *United States Military Forces*, p.181.

[269] Duke, *United States Military Forces*, p.183: NARA, RG 218: JCS Message from CINCLANT to CNO, Navy Department, 2 April 1956.

[270] Duke, *United States Military Forces*, pp.181-8.

monitoring all naval movements between the Barents Sea and the Atlantic. There were American stockpiles on Norwegian soil, but no foreign troops, although there were almost 100 US-funded installations by the 1960s, particularly LORAN stations, to 'provide a means of monitoring ship navigation developments being carried out for the fleet ballistic missile (Polaris) programme… to enable the Polaris submarines to position themselves with absolute precision.' This was a crucial strategic task. [271]

By 1960, the US naval doctrine required the destruction of Soviet naval assets and air bases in the North Atlantic area and carrier groups were built with the mission of bombing the targets.[272] The US Navy judged its own strategic operational ability on this matter alone; however, as the flexible response concept grew, there was a realisation that sea lines of communication (SLOC) would also need to be protected to bring reinforcements from the USA to Europe in wartime. The Royal Navy had fully understood this situation in the 1950s. The US Navy therefore altered its mission and by the end of the 1970s, it was able to control its SLOC, destroy Soviet SSBNs, attack Soviet sea and air bases, make amphibious landings on Soviet soil and use its own SSBNs to lethal effect.

The 1962 US Defense Budget stated that non-nuclear ASW weapons were only available in small numbers in peacetime, with less than 20 per cent of the wartime stack available; also the SSBN engine noise needed to be reduced. It was concluded that the ASW threat had been underplayed and there was a shortfall in planning for non-nuclear ASW weapons.[273]

---

[271] Duke, *United States Military Forces*, pp.215-6: Tamnes, p.110.

[272] Miller, pp.164-66.

[273] Review of the fiscal year 1962 military budget. Points include: naval anti-submarine warfare. Memo. Department of State. TOP SECRET. Reproduced in Declassified Documents Reference System. Document Number: CK3100489492. [accessed 5 July 2006].

In January 1964, both State and Defense reported that new ASW weapons needed to be provided before the outbreak of hostilities, repeating the comments made in 1962. [274] SACLANT also stressed the ASW threat and proposed that ASW aircraft should be modified to carry them.

The build up of Soviet naval capability forced a rethink of the policy towards NATO's Northern Waters. [275] There were concerns that the USSR could gain a foothold in Norway during a period of tension; SACLANT therefore addressed the threat posed by the Kola base. In fact, in the early 1950s, the UK still thought of attacking the Soviet Kola bases by using naval aviation; this was the role later undertaken by FBM fleet.

State requested allied governments to construct more ASW destroyer escort ships in 1964 and completed a detailed study of Soviet overseas submarine bases. [276] In July 1964, the US Navy carried out close surveillance of three Soviet submarines in the Mediterranean as 'excellent ASW training.' [277]

The Panel on Anti-submarine Warfare reported to the White House that progress was being made on all aspects of ASW and highlighted ocean -wide surveillance systems, such as LORAN and SOSUS. The Panel emphasised the advantages given by radar

---

[274] Cable regarding the importance for the Permanent Joint Board on Defense (PJBD) to continue to improve North American defenses by making certain anti-submarine warfare (ASW) weapons are made available to both the U.S. and Canada. Cable. Department of State. SECRET. Issue Date: Jan 22, 1964. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100492561, [accessed 14 June 2006]: [evaluation of ASW torpedo;] Defence Department Report for the President. Apr. 28, 1964. 22 p. TOP SECRET to UNCLASSIFIED. Reproduced in Declassified Documents Reference System. Document Number: CK3100403681, [accessed 19 June 2006].

[275] Milton Leitenberg, Soviet Submarine Operations in Swedish Waters 1980-1986, (Washington: CSIS, 1987), p.8: Grove, p.165

[276] 01405, 1964/05/27, Department of State Memorandum of Conversation from Deputy Under Secretary, Subject: State-Defense Discussion on Defense Budget and Five Year Force Structure, Top Secret, 27 May 1964, [accessed 22 May 2006].

[277] Navy Sixth Fleet units discontinue surveillance of 3 Soviet submarines in the Mediterranean. Report. DEPARTMENT OF DEFENSE. CONFIDENTIAL. Issue Date: Jul 14, 1964. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100175667, [accessed 19 June 2006].

detecting the launch of a missile and urged that this specific matter receive greater development.[278]

The USA needed to store ASW nuclear depth charges in the UK, and these were probably kept at St Mawgan and at Machrihanish (see Chapter Five). By August 1965, the NSC, advised McGeorge Bundy that the American replies to Prime Minister Wilson on the use of these British-based US nuclear ASW weapons should keep to the lines of the agreed consultation process that had begun in 1952. [279] However, Bundy was also advised to check the matter fully with both Rusk and McNamara to ensure that there was no 'misunderstanding concerning our NATO war planning arrangements.' There was still a certain amount of 'vagueness' about such matters, a strong indication that the Anglo-American relationship was working well at official level, despite the difficult personal relationship between Johnson and Wilson.

In November 1965, ASW was again highlighted by the NSC to McGeorge Bundy; the NSC did not like the reductions that were being proposed to the rate of construction of both SSNs and DDEs, and recommended strongly that full construction should continue.[280] Weeks later, Johnson was advised to meet with the President's Science

---

[278] Letter to James Killian, Jr. from Harvey Brooks regarding plans for an antisubmarine warfare (ASW) program for an oceanwide detection and tracking system for all submarines. Letter. White House. SECRET. Reproduced in Declassified Documents Reference System. Document Number: CK3100499377, [accessed 22 December 2005].

[279] Memorandum from Spurgeon Keeny for Mr. Bundy regarding the use of British-based U.S. nuclear anti-submarine warfare (ASW) weapons. Memo. White House. TOP SECRET. Issue Date: Aug 26, 1965. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100148274, [accessed 10 October 2005].

[280] [Defense] Presidential Memoranda on the DOD FY-1967 Budget [notes on draft memoranda prepared for the President outlining key issues on… anti-submarine warfare forces, and other subjects]. Memorandum, Spurgeon Keeny, Jr., Senior Staff Member, to McGeorge Bundy, Spec. Asst. to the Pres. for Nat. Security Affairs. Nov. 6, 1965. 5 p. TOP SECRET, NATIONAL SECURITY COUNCIL. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100395214, [accessed 18 May 2006]: Memo to President Johnson from Donald Hornig suggests that Johnson meet with his Science Advisory Committee. Reports from this committee include: information on anti-submarine warfare. Memo. White House. SECRET. Issue Date: Nov 19, 1965. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100104124, [accessed 15 June 2006].

Advisory Committee to discuss ASW as they had reported to McNamara recommending significant changes to the US ASW systems; the matter now needed the highest attention.

In December, Donald Hornig, the President's Special Assistant for Science and Technology, reported to Johnson; his analysis of the ASW systems was harsh and was supported by both Bundy and the Director of the Bureau of the Budget. He dismissed the future purchase of destroyers and pointed out the lack of specific ASW technical managers within the US Navy. The Navy had already started to action this report to eradicate the negative effects of previous management. [281] The report pointed out that there were no adequate provisions for force coordination in the barrier system and that the torpedoes available all had major shortcomings. There was a serious doubt over the US Navy's ability to 'sink any detected submarine', and an ASW Laboratory and Technical Center was proposed for systems analysis and development activities. The intensity of ASW development continued at a fast, focused pace.

McNamara's main point was that the purpose of US nuclear forces was to be able to survive a Soviet first strike and then be used as a counter force weapon. As a consequence, the importance of submarine-based missiles was universally recognised.[282] Despite this importance, however, the Secretary of Defense still refused the JCS requests for additions to the SOSUS network and other equipment in the 1967 Defense Budget. It has to be noted that this expenditure was aimed at protecting the national interests of the USA, not in fulfilling some NATO alliance task.

By the end of 1967, Flexible Response was adopted as NATO official doctrine; the NATO Defence Planning Committee (DPC) defined it as: 'a balanced and flexible range

---

[281] Donald F. Hornig's 12/14/65 memo to the President opposing the purchase of ten destroyer escorts and for buying three instead of five attack submarines. Memo. White House. Secret. Issue Date: Dec 14, 1965. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100040472, [accessed 29 May 2006].

[282] Freedman, *Kennedy's Wars*, p.46. Memorandum for the President from the Secretary of Defense, Subject: Defense Department Budget for FY 69 (U), 1 December 1967, Draft, 00471, 1967/12/01, Reproduced in *Declassified Documents Reference System*, Document Number: CK3100138481, [accessed 22 June 2007].

of appropriate responses, conventional and nuclear, to all levels of aggression or threats of aggression.'[283] It was also aimed at limiting any 'hot war' to the fields of Europe and thereby keeping it well away from the continental USA, confirmation of Odom and Oltman's viewpoint. A European war could only be sustained by American reinforcements across the Atlantic, thus emphasising the importance of American ASW capabilities. This critical activity was never disregarded and the ASW measures continued to improve.

However, the 1967 consensus agreement satisfied both sides of the alliance. ASW was now one of the main contributory factors in keeping any 'hot war' away from the shores of the USA and firmly in Western Europe. ASW measures could locate, identify and destroy missile submarines that were on their way to attack the US, and US SSNs could attack any anti-shipping Soviet SSK attack submarines. As ever, the contributions from both Thurso and Edzell were crucial to this activity, as the GIUK Gap would be the principal submarine battle zone.

In January 1967, Rusk wrote to McNamara regarding ASW activities, pointing out that some NATO allies were spending too heavily on conventional naval vessels instead of land forces and that this naval expenditure would be better spent on ASW vessels. There was no doubt that ASW had to be a major part of the US strategic naval plan; their NATO allies, however, did not share this belief and this remained a cause of friction throughout the period. The NATO alliance had to cope constantly with national characteristics and historic pride, as well as strategic military planning. [284] Most of this arose from the systemic distrust between the Europeans and the Americans over the latter's ultimate intentions.

---

[283] Dalder, p.18: Sandars, p.217: Miller, pp. viii, 3.

[284] Letter from Secretary of State Dean Rusk to Secretary of Defense Robert S. McNamara regarding expenditures for U.S. naval research and development programs, and theater nuclear forces. Letter. Department of State. TOP SECRET. Issue Date: Jan 13, 1967. Reproduced in Declassified Documents Reference System. Document Number: CK3100121557, [accessed 30 January 2006].

The US Navy developed the Omega hyperbolic radio navigation system by 1968; with a station in Norway: the purpose of Omega was to 'assist the navigational capability of Polaris vessels.'[285] It possessed greater accuracy than LORAN, but the LORAN stations were not closed and operated alongside the new system. The LORAN station in Shetland was unaffected by these changes.

The American efforts prevailed and the JCS SIOP for 1969-71 acknowledged that the Soviets regarded the balance of power in mainland Europe as 'in their favour'. But that the USSR capability for intercontinental assault on the USA was inferior, mainly because of the good ASW capability of the US-driven NATO system that could stem the Soviet SSBNs in the GIUK Gap zone.[286] By 1970, the US had increased its spending on marine science and technology more than twenty fold since 1961 with most of this expenditure awarded to the US Navy for ASW research.[287]

The US had to reinforce Europe during any conflict; by 1970 it was estimated that 11 divisions would need to cross over and therefore, the importance of protecting the SLOC from submarine predation required a
specific framework, as emphasised by McNamara in December 1964. [288]

In 1971 the JCS assessed that the Soviet maritime fleet would attack SSBNs and reinforcements moving to Europe.[289] This strategic threat to the SLOC ensured that Thurso would undoubtedly be crucial in the execution of the northern ASW policy.

---

[285] Tamnes, p.218:*Hyperbolic Radio Navigation Systems*, [accessed 14 January 2006].

[286] Joint Strategic Objectives Plan for FY 1969-71 (JSOP) (U), Military Balance of Power.

[287] *SIPRI 1968/69,* p.101-2.

[288] Document Four: Department of State Airgram enclosing "Secretary McNamara's Remarks to NATO Ministerial Meeting, December 15-17, 1964," 23 December 1964, *National Security Archives*, [accessed 16 November 2005].

[289] Letter from JE Jackson to Mr Thomson, Subject: The implications of the conventional threat to the UK's reinforcement, air strike and defence capabilities, 2 April 1974, Secret covering Top Secret UK Eyes A,

American Activities in Scotland

The earliest Scottish involvement in ASW activities came with US naval hydrographical surveys around the Shetlands in 1958, part of the SOSUS project.[290] Geography was therefore shown to be vital and this attribute was constantly utilised.

Thurso had been identified as a suitable location for a 'US Naval communications facility' in 1960 to support the GIUK Gap system.'[291] This was a sensitive matter and the decision was taken to agree to the American request, but public notification was to be withheld until the Kennedy administration was in place. It would appear that the UK was at that time a willing partner in all such requests from the US because of the strategically important position of Scotland in the GIUK Gap defences. The Admiralty, as ever, tried to camouflage the purpose of these missions; they had been misleadingly briefed by the Pentagon that Thurso was not 'designed to serve Polaris submarines.' The story was revealed by the *Glasgow Herald*, which reported that a station in the north of Scotland would have the responsibility to 'keep track of … radar picket escort vehicles.'[292]

---

[290] From: Commander in Chief, U.S. Naval Forces, Eastern Atlantic and Mediterranean To: Chief of Naval Operations, Subj: Report of Operations and Condition of Command, 1 July 1958 to 31 March 1959 (U), Reproduced in *Declassified Documents Reference System*, Document Number: CK3100343363, [accessed 23 May 2006].

[291] NARA, Memo from Office of the Assistant Secretary of Defense, to State, Subject: Initiation of Base Rights Negotiations for a Proposed US Naval Radio Facility, Scotland (C), dated 15 July 1960, Secret, Reference: I-14, 783/60: NARA, Airgram from American Embassy London to State dated 30 December 1960, Secret, Reference: G-748. Document 741.56311/12-3060: PRO, DEFE 13/11, Letter to Prime Minister Macmillan from Secretary of State for Defence, Subject: US NAVAL BASES IN SCOTLAND OTHER THAN HOLY LOCH, December 1960, Folio 1, Top Secret: PRO, DEFE 13/11, Copy of a Letter from Deputy Secretary of the Cabinet to the Foreign Secretary, 9th December 1960, SECRET, FOLIO 2: PRO, DEFE 13/1006, Letter from Secretary of State for Scotland to Secretary of State for Defence, 13 December 1960, Unclassified: PRO, DEFE/13/11, Defence Committee memorandum from D M Dell to Mr Gough, Secretary and Mr Benwell, Secret, dated 16 January 1961, Reference: S 847/045/58. Facilities for USN at Thurso, Rosyth and Rosneath: PRO, DEFE 13/11, FOLIO 13, Letter from Secretary of State for War to US Secretary of Defense, dated 16th February 1961, Top Secret: PRO, DEFE 13/11, FOLIO 13(A), Letter from Secretary of Defense to Secretary of State for Defence, Top Secret: PRO, DEFE 13/11, Statement on US Navy communications project at Thurso, Scotland, supplementary notes.

[292] US Base for North Scotland, Another link in DEW line, *Glasgow Herald*, 27 July 1961.

The US Navy considered Scotland as an alternative location to Iceland, a clear recognition of the importance of geography in international strategy; Scottish bases would play an essential part in US maritime strategy in the North Atlantic. There was perhaps a touch of NATO obtaining cooperation from the USA on this matter, because of its strategic implications.

Maritime patrol aircraft often had to use Prestwick because poor weather preventing them from landing in Iceland and radio destroyer escorts (DDEs) used the special US Navy port facilities at Greenock at the end of their patrol. Scotland was an active American ASW centre, with both air patrols and location-finding activities taking place. [293]

Vice President Johnson visited Norway in September 1963, after the submarine scares during the Cuban Missile Crisis.[294] Thurso and the other Scottish bases were now drawn into deeper involvement in American ASW actions because of the new strategic situation which was caused by the successful Soviet penetration of the existing US ASW screen.

The United States strategic policy had changed by this stage and the Scottish bases were especially invaluable. This bonus was not fortuitous, as they were part of the original plan formulated before 1960 to support the SSBN fleet and combat the Soviet submarine operations in the GIUK Gap zone. The US Navy had improved its ASW capabilities which now formed part of all naval training. [295] Training was held in the North Atlantic and ASW was one of the main objectives. The US used the western Scottish facilities for

---

[293] Captain Joseph F Bouchard, US Navy, Guarding the Cold War Ramparts, The U.S. Navy's Role in Continental Air Defense, *US Navy War College*, [accessed 22 October 2005].

[294] Ranft and Till, pp.80, 120, 152.

[295] HARD SHOT anti-submarine warfare exercises being conducted in cooperation with Canada. Report. DEPARTMENT OF DEFENSE. CONFIDENTIAL. Issue Date: Sep 15, 1964. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100165794, [accessed 7 July 2006]. Also, Major NATO naval exercises will be held in the Northern Atlantic. Report. DEPARTMENT OF DEFENSE. SECRET. Issue Date: Sep 22, 1964. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100165870, [accessed 14 July 2006].

POL and air bases, as well as utilising the Thurso communications capability. Without these Scottish facilities, major ASW exercises would have been severely curtailed.[296]

The mechanics of ASW measures were simple; when Soviet submarines left Murmansk or Kola, American aircraft from Norwegian bases would track them; this task was then passed to British planes in the UK sector. There was a direct link to the aircraft from the SOSUS chain and in Scotland, Thurso and Edzell were engaged in communications and detection; Edzell's mission 'to support US Fleet units … in the area; provide navigational service relating to air-sea rescue, and conduct technical research in support of Navy electronic projects', while Thurso met the essential LF/VLF requirements in the northern North Atlantic. [297]

The principal reason for the establishment of Thurso had been its ability to communicate with submarines, specifically the FBM boats. Six major VLF stations had been established to communicate with the Polaris SSBNs and Thurso became the main base in Europe; it was also used as an LF back-up station. Edzell was established to carry out a comprehensive monitoring of all Soviet electronic traffic, and collected coverage of SSBN/SLBM testing in the Barents Sea and White Sea.[298] The all-round value of the Scottish bases can be seen from these specific contributions.

The Soviet submarine fleet, however, did not have easy access to the open sea, unlike the American SSBNs; this fact could not be changed and ensured that the Scottish locations played a permanent role in the submarine theatre. The upgrading of Thurso and Edzell continued.

Regardless of any intelligence inaccuracies, there was now a large-scale ASW problem as reported by McNamara in 1968. Thurso and Edzell were now providing shore-to-

---

[296] Major NATO naval exercises will be held in the Northern Atlantic. Report. DEPARTMENT OF DEFENSE. SECRET. Issue Date: Sep 22, 1964. Reproduced in *Declassified Documents Reference System.* Document Number: CK3100165870, [accessed 6 December 2005].

[297] Duke, *United States Military Forces*, p.226: Coletta and Bauer, p.105.

[298] Tamnes, p.201.

submarine communications and SIGINT data, mission critical activities because of the deployment of the SSBN Yankee-class boats.[299]

'There are no areas on the maps of the world's oceans where the Soviet Navy does not sail', was the proud boast of Admiral Grishanov, the powerful head of the Navy's political department in 1971.[300] Thurso now had to keep track of the significant increase in Soviet sea activity in its zone.

American submarines regularly entered the Soviet waters close to the Kola and Murmansk bases to collect intelligence for Operation Johnstone.[301] These operations included testing the Soviet and Polish ASW measures; transmitted data from these missions was picked up at Thurso and also at Edzell. Without the Scottish locations these missions would not have taken place.

ASW operations were always live, and in 1973, during the Arab-Israeli War, the US carriers were threatened in the southern Mediterranean by Soviet surface vessels and submarines. The US commander deployed all ASW measures and the situation became tense. One of the best ASW measures available at this time was from fixed wing aircraft, either shore or carrier-based; these were able to deploy sonobuoys over a wide area and listen to the data being emitted.[302] Many of these shore-based ASW aircraft (mainly P3-Orions) flew regularly from Prestwick, thus ensuring the airfield's constant front-line position.

The major ASW innovation for NATO was the introduction of ASW helicopters, such as by the Royal Navy at *HMS Gannet* in Prestwick in 1970. But the most effective ASW

---

[299] 00474, 1968/01/22, Statement of Secretary of Defense Robert S McNamara before House Subcommittee on Department of Defense Appropriations on the Fiscal year 1969-73 Defense Program and 1969 Defense Budget, 22 January 1968,p.58-9.

[300] Kokoshin, pp.120-30.

[301] Leitenberg 1987, p.158 note 1.

[302] *SIPRI 1974*, pp.309-14.

weapons were now the SSKs, with their effectiveness in locating and identifying the diesel-powered Soviet submarines. Both sides used SSKs, although there were only seven British submarines of this type in 1974, whereas the USSR was able to call upon 28, along with another 48 nuclear boats armed with counter shipping missiles; this armament gave them a dual ASW/ counter-shipping capability.

Admiral Stansfield Turner, president of the US Naval War College, described the ASW mission of the US Navy in 1974, as to 'ensure safe maritime operations.' He showed that air superiority had been achieved by the Israeli air force in its 1967 war, by deep range attacks on enemy air bases, as opposed to shooting aircraft from the air. [303] This suggested that the best place to 'engage' submarines was in known bottlenecks, such as the GIUK Gap zone. A major element of the observation and communications for this zone was provided from Thurso and Edzell, showing again that the US ASW concept depended on its Scottish bases.

Thurso became even more important by 1976, when the US Navy radio station at Londonderry was closed and all its operations transferred to Thurso, with 122 extra personnel arriving at the base.[304] ASW and Scotland were unmistakeably intertwined.

Conclusion

The available sources have mainly been on the US/NATO side; they have been limited in their descriptions, with many important aspects blanked out, but have still enabled a good description to be provided of the ASW operations of the period. The Soviet side, however, has very little information yet available on the protection operations in the Northern Seas and this situation has hampered a fuller examination of the balance between both sides over the period.

---

[303] Vice Admiral Stansfield Turner, Missions of the U.S. Navy, March 1974 Issue, *Naval War College Press,* [accessed 13 January 2006].

[304] NAS, SEP4/2962, Letter from SDD to SEPD, 26 January 1976, D/42/5 PART B, Secret,

The US and Soviet navies engaged in confrontation beneath the Northern Atlantic and Norwegian Sea.[305] It was a serious, and occasionally critical, matter for both navies. By the end of the period, it was clear that the Americans' technical superiority still existed, but the Soviets had caught up significantly. As there was little doubt about the mission of the Soviet Navy, the availability of Scottish operational bases was invaluable. Thus Edzell, Thurso and Holy Loch, performed their wartime task every day and proved their immense value to the US strategic plan.

Scotland played a vital role through the communications centres at Thurso and Edzell, as well as supplying logistics from Prestwick and Greenock. All of this support was delivered, despite the pertaining official subterfuge which claimed otherwise and regularly issued misleading statements.

The American necessity for extensive ASW, and its requirements for Thurso, Edzell, Greenock, Prestwick, Machrihanish and Shetland, did not appear to cause any problems for the Anglo-American relationship. In fact, the US was able to make unimpeded use of its bases in Scotland in pursuit of its strategic ASW interests during this time. The NATO alliance was not damaged by any American ASW requirements in Scotland and there were no apparent difficulties for the US forces at local level. There is no doubt that Scotland played a central part in the ASW effort. But, as usual, it would appear that the Americans unilaterally, with a few insignificant exceptions, applied their own requirements single-mindedly.

---

[305] Chant, p.7.

CHAPTER FIVE

SUPPORT ACTIVITIES – NC3, NAVIGATION AND LOGISTICS

**American Strategic Requirements**

This chapter will examine the US nuclear communications, command and control (NC3) systems, plus the navigation requirements for the delivery of strategic policy and the logistics involved. According to Duke, these operations 'comprise a major part of the US military presence' in the UK and were in fact the 'crux of the military presence.' These systems were absolutely vital to the US strategic operation, being 'more comprehensive' than any collaborative US/NATO systems, particularly the intelligence systems.[306] These support activities required the development of integrated command, control and communications links, along with associated facilities in foreign locations.

The USA had many bases in foreign countries after the end of World War 2 and the Military Air Transport Service (MATS) was created in 1948 to facilitate US military movements worldwide. It included the Air Weather Service (AWS), Air Rescue Service (ARS), Special Airlift Mission (SAM), Air Photographic and Charting Service (APCS), and the Aeromedical Transport Wing (AMTW): MATS became the Military Airlift Command (MAC) in January 1966.

US strategic policy, whether based on 'massive retaliation' or 'mutually assured destruction', required direct communications from the NCA to the strategic nuclear forces, i.e. the SAC, Minutemen regiments, SACEUR and the FBM fleet. NATO planned for a short European ground war, after which it was assumed that overwhelming Warsaw Pact conventional forces would have made the breakthrough and therefore nuclear weapons would be used.

---

[306] Duke *United States Military Forces*, pp.347-8.

Map 5 – American Communications Bases
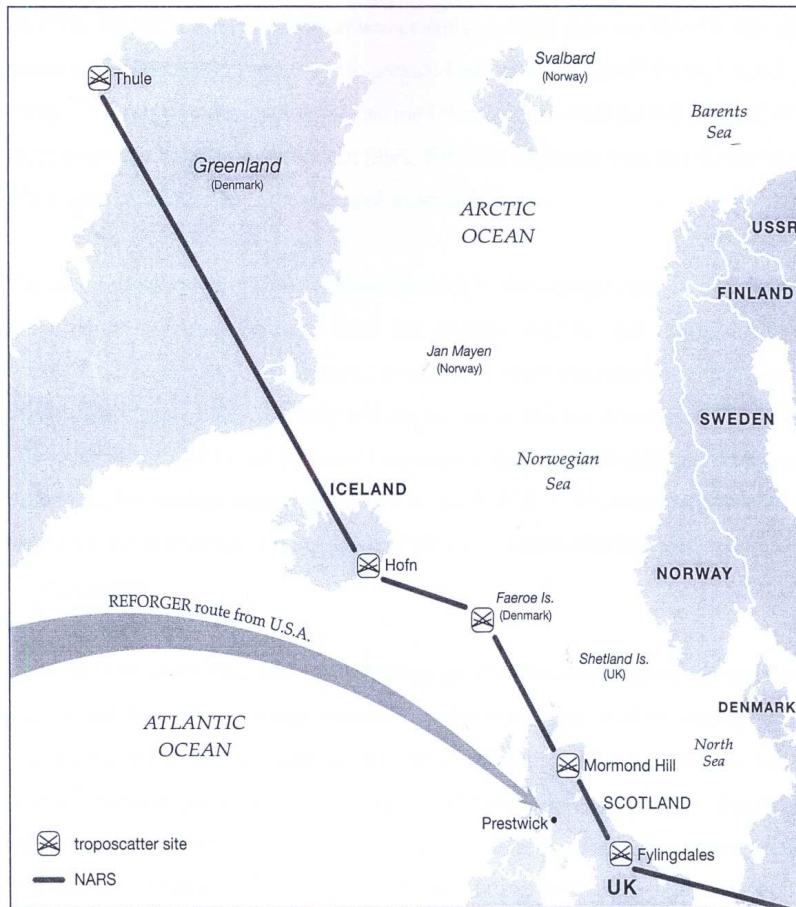
The US-driven NATO doctrine of a ground war in Europe was integral to US strategy and generated a massive requirement for US personnel and equipment to be moved from the USA. Therefore, logistics support was essential and had to be constructed: this would enable a conventional European war to provide Daalder's 'fire-break' for the United States.[307] To support their strategic aims, the US needed to install the full network of support services for their overseas activities. They had originally done this during World War 2 and the UK had been the principal overseas location.

Communications systems were vital and operated to the strategic command nuclear link, and also to individual services. Once the strategic doctrine had moved to flexible response, the requirement for integrated command, control and communications assumed greater importance. This eventually became known as Nuclear Command, Control, and Communications (NC3) and provided connectivity from the President and Secretary of Defense to the nuclear execution forces via the NMCS.[308] Important steps were taken during the 1950s to ensure the resilience of the NCA communications network, including NATO linkage.

The Cuban Missile Crisis had exposed many poorly functioning command and control matters and Kennedy's greatest concern was the inadequate level of intelligence that reached the White House. Additionally, there was the conflict between civilian and military control of operations; the military had a historical resistance to this 'interference' and such friction was exacerbated by the lack of an effective communications system.[309] This was a manifestation of the truth about the influence of the US military in strategic matters. Previously the armed services had maintained their operational independence, but the nuclear era now required operational control from the NCA.

---

[307] Dalder, 1991, p.75.

[308] Communications in the European Theater, *US Army, Europe*, [accessed 9 May 2006]: Exhibit R-2, RDT&E Budget Item Justification, February 2004, Appropriation/ Budget Activity RDT&E, Defense-Wide/07, R-1 Item Nomenclature: Minimum Essential Emergency Communications Network (MEECN), PE 0303131K.p.1., *Department of Defense*, [accessed 29 May 2006].

[309] David E Pearson, *The World Wide Military Command and Control System Evolution and Effectiveness, (WWMCCSEE)* (Maxwell Air Force Base, Alabama. Air University Press, 2000) p.51-61.

By 1960 both Eisenhower and the UK government had agreed that technological advances, particularly SLBMs meant that there was a need for a US communications network to cover the world. US naval operations expanded and White House staff highlighted three aspects of naval communications; first, the interoperability of air defense systems, second, the effects of nuclear detonation on the naval communications systems and, third, the reliability of ship-to-shore links.[310] This became an expensive and technically complex problem involving the top research and development projects over the next two decades. Communications with submarines were tested by aircraft from Prestwick, another example of good US/UK relations, but without any specific quid pro quo for Britain. [311]

Radio communications with submarines had serious problems. Short split-second transmission bursts were used, similar to the use of 'zip' files; the signal was recorded and would then be played back at slower speeds.[312] Various methods were used for communication with the FBM fleet, all with serious drawbacks. The US Navy needed a system that was survivable, jam resistant and receivable during nuclear detonations; without these capabilities, there would be unacceptable constraints on operational deployment. Normal HF military transmissions were unable to penetrate sea water, but VLF signals from powerful transmitters could achieve this to depths of 30 metres. ELF transmission was the best solution; it was receivable over huge distances, during nuclear detonations and at depths of more than 200 metres. Resilience and redundancy could also

---

[310] White House Memorandum from Dr James Killian to Mr Gordon Gray, Subject: Control of the seas, 31 March 1959, Secret, Possible items for discussion relating to whether the primary mission of the Navy, which is to transport troops and material, has been changed by the new weapons systems. Miscellaneous. WHITE HOUSE. SECRET. Issue Date: Mar 31, 1959. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100258816-17: DOD Memorandum from Director Office of Foreign Military Rights Affairs, to Mr Millar, State, Subject: Initiation of Base Rights Negotiations for a Proposed US Naval Radio Facility Scotland (C), I-14, 783/60, 15 July 1960, Secret, NARA 711.56341/7-1560, 13 September 1960.

[311] FOK.LST 005.2, H A/E 4097/61, Colonel Ole Tob. Mehn-Andersen, to Chief, Air Command North Norway, 20 July 1961. (Forsvarets-Overkommando - FOK. Norwegian Defence High Command), cited in Tamnes, 1991), p.111.

[312] Bamford, 1982 pp.164-5. Also; Personal experience of the research author in Berlin and other areas (1975-77).

be achieved by constructing a sufficient number of hardened, dispersed transmitters in suitable locations. [313]

However, a large portion of the US strategic doctrine was predicated on NATO involvement and therefore needed to achieve the same high standards. By 1967, there was no NATO-wide system that could survive a nuclear exchange, cryptographic capability was very limited and there was little inter-operability between the many systems. This echoed one of the key observations of the report by William H. Orrick, Deputy Under Secretary of State for Administration in 1963. [314] It was suggested that NATO should produce a network capable of fully supporting political and military needs.

The inherent vulnerability of the communications network was noted by Kissinger's NSC staff in 1971; they pointed out that the FBM fleet could be neutralised in a conventional war by 'attacks on supply ships, bases, communications.'[315] The Pentagon therefore requested a 'last-ditch reliable' communications system and the outcome was the Minimum Essential Emergency Communications Network (MEECN). This guaranteed connectivity between the President and the strategic deterrent forces in stressed environments.[316] MEECN used ELF/VLF transmission and provided a secure, jam

---

[313] Pearson, *The World Wide Military Command and Control System Evolution and Effectiveness*, p.287-9: Extremely Low Frequency Communications Program, *Federation of American Scientists,* [accessed 14 May 2006]: SIPRI Yearbook 1968/69, p.118.

[314] NATO telegram, to Department of State, Subject: NATO Communications, Challenges and Opportunities, 3 May 1966, Confidential, NATTO A-448, Reproduced in *Declassified Documents Reference System*. Document Number: CK3100051127, [accessed 27 May 2006].

[315] National Security Council memorandum from K Wayne Smith to Dr Henry Kissinger, Subject: Special Defense Panel Papers, 7 January 1971, Top Secret, K. Wayne Smith provides Henry Kissinger with four papers prepared by the Special Defense Panel. Titles include: "Defense Issues for FY 1973;" "Strategic Nuclear Forces: Issues and Alternatives;" "The Navy Problems of the 1970s;" "Tactical Air Missions and Issues." Memo. National Security Council. TOP SECRET. Issue Date: Jan 7, 1971. Complete. 90 page(s). Reproduced in *Declassified Documents Reference System*. Document Number: CK3100519574, [accessed 27 February 2006].

[316] Exhibit R-2, RDT&E Budget Item Justification, February 2005, Appropriation/ Budget Activity RDT&E, Defense-Wide/07, R-1 PE Title07 Operational System Development 0303131F Minimum Essential Emergency Communications Network (MEECN), , PE 0303131F. p.1. *Department of Defense,* [accessed 29 May 2006].

resistant, survivable system.[317] Again, the Scottish communications facilities were part of essential US strategic operational communications through their existing, sophisticated network.

The MEECN system provided a presidential airborne command post that was able to remain airborne for three days; this was based at Andrews AFB, Washington and was given the codeword 'Night Watch.'[318] The emergency procedures were constantly rehearsed, and in October 1969, a simulated presidential party, consisting of senior military officers, was airborne within 14 minutes.[319]

President Nixon established the Office of Telecommunications Policy in February 1970. All presidents since Truman had supported this concept, but communications had been regarded as an element of the command function. Nixon now designated it as a separate activity and brought to an end the ad hoc management that had surrounded it for more than 20 years.[320] As part of this overarching policy, the Worldwide Military Command and Control System (WWMCCS) was instituted in 1971. The chain of command of the NCA was also officially delineated as running from the President to the Secretary of Defense and on to the JCS.

---

[317] *HF Active Auroral Research Program University of Phoenix*, [accessed 3 March 2006]: Weapons of Mass Destruction (WMD), *Globalsecurity*, [accessed 28 February 2006].

[318] Campbell, 1986, p.183: National Military Command Center memorandum for the Record from Brigadier General Paul Watson, Deputy Director for Operations, NMCC, Subject: Alfa Prime with Opal Drill Two (report on the military exercise designed to fly the President and his party to safety in the event of a national emergency). Reproduced in *Declassified Documents Reference System.* Document Number: CK3100515379. [accessed 18 May 2006].

[319] Notification Procedures for Emergency action Messages, Emergency Employment of Army and other Resources, OSC Regulation 500-4, *Department of the Army*, 9 February 2001, [accessed 15 June 2006]: Campbell, p.183.

[320] Pearson, *The World Wide Military Command*, pp.117-8; Department of Defense Directive Number 5100.30, 2 December 1971, Subject: World-Wide Military Command and Control System (WWMCCS), DoD Issuances and Administrative Instructions, Department of Defense and WHS Online, [accessed 28 May 2006].

Navigation at sea has always been a crucial matter and the US Navy developed a long navigation system (LORAN) during World War 2; this used land-based radio transmitters to enable ships, or aircraft, to fix their positions when they were within 800 kilometres of a LORAN station. [321] After the war the technology improved to 1,200 kilometres, with greater accuracy. The strategic necessity of LORAN was highlighted in July 1958 when the possible cancellation of a LORAN station in the Dominican Republic prompted the CNO, Admiral Burke, to write to the Under Secretary of State stressing its importance.[322] This remained a cornerstone of US strategic detail as it ensured that all SLBM targeting was accurate.

US Actions

The US support profile therefore required the full spectrum of command centres, ballistic missile warning systems and an integrated military and naval command infrastructure. This was accomplished with the relentless application of the US' technological advantages.

The importance of the communications framework to the strategic actions of the US had to overcome the unsuitability of any joint US/NATO network. Communications networks needed to be constructed solely on a US needs basis, thus requiring good management of the Anglo-American relationship for all components of the system required to be situated in the UK..

The USA constructed its own Alternative Joint Command Centre (AJCC) national emergency command post and it became operational in 1953 at Fort Ritchie, Maryland.

---

[321] LORAN, US Coast Guard Historian's Office, *US Coast Guard*, [accessed 14 November 2005]: Loran-C, Delft University of Technology, *Eurofix*, [accessed 21 June 2006]: Coast Guard Long Range Aids to Navigation Program, *US Coast Guard*, [accessed 18 December 2006].

[322] Letter from Admiral Arleigh Burke, Chief of Naval Operations, to Christian A. Herter, Under Secretary of State, Subject: Trends in Caribbean and Latin America, 11 July 1958, Secret, Reproduced in *Declassified Documents Reference System*. Document Number: CK3100437726-8: Wilkes and Gleditsch, Loran-C and Omega, p.81), both cited in Tamnes, p.110.

Another emergency headquarters was constructed for the civilian agencies, at Mount Weather, Virginia and this housed the Presidential Emergency Facility ('Crystal Palace'). [323] The extension of this essential network to Europe was undertaken during the late 1950s and 1960s.

Fort Ritchie was America's main strategic command centre, with 6,000 staff and an underground AJCC, and overseas commands were linked via individual services' ocean cables. The NATO Standing Group communicated with SACLANT and SACEUR from a separate command centre in Maryland via commercial telephone lines and had access to the DOD worldwide network; all of these links had resilience provided at Fort Bragg, North Carolina.[324] The consolidation of all strategic command communications systems had begun, but none of it appears to have considered NATO requirements, only American needs.

The 1963 Orrick committee investigated the need for a flexible, integrated communications system; this restructured the military and civilian communications systems to provide a national level command and control framework that would deliver a crisis management capability to the NCA. This incorporated the National Military Command Center (NMCC), the Alternate National Military Command Center (ANMCC), North American Air Defence (NORAD) and the national emergency airborne command posts (NEACP). Also integrated were BMEWS and other SAC networks. It was the birth of the new concept of command and control, McNamara's great contribution to American strategic management.

---

[323] Site-R Raven Rock, Alternate Joint Communications Center (AJCC), Weapons of Mass Destruction, *Globalsecurity*, [accessed 9 December 2005]: Justification of the Radio Relay System from Alternate Joint Communications Center to the Washington Area, 1951, Confidential, The AJCC Microwave Network, *Cold War Infrastructure*, [accessed 28 November 2005]: The Mount Weather Emergency Operations Center, Bluemont, VA, *Cold War Infrastructure*, [accessed 28 November 2005].

[324] Defense Communications Agency Memorandum to Secretary of Defense, Subject: Communications Facilities at National Level, 1 March 1961, Secret, A Secret Landscape, The Cold War Infrastructure of the Nation's Capital, *Cold War*, pp. 9-12, [accessed 21 November 2005].

It received its first live test when a USAF reconnaissance aircraft strayed into East German air space and was shot down. The National Military Command System (NMCS) provided President Johnson with accurate and timely information. The system also witnessed serious failures, as when the Israelis attacked the *USS Liberty* SIGINT ship in 1967, the North Koreans captured the *USS Pueblo* SIGINT ship in 1968, and a US Navy reconnaissance plane was shot down over the Sea of Japan in 1969. These episodes resulted in major changes. At no time during any of these incidents was there other than perfunctory liaison with NATO allies; US strategic interests were the only consideration.

In January 1965, the JCS submitted their proposals for an appropriate command and control structure to support the President; they supported the concept of the NEACP and specified that direction of the Armed Forces was to be exercised through the NMCS.[325] The construction of a system of national military emergency warning procedures was integrated into military planning in March 1964 and the JCS devised new alert procedures, including the requirement for a joint conference with the President and the Secretary of Defense in times of crisis.[326].

The main element for the WWMCCS was the NMCS; this was the hub of the command and control network and the Pentagon regularly tested it under realistic conditions. The NMCC, the ANMCC and the NEACP, were re-designed to ensure continuity of command under war conditions. Particular emphasis was given to the links with strategic forces, i.e. SSBNs and missile sites, and one NEACP aircraft was always on standby to provide immediate command support. [327] At long last it appeared that McNamara's concept of a unified command and control system had been achieved.

---

[325] Memorandum for the Secretary of Defense, from Joint Chiefs of Staff, Subject: Conceptual Approach to the National Military Command System (NMCS) (U), 26 February 1965, Top Secret, Reproduced in *Declassified Documents Reference System*. Document Number: CK3100074559 [accessed 15 May 2006].

[326] Department of Defense cable regarding a uniform system of progressive alert procedures to assure national security, 5 March 1964, Secret, Reproduced in *Declassified Documents Reference System*. Document Number: CK3100138641, [accessed 15 May 2006].

[327] Department of Defense Directive Number 5100.30, 2 December 1971, *Department of Defense and WHS Online*. And E-4B, *Air Force Link*, [accessed 27 May 2006]. Also; Order 7610.4K, Special Military

This posed problems with NATO partners. The US had assigned five SSBNs for integration into the overall NATO targeting plan in 1964; the WWMCCS also included these assets, plus other land-based systems, and this information was available to SACEUR's headquarters. A separate computer link had to be introduced to filter this sensitive information and reserve it for US-eyes only.[328] The Americans looked after their own strategic interests first, regardless of NATO commitments.

The first priority was the construction of a system of early warning stations to detect incoming Soviet missiles and by October 1960, the BMEWS site at Thule, Greenland, opened to give the USA the capability of detecting any ICBMs launched from central USSR towards the continental USA. Each BMEWS site had four huge antennae, which were highly visible and obvious targets for Soviet interdiction prior to any nuclear launch situation.[329]

Greenland formed part of the GIUK Gap. It had two main bases; one was a DEW Line extension, built on the ice-cap, and the BMEWS base at Thule; it was also part of the US-Canadian North American Air Defence Command (NORAD) system, directly linked to Cheyenne Mountain, Wyoming. Thule was a dispersal base for wartime B-52 nuclear bombers, manned by Danish civilians, with another 300 American civilians who covered all the militarily sensitive matters. Needless to say, these sites caused regular disagreement between the USA and the USSR.[330]

The DEW Line stations had been activated in 1957 across Canada and Alaska and were eventually upgraded into the North American Radar System (NARS). In 1960, five

---

Operations, Night Watch, Special Military Flights and Operations, Air Traffic Publications, Effective Date: 19 February 2004, *Federal Aviation Administration*, [accessed 2 June 2006].

[328] Pearson, *The World Wide Military Command and Control System Evolution and Effectiveness*, p.195.

[329] 130 metres long and more than 90 metres high.

[330] Simon Duke, 1989, pp. 44-8.

Troposcatter sites were constructed to form the NARS.[331] There were two sites in Iceland (Sites 41 and 42) and NATO Communications Unit in the Faeroe Islands (Site 43) was manned by US and Danish technicians; another two sites were in the UK..

Troposcatter technology could transmit over many hundreds of kilometres by 'bouncing' signals from its AN/FRC-39A(V) antennae; conventional equipment would have required several repeater stations to achieve this distance. NARS was thus one of the USAF's primary communications systems, with the role of linking the air defence systems to the early warning systems. It also transmitted information from the US Navy's SOSUS equipment, which served to provide early warning of Soviet submarines.[332]

The requirement for a separate US strategic command system and a combined NATO command structure caused difficulties. Structures overlapped because SACEUR and CINCEUR (Commander-in-Chief Europe) are American-held posts; this was one of the constraints imposed by the US Atomic Power Act, which compelled all decisions on the use of US nuclear weaponry to be taken by American commanders. All US forces that were assigned to NATO similarly came under the control of the President of the United States; therefore, the US military network in Europe was primarily intended to support SACEUR and by extension the President. No alliance or US/UK requirements appear to have interfered. [333]

NATO had different military communications systems; some were based on commercial networks and were vulnerable and insecure, such as those in Scotland. The requirement for a coordinated air defence plan in the 1950s accelerated the introduction of an

---

[331] *About the North Atlantic Radio System*, [accessed 3 December 2005].

[332] Duke, *United States Military Forces*, p.331. SOSUS, The Secret Weapon of Undersea Surveillance, *Undersea Warfare*, [accessed 15 December 2005].

[333] Duke, *United States Military Forces*, p.324-8.

integrated command and control system; as a result, the Allied Command Europe (ACE High) system was constructed.[334]

ACE High's updated technology enabled voice communication over distances up to 700 kilometres. It was designed to provide 'reliable, secure and virtually instantaneous communications' for SACEUR, by connecting both the military and national headquarters, thus ensuring that the new concept of command and control could be exercised effectively by the NCA.[335] Opening in Norway in 1958, ACE High was still operating in 1988; the equipment used huge reflectors and aerials more than 50 metres high. It was the biggest communications project of its kind ever undertaken, extending from Norway to eastern Turkey and linking 9 of the 15 NATO countries.

The United States also attempted to eliminate the vulnerabilities of the command and communications process and provided an airborne control facility for all bomber, Minuteman and Polaris launchings.[336] This deployed a 'take command and move out' (TACAMO) aircraft that could remain airborne for 72 hours during any time of increased tension or nuclear confrontation, and were part of the 'SILK PURSE' command network system.

---

[334] For ACE information see: 50 Years of Infrastructure; NATO Security Investment Programme, NATO, 2001. *NATO*, [accessed 11 March 2006]. P.60-1: Duke, *United States Military Forces*, p.329.

[335] Source SIGNAL, November 1960 and January 1964, Communications in the European Theater, *US Army, Europe,* [accessed 9 May 2006]: DISA, JITC Networks, Transmissions and Intelligence Division High Frequency Test Facility, *SCOPE Command*, [accessed 11 June 2006].

[336] Statement of Secretary of Defense Robert S McNamara before the House Subcommittee on Department of Defense Appropriations on the Fiscal Year 1969-73 and 1969 Defense Budget, Secret, 22 January 1968, 00474, 1968/01/22, p.47. *Digital National Security Archives,* [accessed 6 January 2006]. Also, Draft Presidential Memorandum on Strategic Offensive and Defensive Forces, Tentative Record of Decision, 9 January 1969, 00476, 1969/01/09, *Digital National Security Archives*, [accessed 6 May 2006]. pp.17, 32: USSTRATCOM Attack Command and Control System (SCACS) Aircraft Operations, 12-2-1. SCACS Aircraft, Chapter 12. Special Military Flights and Operations, Order 7610.4K, Special Military Operations, Air Traffic Publications, *The Federal Aviation Administration,* [accessed 16 June 2006]: T.C. Jewel1 and J. D. Geist, A Time and Frequency Reference System for the TACAMO Aircraft, 38th Annual Frequency Control Symposium – 7984, *US Naval Research Lab Space Applications Branch,* [accessed 16 June 2006].

There was a need for a common user system that could support the entire command and control network and remain invulnerable to enemy action. Therefore, in April 1964, the US Army and Air Force networks were combined to form the Automatic Voice Network (AUTOVON); this was a wholly military system, with appropriate physical defence measures to resist enemy attack.[337]

AUTOVON controlled operational traffic by multi-level, precedence pre-emption that enabled high level users, such as the President, Secretary of Defense and JCS to override other users. [338] It was the most important telephone communications project undertaken by the DOD; its mission was to provide 'rapid, world-wide command and control communications for the NCA and other high priority subscribers,' as well as other military and diplomatic users.[339] High-level users could access the world-wide network, while others, less important, were limited to their local area. The overseas section of the system was eventually completed in 1970 and formed the final segment of the command, control and communications framework, C3.[340] This major US strategic communications network was routed through Scotland with little information being provided.

With the growing strategic importance of the FBM fleet, underwater communications assumed a higher priority. ELF meant that the submarine would not have to come close to the surface and it guaranteed a direct, link between the captain and the NCA during wartime conditions. This led to Project Sanguine, a ten-year programme to develop the operational effectiveness of ELF, starting in 1968 at a cost of £1.5 billion. However, the ELF requirement for very large antennae proved to be an intractable difficulty.

---

[337] Peter B Mersky, Autovon: The DoD Phone Company, *The Department of the Navy Information Technology Magazine,* [accessed 16 June 2006]: Dr Martin J Fischer et, al. The Circuit Switched Network Design and Analysis Model, *The Telecommunications Review,* p.91. [accessed 20 June 2006].

[338] Mersky, *The Department of the Navy Information Technology Magazine*: AUTOVON - History and description, *Bell System Memorial*, [accessed 11 January 2006].

[339] *Bell System Memorial*: *Autovon*.

[340] Communications in the European Theater, *US Army, Europe*, [accessed 9 May 2006]: Exhibit R-2, RDT&E Budget Item Justification, February 2004, Appropriation/ Budget Activity RDT&E, Defense-Wide/07, R-1 Item Nomenclature: Minimum Essential Emergency Communications Network (MEECN), PE 0303131K.p.1., *Department of Defense*, [accessed 29 May 2006].

Sanguine was incredibly ambitious and controversial and was a good example of Eisenhower's prediction regarding the uncontrollable expenditure of the military-industrial complex. The original design needed to bury more than 9,500 kilometres of wire antenna in Wisconsin State, approximately 41 percent of the state. It also needed 240 underground transmitters and more than 800 million watts of power, enough power for a city the size of Edinburgh (400,000 population). This was reduced to 220 kilometres and located in a remote area of the state. However, the huge cost and the environmental lobby limited the project and by the mid-1970s the Navy developed a reduced specification, non-survivable system called Seafarer.[341]

The LORAN naval navigation system allowed the SSBN boats to 'position themselves with absolute precision' and because of the development of submarine warfare, particularly the FBM fleet, the US Navy constructed a chain of LORAN-C stations in the north east Atlantic, the Pacific and the Mediterranean during 1957. [342] Because of the Norwegian veto, LORAN was placed under the command of the US Coast Guard (USCG), as the USCG was responsible for safety at sea. As part of this subterfuge, both LORAN-C and Omega, its upgraded successor, were later assigned for use by both military and civilian craft.[343] By 1969 there were 79 LORAN -A stations in operation and 18 LORAN -C stations.

---

[341] Pearson, *The World Wide Military Command and Control System Evolution and Effectiveness*, p.289. also Department of Defense Appropriations for 1970. Hearings before a Subcommittee of the Committee on Appropriations. US House of Representatives, 91st Congress, 1st session. Part 4: Research, development, test and evaluation. Washington 1969. pp 129, 244,269, cited in *SIPRI Yearbook of World Armaments and Disarmaments 1969/70,* Stockholm: Almqvist & Wiksell, P.118.

[342] LORAN-C Introduction, *Hyperbolic Radio Navigation Systems*, [accessed 27 November 2005]: Airworthiness approval of LORAN-C navigation systems for use in the US National Airspace System (NAS) and Alaska, US Department of Transportation Federal Aviation Administration Advisory Circular, *International Loran Association* [accessed 27 November 2005].

[343] Campbell, 1986, p.228-9: All about LORAN-C, *US Coast Guard*, [accessed 20 June 2006]: Amb. Anderson, to Secretary of State, Subject: Briefing Paper] HAG/CP-2, May 1965, Confidential, Johnson Library, NSF, International Meetings and Travel, NATO Ministerial Meeting, The Hague, May 12-14, 1964. Reproduced in *Declassified Documents Reference System.*. Document Number: CK3100435940-1, [accessed 19 January 2006].

The LORAN-C system was later upgraded for use by SSBNs; this was codenamed Clarinet Pilgrim and was introduced in the 1970s. It was a vital element of the US strategic package; without LORAN-C it would have been impossible for the SSBNs to fix their positions accurately.

As shown in Chapter Two, 'there are no foreign military bases in Norway in peacetime'; in reality there were more than 100 such bases, either financed by the USA or NATO.[344] In particular America funded intelligence-gathering activities, SOSUS and LORAN stations. The official policy had consistently been outflanked by placing the equipment on Norwegian soil and operating it by Norwegian armed forces during peacetime, with the proviso that it would then be operated by US or NATO forces during wartime.

Because of the Norwegian veto, LORAN was placed under the command of the US Coast Guard (USCG), as the USCG was responsible for safety at sea. As part of this subterfuge, both LORAN-C and Omega, its upgraded successor, were later assigned for use by both military and civilian craft.[345] Transit, the world's first satellite navigation system was launched in 1959 and by 1968 a fully operational constellation was in place, providing navigation to the US Navy's FBM fleet.[346]

Strategic airlift capability was also a major consideration and in the 1950s, America began to modernise its small fleet of transport aircraft. During congressional hearings, Congressman Mendel Rivers, chairman of the Armed Services Committee, pointed out that flexible response required greater numbers of conventional aircraft to support any action by US conventional forces.[347] By extension, this policy would also require greater

---

[344] Duke, *United States Military Forces*, p.215-30.

[345] Campbell, 1986, p.228-9: All about LORAN-C, *US Coast Guard*, [accessed 20 June 2006]: *Declassified Documents Reference System.*. Document Number: CK3100435940-1, [accessed 19 January 2006].

[346] Technology Transition, *Defense Advanced Research Projects Agency*, [accessed 22 June 2006] .p.120.

[347] For transport aircraft information see: Roger D. Launius and Betty R. Kennedy, A Revolution in Air Transport: Acquiring the C-141 Starlifter, *Air & Space Power Chronicles*, [accessed 25 January 2006].

numbers of airfields with longer runways; as a consequence, Prestwick and Machrihanish were activated for US reinforcement needs.

The US reinforcement plan required an airlift capability to transport a tactical airborne assault force of four divisions. General Lemnitzer, Chairman JCS, needed these forces in Europe within four weeks. Surprisingly, there were no plans for the air force to have this capability available and an appropriate rebuke was given to the JCS for this major oversight. Procedures were then formulated between CINCEUR and the commanders of the USAF Europe and US Navy Europe for the deployment of an intra-theatre airlift.[348]

This matter arose during the 1960 presidential campaign and Kennedy emphasised the point during his first State of the Union speech in January 1961; a modern airlift capacity, i.e. the concept of flexible response, was now being backed at the highest level. McNamara accelerated the procurement and 284 of the new C-141 Starlifter aircraft were provided by 1968. At the same time there was also greater development in Europe of airfields to support America's changed strategic doctrine. Without the airlift capability, the US could not achieve the NATO requirements; however, the Vietnam War also created a huge operational demand for this capability.

According to McNamara in 1964, 'our capability to airlift tonnage to any part of Europe has almost doubled.' This capacity would triple by 1970 and 11 divisions would be delivered to Europe within 30 days. Logistical supplies were also pre-positioned in Europe. Several hundred aircraft would also be delivered from the US to Europe within

---

[348] Report of Operations and Conditions of Command, 1 July 1958 to 31 March 1959 (U). United States Naval Forces Eastern Atlantic and Mediterranean. FF5-3/5213, Adm. J.L. Holloway, Jr., CINCNELM, to Chief of Naval Operations. Mar. 31, 1959, Secret, Reproduced in *Declassified Documents Reference System*, Document Number: CK3100343363, [accessed 22 February 2006].

three days.[349] Scottish airfields were in an ideal location for this purpose and were regularly used.[350]

The first major reinforcement exercise, REFORGER (Reinforcement of Germany), took place in 1963 and moved 150,000 personnel and associated stores from the US to Germany in 63 hours. At the same time, as a consequence of the Vietnam War, America decided to withdraw almost 30,000 troops from Europe in 1968; however, to reassure their nervous allies, an agreement was also made to practice REFORGER annually.

These advances were driven by the Advanced Research Projects Agency (ARPA) which had been established in 1958 as a response to the shock of Sputnik. ARPA was a unique organisation and reported directly to the Secretary of Defense; its remit of ensuring that the USA led the way with the application of state-of the art technology for military uses, was outwith the standard military R&D structure.[351] Its most noteworthy achievement was the invention of the Internet in 1969, when ARPA researched the problem of command and control after a nuclear attack and developed a communications solution named the ARPANET.

Soviet Threat

The development of the BMEWS and DEW systems was a direct US response to the missile systems being deployed by the Soviet Union. This was a constant and ever-growing threat as the USSR rapidly improved its missile capability from a very poor base in the early 1950s to one of almost parity by the mid-1970s.

---

[349] Document Four: Department of State Airgram enclosing "Secretary McNamara's Remarks to NATO Ministerial Meeting, December 15-17, 1964," 23 December 1964, National Security Archives, [accessed 16 November 2005]: Duke, 1989, p351: Sandars, p.208: REFORGER, Military, *Globalsecurity*, [accessed 22 June 2006].

[350] See Berry.

[351] Internet History, *Birth of the Internet*, [accessed 21 June 2006]: DARPA over the Years, *Defense Advanced Research Projects Agency (DARPA),* [accessed 21 June 2006]: Technology Transition, *DARPA*, pp.76-134, [accessed 22 June 2006].

In 1958, the USSR possessed only R-5M (SS-3 Shyster, 1,200 kilometres range) IRBMs; 48 were deployed after 1957 and there were also long range bombers. The ICBM R-7 (SS-6 Sapwood, 8,000 kilometres range) arrived in 1960 and remained in operational use until 1968, but this was not fully adopted and only 4 were deployed.[352] It was followed in 1961 by the R-16 (SS-7 Saddler, 11,000 kilometres range); 186 were deployed up to 1979. Although these missiles were somewhat primitive in their design and guidance systems, the US nevertheless implemented significant countermeasures such as BMEWS.

The Soviets produced the R-12 (SS-4 Sandal, 2,000 kilometres range) TBM; this was deployed to Cuba, sparking the missile crisis in October 1962; a total of 608 were fully deployed after 1960. Next came the R-14 (SS-5 Skean, 4,500 kilometres) which 'exhibited the maximum potential of a single-stage ballistic missile' according to Podvig; 97 launchers were deployed between 1965 and 1969.

In addition, there were bombers such as the Tupolev Tu-16 (Badger), the mainstay of the strategic bomber forces; this was designed as a high-speed jet bomber for tactical use, with a range of 5,800 kilometres. Large numbers were produced and it was still being flown by the Russian Air Force in 1993. However, the first 'intercontinental' strategic bomber was the M-4 3M (Bison), with its range of 8,100 kilometres: this aircraft came into service in 1958 and 93 were constructed by the end of 1963.

The Tupolev Tu-95 (Bear) was designed to deliver nuclear weapons into continental USA and was a major Soviet strategic advance, but there were only one hundred ever in operational use. The M-4 Molot (Bison) Strategic Bomber had a combat range of 8,000 kilometres, but even after upgrading, less than 60 were built as they could not properly overcome the US air defences.

---

[352] Zaloga, *The Kremlin's Nuclear Sword*, pp.251-73: Podvig, pp.177-398: Miller, pp.407-8: Jeremy Isaacs and Taylor Downing, *Cold War*, (London. Bantam Press, 1998), p.191.

Other missiles were developed and the R-9A (SS-8 Sasin) was operational from 1963 to 1976, but only 23 were deployed. The major development was the orbital ICBM R-36 (SS-9 Scarp, 40,000 kilometres range), with a conventional launch model, range 10,200 kilometres; a total of 268 launchers were deployed between 1965 and 1973. Soviet land-based ICBMs improved with the UR-100 (SS-11 Sego, 11,000 kilometres range) in 1966 and the RT-2 (SS-13 Savage, 9,400 kilometres range) in 1968. The submerged launch threat was upgraded by the R-27 (SSN-6 Serb, 2,700 kilometres range) SLBM; the SSN-8, SLBM, (4,690 kilometres) further increased this threat by 1972.[353] As a result, the Soviet Union could almost claim strategic nuclear parity by 1970 with their versatile range of nuclear weapons and delivery systems.

A summary of Soviet missile development is shown in Table 5 below.

Table 5

Soviet Missiles

Soviet title	NATO title	Range	Type	Year
R-5M	SS-3 Shyster	1,200 kms	IRBM	1958
R-7	SS-6 Sapwood	8,000 kms	ICBM	1960
R-16	SS-7 Saddler	11,000 kms	ICBM	1961
R-12	SS-4 Sandal	2,000 kms	IRBM	1960
R-14	SS-5 Skean	4,500 kms	ICBM	1965
R-9A	SS-8 Sassin	10,000 kms	ICBM	1963
R-36	SS-9 Scarp	10,200 kms	ICBM	1965
UR-100	SS-11 Sego	11,000 kms	ICBM	1966
RT-2	SS-13 Savage	9,400 kms	ICBM	1968
R-27	SSN-6 Serb	2,700 kms	SLBM	1970
R-29	SSN-8 Sawfly	4,690 kms	SLBM	1972

---

[353] *SIPRI 1974*, pp.98-103.

US Activities in Scotland

The logistics required for fighting a conventional war could only come from America and therefore bases, airfields and ports needed to be available in the UK. Scotland had played a peripheral role in the US activities during World War 2, therefore a new structure had to be created.[354] However, less than one per cent of the American forces had been in Scotland because of its geographical remoteness to the efforts in Western Europe. The post-war US requirements, however, propelled Scotland rapidly up the list of most desirable locations for the sprawling network of installations and links that made US policy work on the ground. Soviet strategic development increased the threat and therefore the importance of the Scottish bases.

By 1957 the US had a wide spectrum of military establishments in the UK, including airfields, personnel accommodation, anchorages, port facilities, logistics bases, hospitals, weather observation facilities, military headquarters and navigation stations, as well as army, navy and air live firing ranges.[355] They also possessed an IRBM launch complex, LORAN stations, a naval aviation site at Machrihanish, as well as a variety of essential communications networks.

The original specification for BMEWS included a site in Scotland; this site was proposed for Thurso because of its excellent location and was subsequently fully exploited to serve the needs of US strategic policy.[356]

---

[354] Duke, *United States Military Forces*, pp.368-9, 347-8.

[355] Appendix to Frank C. Nash's White House report on U.S. Overseas Military Bases, Country Studies: Great Britain. Miscellaneous, 1 November 1957. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100288057. [accessed 25 June 2006].

[356] Duke *U.S. defence bases*, p.1:Status of Ballistic Missile Early Warning System (BMEWS) detailed. Miscellaneous. WHITE HOUSE. SECRET. Issue Date: May 21, 1958. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100322103: Status of Ballistic Missile Early Warning System (BMEWS) outlined. DEPARTMENT OF DEFENSE. SECRET. Issue Date: Oct 10, 1958. Reproduced in *Declassified Documents Reference System*. Document Number: CK3100323174: Acting Defense Secretary James H. Douglas' memo to President Eisenhower on progress on the anti-Ballistic Missile Weapons System for three-month period ending 10/15/60, topics include: Ballistic Missile Early

Improved communications were requested by senior American officers in March 1959, to overcome the lack of reserve capacity in naval communications and specifically the shortcomings of the Londonderry station in support of operations in the Norwegian Seas area.[357] The US naval headquarters London had already been integrated into the UK/USAF Air Operations Net to facilitate air operations in the Iceland to Londonderry area. This HQ was also linked to the Admiralty to provide US traffic on the UK net. The scene was set, therefore, for the construction of the US Navy facility at Thurso to improve the communications network. By 1960, communications with submarines were tested by aircraft from Prestwick, another example of good US/UK relations, but without any specific quid pro quo for Britain. [358]

The US Navy communications stations at Thurso and Edzell were involved in providing ground resilience links for the TACAMO and SILK PURSE systems, further evidence of the geographical importance of these Scottish bases to US strategic operations. [359] Little evidence has been uncovered of any significant US/UK consultation on this matter.

Warning System (BMEWS); NIKE-ZEUS Anti-Missile Guided Missile Defense System; ATLAS. DEPARTMENT OF DEFENSE. SECRET. Issue Date: Dec 12, 1960. Reproduced in *Declassified Documents Reference System.* Document Number: CK3100052940, [accessed 14 February 2006]: Thule Air Base Greenland, *Air Force Link*, [accessed 16 June 2006].

[357] Report of Operations and Conditions of Command, 1 July 1958 to 31 March 1959 (U). United States Naval Forces Eastern Atlantic and Mediterranean. FF5-3/5213, Adm. J.L. Holloway, Jr., CINCNELM, to Chief of Naval Operations. Mar. 31, 1959, Secret, Reproduced in *Declassified Documents Reference System*, Document Number: CK3100343363, [accessed 22 February 2006].

[358] FOK.LST 005.2, H A/E 4097/61, Colonel Ole Tob. Mehn-Andersen, to Chief, Air Command North Norway, 20 July 1961. (Forsvarets-Overkommando - FOK. Norwegian Defence High Command), cited in Tamnes, p.111.

[359] Statement of Secretary of Defense Robert S McNamara before the House Subcommittee on Department of Defense Appropriations on the Fiscal Year 1969-73 and 1969 Defense Budget, Secret, 22 January 1968, 00474, 1968/01/22, p.47. *Digital National Security Archives,* [accessed 6 January 2006]: Draft Presidential Memorandum on Strategic Offensive and Defensive Forces, Tentative Record of Decision, 9 January 1969, 00476, 1969/01/09, *Digital National Security Archives*, [accessed 6 May 2006]. pp.17, 32: USSTRATCOM Attack Command and Control System (SCACS) Aircraft Operations, 12-2-1. SCACS Aircraft, Chapter 12. Special Military Flights and Operations, Order 7610.4K, Special Military Operations, Air Traffic Publications, *The Federal Aviation Administration,* [accessed 16 June 2006]: T.C. Jewel1 and J. D. Geist, A Time and Frequency Reference System, [accessed 16 June 2006].

The deployment of the NATO-wide communications network to the UK, as highlighted by Orrick, was not problematic because of the good relationship between the UK and US governments, and it was duly implemented with the Scottish links being integrated in a confidential fashion. [360] . At this stage, the US involved all NATO partners and achieved a swift, operationally-viable outcome, a singular example of unilateral requirement being accomplished in a multilateral fashion. The separate computer information link required for SACEUR was also transmitted via the Scottish stations.[361]

The MEECN system also trained annually in Europe and the Scottish networks were used. Emergency Action Messages (EAMs) from the NAC were transmitted to the SSBNs in the northern waters from Thurso, which was thus accomplishing its primary wartime role. There can be no doubt about the essential nature of these Scottish bases to the US strategic communications requirements.

There were two NARS sites in the UK; one at Mormond Hill, Scotland (Site 44) and Fylingdales Moor, Yorkshire (Site 45) to provide connectivity for the BMEWS site operated by the RAF. The UK sites had been established with little public announcement, yet again demonstrating the 'gentleman's agreement' aspect of the US/UK relationship.

ACE used links in Scotland, including the Shetlands, with a major interconnect site at Mormond Hill; as always, the Anglo-American relationship ensured that these Scottish facilities were quietly provided and rapidly activated. The AUTOVON project had a major presence in Scotland and a line of unmanned sites at Latheron, Inverbervie, Kinnaber, Craigowl Hill, East Lomond, Kirk o' Shotts, Browncarrick Hill and Seargeant

---

[360] PRO, DEFE 25/65, Letter from Peter Thorneycroft, Secretary of State for Defence, to Chief of the Defence Staff, Subject: Use of UK Bases east of Suez by US Forces in War, 7 February 1963, Top Secret – Guard. NATO telegram, to Department of State, Subject: NATO Communications, Challenges and Opportunities, 3 May 1966, Confidential, NATTO A-448, Reproduced in *Declassified Documents Reference System*. Document Number: CK3100051127, [accessed 27 May 2006].

[361] Pearson, *The World Wide Military Command*, p.195.

Law linked this network from the DEW Line to England and Londonderry. The Scottish bases were in the essential category for US strategic communications. [362]

By 1969 the UK Wideband Microwave System (UKMS) was completed and Edzell was linked to Londonderry; there were also another seven Scottish UKMS sites, including Mormond Hill.[363] Edzell's inclusion was an indication that the CRITICOMM network (communications supporting the National SIGINT mission), had been incorporated into this protected network.[364] The relevance and importance of Edzell in this context could not have been clearer.

AUTOVON and ACE HIGH were upgraded in the 1970s using these microwave links, providing secure voice and data capability; Scotland had seven Digital European Backbone (DEB) sites, including West Murkle and Mormond Hill.[365] Campbell has claimed that other Scottish sites were also part of the 'mission-critical' network, but no reliable sources have been found to support this assertion.[366] Regardless, the sites in Scotland were used to broadcast US military communications, with a notable absence of any NATO role; therefore Campbell's claim may probably be accurate.

---

[362] Peter B Mersky, Autovon: The DoD Phone Company, *The Department of the Navy Information Technology Magazine,* [accessed 16 June 2006]: Dr Martin J Fischer et, al. The Circuit Switched Network Design and Analysis Model, *The Telecommunications Review,* p.91. [accessed 20 June 2006].

[363] WNY, NRS/2, 5750, Ser.09, OP Nav Report, 5750-1 (Command History) Thurso, 26 January 1970, cited in Duke 1987.p.148.

[364] Securing Record Communications, The TSEC/KW-26, Center for Cryptologic History, *National Security Agency*, [accessed 19 June 2006] p.8.

[365] Duke, *United States Military Forces*, p.305: Digital European Backbone Complete, *ElectronicSystems Center Public Affairs*, [accessed 3 December 2005]: Source: 5th Signal Command Briefing , Communications in the European Theater, *US Army, Europe,* [accessed 9 May 2006]. NAS, DD12/2518 = P/SLR/11/ZT/9, Letter from Mrs HD Harrison, MOD S13 (d) Air), to Miss JF Nicol, Scottish Development Department, Subject: Service Land Requirements Ministry of Defence (Air Force Department) Safeguarding of Technical Sites, 23 June 1964, Ref: C144250/61/II/S 13d (Air), Unclassified. NAS, AF79/70, Letter from Mrs HD Harrison, MOD, to Miss Nicol, Scottish Development Department, 28th May 1964, AF/A1629/64/S.13d (Air).

[366] Campbell, 1986, p.117.

The microwave system achieved its strategic objective of rendering American military communications completely independent of UK and other national systems. The unstated purpose of this upgrading was to ensure that emergency contact could be guaranteed with the SSBNs in northern waters.[367] This was an excellent example of the USA identifying a strategic requirement, with its Scottish-based SSBNs, and implementing a Scottish communications solution. The USAF also operated a ground-to-air link at Mormond Hill, which was deployed as part of the Apollo space mission network.[368] Scotland's attractiveness as a communications platform was never more apparent. The 1965 JCS report which established the NEACP and NMCS required the technical upgrading of the existing Scottish links at Thurso and Mormond Hill. [369]

The Americans constructed a fully operational communications system for their SSBN fleet, using VLF and ELF; this was centred at Thurso, the main VLF transmitter for Europe. In Scotland, the US naval communications network was totally independent of any UK systems; this ensured that Thurso and relay stations in the north of the country could guarantee links to the SSBNs in the Norwegian Sea patrol areas.[370] The US had insisted on full support from the British government. In addition, there was a group of LF stations to provide resilience for the system, only used for close-to-surface communications, and also the TACAMO aircraft with their ten kilometres trailing antenna. All of these communicated with Thurso.

---

[367] Duke, *United States Military Forces*, p.332.

[368] *Press and Journal*, 14 December 1972.

[369] Memorandum for the Secretary of Defense, from Joint Chiefs of Staff, Subject: Conceptual Approach to the National Military Command System (NMCS) (U), 26 February 1965, Top Secret, Reproduced in *Declassified Documents Reference System*. Document Number: CK3100074559 [accessed 15 May 2006]. Department of Defense cable regarding a uniform system of progressive alert procedures to assure national security, 5 March 1964, Secret, Reproduced in *Declassified Documents Reference System*. Document Number: CK3100138641, [accessed 15 May 2006].

[370] Duke, *United States Military Forces*, pp.332-4: SIPRI Yearbook 1969/70, p.118: Submarine Communications Shore Infrastructure, *Federation of American Scientists,* [accessed 3 June 2006]: Memorandum for the President from the Secretary of Defense, Subject: Defense Department Budget for FY 69 (U), 1 December 1967, Top Secret, Document Number: CK3100138481, [accessed 16 January 2006].

Eight LORAN stations were established, including Scatsta, in Shetland, and Bo and Jan Mayen Island, both in Norway; as with previous base construction, the Shetland base was implemented quietly.[371] By 1969 there were 79 LORAN -A stations in operation and 18 LORAN -C stations, including three stations in Scotland, operated by the USCG. This was another example of Scottish strategic achievement for the USA.

The LORAN-C transmission system was upgraded in the 1970s for use by SSBNs and codenamed Clarinet Pilgrim. It was a vital element of the US strategic package and the Scottish stations at Thurso and Edzell, who had both operated the previous Clarinet Betty system for LORAN-A, were crucial participants..[372] Thurso and Edzell also linked the Transit satellite navigation data to the SSBNs in the northern waters.

Because of the strategic advances achieved by REFORGER, the Pentagon decided to reduce American air presence in the UK (see Chapter 2), and this was announced by General Landon, CINCUSAFEUR, in April 1963. Various USAF bases in the UK were closed down, but this excluded the Scottish airfields, Prestwick and Machrihanish, which had become part of the US logistics chain.[373]

Prestwick and Machrihanish had a long history of military aviation. In Prestwick's case this began in 1917 when the Number 1 School for Aerial Fighting was formed at nearby Ayr Racecourse, and by 1933 Scotland's first female captain, Winifred Drinkwater flew her first service flight from Campbeltown to Prestwick.[374] In 1935 the Scottish College of

---

[371] LORAN-C Introduction, *Hyperbolic Radio Navigation Systems*, [accessed 27 November 2005]: Airworthiness approval of LORAN-C navigation systems for use in the US National Airspace System (NAS) and Alaska, US Department of Transportation Federal Aviation Administration Advisory Circular, *International Loran Association* [accessed 27 November 2005]: Campbell, 1986, p.228-9: All about LORAN-C, US Coast Guard, [accessed 20 June 2006]: Amb. Anderson, to Secretary of State, Subject: Briefing Paper] HAG/CP-2, May 1965, Confidential, Johnson Library, NSF, International Meetings and Travel, NATO Ministerial Meeting, The Hague, May 12-14, 1964. Reproduced in Declassified Documents Reference System.. Document Number: CK3100435940-1, [accessed 19 January 2006].

[372] Technology Transition, *Defense Advanced Research Projects Agency*, [accessed 22 June 2006] .p.120.

[373] Jackson, pp.102-03.

[374] Berry, pp.9-17, 72-6, 139.

Aviation was formed at Prestwick to train RAF pilots; the main personality involved was Squadron Leader the Marquis of Clydesdale, who had been the first person to fly over Mount Everest in 1933. Number 1 Civil Air Navigation School (CANS) was formed in 1938.

Once World War 2 began, Prestwick's location as an all-weather, Atlantic side airfield saw the arrival of various units: merchant navy convoy escort aircraft operated out of the base, an aviation radio school was established and ferry transport flew aircraft to other UK bases. However, the most momentous event happened in 1940, when a ferry flight from Gander, Newfoundland, landed at Prestwick after bad weather closed Aldergrove in Northern Ireland.[375] During the war, almost 5,000 aircraft were delivered over the North Atlantic via Prestwick and more than 37,000 military flights were undertaken through Prestwick. This was a portentous activity in view of Prestwick's later use by the United States.

After the war, Prestwick remained the preferred bad-weather diversion airfield for many civil and military flights and was a staging and maintenance base for USAF aircraft. It was reactivated for USAF use in 1951, when the 1631st Air Base Group (USAF) arrived to support MATS and Prestwick was also given air-sea rescue responsibility for the eastern Atlantic. The site was rapidly re-developed and in May 1952, the 67th Air Rescue Squadron moved in; the following month, Prestwick hosted the completion of the first transatlantic flight by helicopter, when two USAF Sikorsky H-19s arrived from Reykjavik. This helped cement its geographic relevance to US aviation.

Jet fighter aircraft in transit to Europe parked at Prestwick and during Exercise Big Lift in 1961, more than 40 transport aircraft arrived: the US Navy also used Prestwick for early warning operations, ASW surveillance and other missions. Scotland was now playing a full, operational part in delivering American strategic policy. There were no local problems to be overcome and no strains on the Anglo-American relationship as a result.

---

[375] Jackson, pp.31-2, 43, 177.

Shortly after the Cuban missile crisis, the Soviet deputy premier Mr Mikoyan arrived at Prestwick en route for Havana, highlighting the bizarre situation of a senior Soviet minister using an American strategic overseas base during a period of international tension.[376] The change over of FBM crews for the Holy Loch base also took place at Prestwick (see Chapter Three), and a Courier Transfer Station was opened in January 1963 to facilitate the daily movement of SIGINT data from Edzell to Washington DC (see Chapter Two).[377] International diplomacy, nuclear response and intelligence activities were now regular US strategic activities at Prestwick.

In 1965, the 1267th Airways and Communications Service (AACS) Squadron MATS arrived to handle the transit requirement to move US military personnel to Europe.[378] The1602nd Air Transport Wing arrived to support 1631st Air Base Group, and also deployed were detachments of 18th Weather Squadron and 3rd Postal Squadron. In addition, Prestwick was regularly used by other units from MATS/MAC, e.g. 420th Air Refuelling Squadron, 1370th Photo Mapping Wing, as well as occasionally hosting aircraft involved with Distant Airborne Early Warning and other operations.

Later that year, the 67th Air Rescue Squadron left Prestwick and moved to Moron AFB in Spain, as most of the sea traffic from the USA was heading through the sea waters controllable from. [379] Prestwick was then run down by the USAF, and in 1970 became *HMS Gannet*, a Royal Navy ASW base, which had been given responsibility for ASW defence of the Clyde area. However, the transit of the Blue/Gold crews was still carried out at Prestwick until 1992.

---

[376] 'Mikoyan's Call at Prestwick', *Glasgow Herald*, 2 November 1962

[377] Coletta and Bauer, p.105.

[378] Berry, p.76: 18th Weather Squadron Unit History, Simmons Weather, *Fort Bragg*, [accessed 1 June 2006].

[379] Coletta and Bauer, 1985, p.278-80: Berry, p.83: HMS Gannet, History, *Royal Navy*, [accessed 14 June 2006].

A summary of the US units deployed to Prestwick during the research period is set out in Table 6 below.

Table 6

USAF Units Based at Prestwick 1951-1970

Unit	Dates	Activities
1631st Air Base Group	1951-1970	Support of MATS; Changeover of SSBN crews 1961-1992
67th Air Rescue Squadron	1952-1965	Responsible for Eastern Atlantic.
Courier Transfer Station, 6321st Air Base Group	1963-1970	Under command CO Edzell.
1267th Airways & Communications Service Squadron MATS	1965-1970	Terminal operators to move US servicemen to Europe.
1602nd Air Transport Wing	1965-1970	Support for 1631st Air Base Group.
18th Weather Squadron	1966-1970	Weather reconnaissance
3rd Postal Squadron	1966-1970	Postal duties.

The Clyde area was considered suitable for the construction of additional US airfields at Machrihanish and Stornoway in September 1959; atomic weapons stockpile facilities were also authorised for these sites.[380] All of the facilities in the Clyde area, including ammunition and oil storage depots, Machrihanish airfield and associated communications sites were assigned to SACEUR for wartime use. This was another sign of the importance of Scottish operational facilities as forward bases, especially at a safe distance from the USA. [381]

In 1906 Professor Fessenden, inventor of the echo sounder, built a 150-metre tall radio mast at Machrihanish and achieved the first radio voice transmission across the Atlantic, between Britain and the USA, Campbeltown airfield was expanded during World War 2 and became one of the three busiest airfields in the UK because of its strategically important location as the nearest landfall for the Atlantic naval convoys.[382] This strategic importance caused the US to request an upgrading of the airfield in the 1960s. This was achieved, despite opposition by the Duke of Argyll to the loss of some acres of one of his nearby farms.[383] Once again, the American strategic interests had been comfortably accommodated without local difficulties or relationship strain.

---

[380] *Declassified Documents Reference System*, Document Number: CK3100343363. Also; Appendix to Document Number: CK3100288057, *Declassified Documents Reference System*. [accessed 23 December 2006].

[381] NAS, DD12/3064=P/SLR/10/AL/18/1, Urgent Telex from Ronayne, Admiralty, to Gillett, Room 505, Subject: Machrihanish-Brief for Lord Forces' Visit to Campbeltown on 4th May 1959, dated 30 April 1959.

[382] Alastair Jamieson, World War View, Heritage & Culture, *Scotsman.com*, [accessed 14 November 2005]: Radio Machrihanish, *The Irish Era*, [accessed 25 November 2005]: President pays tribute to Fessenden, *Campbeltown Courier & Advertiser*, 26 January 2007.

[383] For the full correspondence see: NAS, DD12/3064=P/SLR/10/AL/18/1, Letter from Chief Surveyor of Lands, Civil Engineer-in-Chief's Department, Admiralty, to Secretary, Department of Health for Scotland, Subject: Notice of Proposed Acquisition of Land by Admiralty, 17 January 1958, 5030/2678/116a, Confidential Enclosure. Also: 'NATO Base for Kintyre, Machrihanish Airfield runway to be extended', *Scotsman*, 28 April 1959; 'NATO Air Base in Kintyre', *Glasgow Herald*, 28 April 1959: NAS, DD12/3064=P/SLR/10/AL/18/1, Urgent Telex from Ronayne, Admiralty, to Gillett, Room 505, Subject: Machrihanish-Brief for Lord Forces' Visit to Campbeltown on 4th May 1959, dated 30 April 1959: NAS, DD12/3064=P/SLR/10/AL/18/1, Letter from Lord Selkirk, First Lord of the Admiralty, to Duke of Argyll, 18 November 1958, Unclassified.

When the development project began in January 1959, the Scottish Office indulged in the customary subterfuge, claiming that it was not an 'active airfield' and would 'only be put to very occasional use for defence exercises for short periods in peace time.'[384] In March 1962, a huge NATO fuel depot was constructed. The RAF announced that they would be deploying nuclear depth charges to a stockpile in Scotland before September 1963; the only site that could take these was Machrihanish, as suitable bunkers had recently been constructed. This action was definitely a strategic requirement from the USA as the UK did not possess its own nuclear depth charges and remained a matter of considerable speculation regarding the presence of undisclosed US nuclear weapons in Scotland. However, the research has been able to arrive at a positive conclusion to this mystery.

A storage area was provided at Machrihanish for storing nuclear depth charges for use by the US Navy and the RAF in wartime; no documentary evidence has been discovered that these weapons were ever stored on the base, although anti-submarine torpedoes were stored on site.[385] Serving RAF personnel believe this to have been the case.

In mid-1967, US naval personnel for a Mobile Mine Assembly Unit arrived at Machrihanish. They were joined by a detachment from the Explosives Ordnance Disposal (EOD) Group, US Atlantic Fleet. The base was commissioned on 7 March 1968 as US Naval Aviation Weapons Facility Machrihanish, with a mission to 'receive, store, maintain, issue and tranship classified weapons in support of the US Navy and NATO operations,' and placed under the command of CINCLANT. [386]

---

[384] NAS, DD12/3064=P/SLR/10/AL/18/1, Letter from JM Foster, Department of Health for Scotland, to JAM Mitchell and others, including the Scottish Information Office, Subject: NATO Facilities Clyde Area, 12 February 1959, OL3/505/6/238b, Secret: NAS, DD12/3064=P/SLR/10/AL/18/1, Urgent Telex from Ronayne, Admiralty, to Gillett, Room 505, Subject: Machrihanish-Brief for Lord Forces' Visit to Campbeltown on 4th May 1959, dated 30 April 1959. Also; '£2m. NATO Base for Scotland', *Glasgow Herald*, 17 March 1962: 'Nuclear Depth Charges: New Weapons for Coastal Command', *Glasgow Herald*, 2 April 1962.

[385] Interview with former RAF armourer inspection officer on 30 June 2006.

[386] Duke, *U.S. defence bases*, pp.148-9.

US Marines were deployed to the base in January 1974, to provide physical security; the British government agreed that this activity should be treated in a low-key fashion, with little publicity, other than informing the local Member of Parliament. Lord Carrington, Defence Secretary, described it as a 're-deployment of US forces' after the end of the Vietnam War, who would relieve American sailors who had been 'misemployed hitherto on this work.'[387]

This was disingenuous as the US Marine Corps had primary responsibility for the security of all US Navy nuclear weapons; it has been stated that the Marine detachment here had one primary function, namely 'nuclear weapons security.' Therefore, it is probable that they carried out this mission; if this was not so, there seems to be little reason for replacing the US naval personnel and keeping quiet about it. Further strength is given to this theory by local residents who recall that US servicemen never appeared in the local court, but were always moved to the USA from local police custody.[388] Another theory is that any nuclear munitions stored at Machrihanish were for use by RAF Nimrods; the US Navy was known to store such items at St Mawgan, Cornwall, for a similar task for the RAF.[389]

The specific role of USAF Machrihanish is still classified, but it would appear that it had a direct task of servicing nuclear armaments, giving credence to the belief that nuclear armaments were stored on the base. Otherwise, there would have been no reason for the presence of the USMC and EOD nuclear specialist units. [390]

---

[387] PRO, Memorandum from Lord Carrington, Secretary of Sate for defence, to Lord Home, Foreign and Commonwealth Secretary, Subject: US Armed Forces in the UK, 3rd January 1974, AMU 10/2, FCO 82/457, MO 14/2, Secret. Note: Lord Carrington was Secretary of State for Defence 1970-74, Foreign Secretary 1979-82 and NATO Secretary-General 1984-88: The Bulldog, Issue 5 Spring 2005, Scottish Edition, *www.mcl-london-uk.org,* [accessed 2 February 2006].

[388] Interviews with two Campbeltown residents on 27 May 2006.

[389] Interview with former RAF armourer inspection officer on 30 June 2006.

[390] Duke, *U.S. defence bases*, pp.148-9.

The agreement for deployment of these ASW nuclear weapons was made between President Johnson and Prime Minister Wilson in 1965 and formed part of the long-standing consultation procedures dating from 1952; this situation was reiterated in 1970 by the Secretary of State Rogers, to Prime Minister Heath. [391]

This US involvement produced the longest runway in Western Europe (3,049 metres) to enable Machrihanish to receive large transport aircraft from the USA.[392] The base was regularly used by RAF Vulcan bombers (the UK's airborne nuclear delivery force) and also by US Navy P-3 Orion ASW patrol aircraft (which carried nuclear ASW weapons). Machrihanish moved into an important position for American strategic reinforcement and ASW activities.

In 1971 the JCS assessed that the USSR could plan for a conventional air attack on the UK and use chemical weapons. Dual-purpose airfields, e.g. Prestwick and Machrihanish, were vulnerable, along with conventional naval locations. A NATO programme of hardening of airfields against missile attacks was also implemented.[393]

---

[391] State Department telegram from Secretary of State to American Embassy London, Subject: Nuclear Consultation with the British, 15 December 1970, State 203272, Top Secret; 'The following letter from President Nixon should be transmitted urgently to Prime Minister Heath prior to his departure for the US.' *Digital National Security Archives*, [accessed 10 April 2006].

[392] WNY, Ser. 102-69, Command History: Machrihanish, 7 February 1969, p.213, cited in Duke *U.S. defence bases*.p.148: *Air Force Special Operations Command*, [accessed 19December 2005].

[393] Letter from JE Jackson to Mr Thomson, Subject: The implications of the conventional threat to the UK's reinforcement, air strike and defence capabilities, 2 April 1974, Secret covering Top Secret UK Eyes A,

A summary of the US units deployed to Machrihanish is set out in Table 7 below.

Table 7

US Naval Aviation Weapons Facility Campbeltown Units

Unit	Dates	Remarks
Mobile Mine Assembly Unit	1967-1996	Assembly team for nuclear depth charges.
Detachment Explosives Ordnance Disposal Group, 6th US Fleet.	1968-1996	Servicing nuclear armaments.
Detachment USMC	1974-1996	Security protection for US Navy nuclear weapons.

Amusingly, the development of the US naval munitions depot at Glen Douglas, Loch Long, was beset with a non-military problem, when it became embroiled in a parochial dispute with the intransigent Scottish Office over ownership of a flock of sheep.[394] Despite a personal plea from the Civil Lord of the Admiralty, that his mission was to 'run ships, not sheep', the saga lasted more than 20 months before the construction could commence. As well as Royal Navy munitions, Glen Douglas stored the munitions

---

[394] NAS, AF79/70, Letter from Graham-Campbell, Forestry Commission Scotland, to J Walker, Department of Agriculture for Scotland, Subject: Craggan farm (Part) Glen Douglas, Dunbartonshire, 8 May 1956, 108680/L/SLR/AD/GD/S, 229/25, Unclassified: Letter from Ian Orr-Ewing MP, Civil Lord of the Admiralty, to Gilmour Leburn MP, Department of Agriculture, 2 December 1959; letter from Gilmour Leburn MP, Department of Agriculture, to Ian Orr-Ewing MP, Civil Lord of the Admiralty, 15th December 1959. Also; Interview with former RAF armourer inspection officer on 30 June 2006.

requirement for a Marine Expeditionary Force. This was yet another important front line addition in Scotland to US strategic capabilities.

Conclusion

There has been plenty of good source material available for this chapter, although several areas are still not yet declassified. It has however been difficult to obtain much detailed information of the individual communications sites from UK sources, which is surprising as all would have been required to be submitted to local authority planning processes. This may be explained by the probability that their requirements were piggybacked on to existing run-of-the-mill UK applications.

To support their strategic aims, the US needed to install a full network of support services for their overseas activities. They had originally done this during World War 2 and the UK had been the principal overseas location. However, less than one per cent of the American forces had been in Scotland because of its geographical remoteness to the military efforts in Western Europe. The post-war US requirements, however, propelled Scotland rapidly up the list of most desirable locations for the network of installations and links that made US policy work on the ground.

This was completely due to its geographical significance, i.e. in military parlance it was 'vital ground.' In all military operations, there is some ground which is designated as vital ground; it is a formal term and simply means that whichever side is able to dominate the vital ground will have a major strategic/tactical advantage. Throughout military, including naval, history, the battle for vital ground had been the aim of every campaign and battle. Its possession is the imperative for commanders and therefore Scotland's geography placed it in this category during this period.

During the 1960s and 1970s, there was a rapid upgrading of the American presence in Europe; the command and control infrastructure was improved with better links to Washington. There was a separate US communications network which ensured that the

NCA would always be able to exercise control over the major US strategic functions in any European-based conflict. This was accomplished in a unilateral fashion by the USA, without any real close inspection as radio relay stations were trivial matters when considered against Polaris-carrying submarines..

All aspects of the US military infrastructure were enhanced, especially the links to the strategic nuclear forces. There were better ship-to-shore communications and greater navigational facilities, principally based in the northern Atlantic area. The Scottish bases had an important role in this structure, particularly those at Thurso and in the Shetlands. It became obvious that Europe's role in US strategy was to be a 'fire break' to detain the Warsaw Pact forces and provide time for American reinforcements to be delivered in time of need; the upgrading of facilities at Prestwick and Machrihanish bear testimony to this strategy. This major refurbishment of the US military profile was accomplished with little objection from the UK, as befitting the junior partner in the 'special relationship.'

The United States amended its strategic policy during this period, in most cases as a result of its own requirements; these changes were fully implemented at communications and logistics bases in Scotland, emphasising that Scotland was vital in the overall American strategic scenario.

The evidence in this chapter shows that the Anglo-American relationship was not damaged by the American use of Scottish bases for strategic purposes; the bases also enabled the US to fully deliver the strategic matters requiring such bases in Scotland. There is little evidence that there was any NATO involvement in any of these above activities. On the other hand, there were definitely no local problems that affected the US strategic purpose of the bases in Scottish locations.

CHAPTER SIX

CONCLUSION

This research has been possible because of the wide range of sources identified and examined for the various topics. Many of these sources provide excellent material from extremely reliable sources. However, the sources are not a complete list and have many omissions, particularly with regards to detailed operational orders and mission statements. All matters regarding national security have long declassification procedures and this has been the single fact which has limited the statement of various points. In conjunction, the intelligence gathering community holds fast to a lifetime secrecy code and this has hampered this particular topic.

Taken together, there is sufficient source material available to clearly state some conclusions and make supported statements regarding other matters. More research is needed in many instances to uncover better material for those weaker areas.

- Why were the Americans present in Scotland during this period in such strength?
- What were they doing there?
- How did this change over time?
- How does this study of policy implementation help us to understand the American motives?

The Americans were present at Kirknewton, Edzell and Thurso as part of their worldwide intelligence gathering requirements. Despite the strict secrecy regime surrounding such activities, there is sufficient evidence from the research to safely conclude that these bases were key players in the European zone of this operation. [395] Although such constraints have necessarily restricted the available information, the US presence and activities at these bases has been established. Over time, the only changes at Edzell and

---

[395] SECNAVINST 5212.SD, 22 April 1998, Chapter 2, Telecommunications Records, pp III-2-1 to III-2-24. *Navy Directives* ,[accessed 3 March 2006].

Thurso were the upgrading of facilities and greater integration into overall US strategic operations.

All of the US actions and decisions were driven by American requirements, which were integrated into the overall defence of Western Europe. The Soviet Navy's biggest fleet, with all its SSBNs, was being assembled in northern waters throughout the 1950s and 1960s and therefore the US needed to upgrade its presence at Edzell and Thurso to assist its ASW strategy.

The US Navy was present at Holy Loch as part of the US strategic policy of second-strike capability; their sole purpose was to provide the USA with the guarantee of a second-strike and therefore ensure balance in the Cold War strategic equation. Holy Loch was required because of the forward defence implications of both US strategy and the limited range of the missiles. It was able to use Holy Loch because of the strength of the US/UK special relationship, but also because of the military benefits that the UK was able to accomplish by agreement.

However, it was predicated on a completely American unilateral position regarding the UK and the USSR; American policy required these facilities and they obtained them. It was strategically essential to the USA, having a most potent deterrent force at a location as close to the enemy as possible and as far away from their own shores as they could contrive. As one American sailor said about Holy Loch, 'Imagine handling nuclear weapons in a residential neighborhood (sic)! Some of the Scots' complaints about us were justified. Would you allow that in your neighborhood (sic)?' [396]

The FBM fleet achieved its strategic purpose during the Cuban Crisis and the only changes were in the upgrading of the Polaris missile, the introduction of Poseidon and the berthing of more submarines at Holy Loch than previously agreed. Holy Loch was the iconic example of the importance of Scotland to the USA for its strategic nuclear policy.

---

[396] Sub Bases: Holy Loch Scotland, *Tender Tale*, [accessed 19 August 2005].

The available evidence shows no damage to the 'Special Relationship' from US operations at the Holy Loch. The UK government recognised reality and agreed to all US requests. This pliability meant that the US Navy was able to execute its strategic mission from Scotland. The US actions at Holy Loch were not

The American use of Scottish facilities in their ASW operations during this period was an integral part of their overall strategic activity. However, it needs to be borne in mind that these activities were also aimed at the protection of Western Europe and therefore the exploitation of Scotland's strategic geographical location would have been part of any NATO operational plan. The Scottish bases at Thurso, Edzell and Holy Loch were fully involved in this plan. The accompanying official policy of misinformation was a natural consequence of such a high value defence operation.

The upgrading of various pieces of equipment and increases in manning levels at the bases were also consistent with the prime task involved. In general terms, it was a repeat of Scotland's one strategic function of World War 2, namely anti-submarine warfare, as its geography was still pertinent and military vital ground. The American motives were the same as from that period.

The Americans had a wide range of smaller facilities in Scotland to enable them to provide the full support and logistics network for their strategic plans for the defence of Western Europe. However, the principal aim of these facilities was in the defence of mainland USA from Soviet missiles crossing the polar zone. The airfields at Prestwick and Machrihanish both played a significant role in both reinforcement plans and ASW requirements; Machrihanish probably contained nuclear ASW munitions and was therefore a significant UK location as the only other known ASW storage facility was at St Mawgan.

Scotland occupied vital ground both from strategic operational perspective and also from a logistical viewpoint. The upgrading of American communications systems throughout the period meant that there was constant activity on the various Scottish sites, both

manned and unmanned. The American motives were simply to ensure that they could participate fully in the defence of Western Europe, while at the same time reducing costs to the USA, as demanded incessantly by the US Congress.

Machrihanish is the only American base that still operates as a US facility, although this is very limited and infrequent. It has been used regularly since its official closure in 1998 for various specialist aircraft trials, because of its very long runway; these aircraft have ranged from top secret spy planes to new heavy lift aircraft. It is also used for annual exercises by major USAF logistics units. However, the reason behind these activations is the remoteness of the airfield from any main centres of population; on one side is the Atlantic Ocean and the nearest large inhabited area is almost 200 kilometres away in Glasgow. In this aspect at least it could be claimed that Scotland still has a geographical uniqueness for the American forces.

It needs to be remembered that the overall focus of the research is US strategic policy during the period and therefore documentation regarding its implementation in Scotland is scarce. This identifies an area of research that needs to be undertaken to provide a much more definitive appraisal of US activities in Scotland at this time.

Without doubt, Scotland was an important place for US strategic operations during the period 1953-1974. Its geographic position meant that it had great saliency. During the Second World War, Scotland had only housed about one per cent of the entire American forces who passed through Britain; it was not geographically relevant as the war was some distance away. The situation changed with the Cold War and Scotland became a central piece of the US strategic solution: it was vital ground for the operations required in the Northern Seas, reinforcement locations and communications facilities.

These facts rebut Duncan Campbell's claim that American bases were in the UK mainly for political reasons; Scotland was sought out by the US Navy for essential facilities and this was the case throughout the research period. However, the facts also show that there were political advantages in having Scottish bases, as this enabled the US to keep a tight

rein on the UK's strategic, and especially nuclear, intentions. The Scottish bases undoubtedly provided sound military advantages for the USA, and by extension NATO, as they were and important part of the vital ground which governs all military actions.

This was the reason for having bases in Scotland; it was because of the geographic importance in relation to the military technology currently available. It was a very good fit and has been shown by the research sources to have worked well throughout the period. Other countries had been chosen for US military bases through occupation after World War 2 (Japan and West Germany) and others because of economic and political reasons (Cold War politics): this was certainly not the case for Scotland. It was vital ground as previously explained and Scotland was geographically vital, but its use was eased by political amity between the two governments. Once its usefulness as vital ground had diminished in the 1980s onwards, Scotland was gradually abandoned by the USA.

In the final analysis, the answers to the research questions have been established. Why were the Americans present in Scotland during this period in such strength? The research has shown that the United States chose to have bases in Scotland during this period of the Cold War because of its excellent geographic location. There was no other reason for the choice of Holy Loch, Edzell, Thurso, Prestwick and Machrihanish. The matter needs more detailed research, perhaps along the lines of eventually finding operational information regarding submarines, intelligence gathering, communications, and nuclear weapons storage.

What were they doing there? The USA introduced the SSBN to the Atlantic in 1961 and this strategic tool operated at all times in full accordance with its plan, especially during the Cuban missile crisis. The build up of intelligence gathering, submarine communications, logistics, navigation equipment and command and control communications all occurred at the rate of increase that had been planned. The Scottish bases were essential to these matters. The USA employed a unilateralist approach, but they were acting in defence of Europe as well as themselves.

How did this change over time? Was American strategic policy a unilateral activity driven by the centrality of technical military issues? Was it an effort to reach a state of balance with the Soviet Union, or was it a unilateral American process that would have been enforced in any case? Was the United States able to use its Scottish facilities in line with the unilateral changes it had made to its strategic defence policy? The evidence examined during the research can only provide a positive reply on this matter.

How does this study of policy implementation help us to understand the American motives? America's main concern was that all nuclear launches would be controlled by the US president. They attempted some multilateral camouflage, such as the NATO multilateral force (MLF), which was unacceptable to Britain and France, but led to the creation of the NATO Nuclear Planning Group (NPG) in 1968.[397] The two reasons for US overseas bases were 'to provide support for forward forces engaged in war and to support American foreign policy worldwide.' [398] In 1943 the Joint Chiefs of Staff (JCS) stated that American overseas bases were 'essential', and by 1970 there was 'little initiative' by the Americans to discard any bases. The American motives remained constant throughout the period.

---

[397] Miller, pp.116-7: Freedman, *Nuclear Strategy*, pp.311-3.

[398] Coletta and Bauer, p.xvii; and, R Harkavy, *Great Power Competition for Overseas Bases*, (Oxford; Pergammon, 1982), pp.6 & 16.

BIBLIOGRAPHY

MANUSCRIPT SOURCES

National Archives College Park.
      Records of the Joint Chiefs of Staff, US (1941-78), RG 218
      General Records of the Department of State, RG 59
      Defense, Office of the Secretary of (1921-94), RG 330
      Defense Intelligence Agency (1920-84), RG 373
      White House Office (1814-1977), RG 130

National Archives UK.
      DEFE 25 Ministry of Defence: Chief of Defence Staff:
      FCO 82 Foreign and Commonwealth Office: North America Department:
      FO 371 Foreign Office: Political Departments: General Correspondence from 1906-1966
      DEFE 24 Ministry of Defence: Defence Secretariat Branches and their Predecessors: POLARIS, POSEIDON and Holy Loch
      DEFE 13 Ministry of Defence: Private Office: US Naval bases in UK: Holy Loch

National Archives of Scotland.
      AF79/70 Acquisition of Land by the Forestry Commission, 1956-1967
      DD6/3298 Housing Needs, 1968-1974
      DD9/281 Nuclear Ships: Holy Loch, Polaris Submarine Base, 1961-1967
      DD12/2518 Services Land Requirements: Safeguarding of Air Ministry Technical Sites, 1954-1964
      DD12/3064 Services Land Requirements, 1958-1959
      DD12/3075 Services Land Requirements, 1961-1975
      DD12/3076 Services Land Requirements, 1960-1975
      HH56/76 Nuclear Submarine Bases, 1961-1966
      SEP4/2692 Investigation of Sites for Individual Firms, 1963-1967

PRINTED PRIMARY SOURCES

Foreign Relations of the United States:

Kennedy Administration:
      Volume V, Soviet Union
      Volume VI, Kennedy-Khrushchev Exchanges
      Volume VII, Arms Control and Disarmament
      Volume VIII, National Security Policy
      Volume IX, Foreign Economic Policy
      Volume XI, Cuban Missile Crisis and Aftermath
      Volume XIII, Western Europe and Canada

Volume XIV, Berlin Crisis, 1961-1962
Volume XV, Berlin Crisis, 1962-1963

Johnson Administration:
Volume X, National Security Policy
Volume XI, Arms Control and Disarmament
Volume XII, Western Europe
Volume XIII, Western Europe Region
Volume XIV, Soviet Union
Volume XV, Germany and Berlin
Volume XIX, Arab-Israeli Crisis and War, 1967
Volume XX, Arab-Israeli Dispute, 1967-68
Volume XXXIII, Organization and Management of Foreign Policy; United Nations

ONLINE PRIMARY SOURCES

About the North Atlantic Radio System   http://nars.westgeorgia.org.
Air Combat Command   www.acc.af.mil/
- HQ ACC/A7 Installations and Mission Support, Navy Installations Associated With the Navy's Cold War Guided Missile Program , A-6.

Air Force Link   www.af.mil.
- Thule Air Base Greenland,
- E-4B,

Air Force Special Operations Command   www2.afsoc.af.mil
Air Intelligence Agency   http://aia.lackland.af.mil.
- History Perspective

Air & Space Power Chronicles   www.airpower.maxwell.af.mil.
- Roger D. Launius and Betty R. Kennedy, A Revolution in Air Transport: Acquiring the C-141 Starlifter

Air University Review   www.airpower.maxwell.af.mil.
Autovon,   http://massis.lcs.mit.edu.
Bell System Memorial   www.bellsystemmemorial.com.
- AUTOVON - History and description

Birth of the Internet   http://smithsonian.yahoo.com.
Campaign and Service Awards   www.tioh.hqda.pentagon.mil
- Chapter 4, Campaign and Service Awards, 4-28, SECNAVINST 1650.1G,

CIA   https://www.**cia**.gov/
- CIA Press Release 11 July 1995,

Cold War   http://coldwar-c4i.net.
- Naval Security Group History.
- Defense Communications Agency Memorandum to Secretary of Defense, Subject: Communications Facilities at National Level, 1 March 1961, Secret, A Secret Landscape, The Cold War Infrastructure of the Nation's Capital.

- Justification of the Radio Relay System from Alternate Joint Communications Center to the Washington Area, 1951, The AJCC Microwave Network;
- The Mount Weather Emergency Operations Center, Bluemont, VA,
- Al Grobmeier, 'End of an Era, USN CDAAs'.

Columbia Amateur Radio Association www.neca.com.
- Wullenweber/CDDA Antenna Homepage.

Declassified Documents Reference System www.gale.cengage.com
- Glasgow University no longer has access to this site and therefore the relevant information is not available.

Defense Advanced Research Projects Agency www.darpa.mil.
- DARPA over the Years,
- Technology Transition.

Defense Intelligence Agency www.dia.mil/history.
- Organization Relationship of DIA and the JCS/J2, Defense Intelligence Agency, DoD Directive 5105.21.

Department of Defense www.dod.mil/comptroller/defbudget
- Exhibit R-2, RDT&E Budget Item Justification, February 2004, Appropriation/ Budget Activity RDT&E, Defense-Wide/07, R-1 Item Nomenclature: Minimum Essential Emergency Communications Network (MEECN), PE 0303131K.p.1.

Department of Defense and WHS Online www.west.dtic.mil/whs.
- Department of Defense Directive Number 5100.30, 2 December 1971.

Department of the Navy Information Technology Magazine, www.chips.navy.mil.
- Mersky.

Department of the Navy Issuances http://doni.daps.dla.mil.
- OPNAV NOTICE 5450, Ser DNS-33/5U838417, From Chief of Naval Operations, Unclassified, 27 October 2005, '…designed to divest NAVSECGRU of Classic Wizard front end mission sites.'

Department of the Army www.army.mil/
- Notification Procedures for Emergency action Messages, Emergency Employment of Army and other Resources, OSC Regulation 500-4, 9 February 2001.

Designation-Systems www.designation-systems.net.

Digital National Security Archives www.gwu.edu/~nsarchiv.
- Electronic Briefing Books:
  Europe.
  Nuclear History.
  US Intelligence.

Electric and Magnetic Fields www.emfs.info

ElectronicSystems Center Public Affairs http://esc.hanscom.af.mil.
- Digital European Backbone Complete.

Eurofix www.eurofix.tudelft.nl
- Loran-C, Delft University of Technology.

Federation of American Scientists (FAS) www.fas.org
- History of the Naval Security Group.
- Surveillance.

- The SOund SUrveillance System (SOSUS) provides deep-water long-range detection capability.
- Integrated Undersea Surveillance System (IUSS).
- Extremely Low Frequency Communications Program.
- Submarine Communications Shore Infrastructure.

Federal Aviation Administration   www.faa.gov.

- USSTRATCOM Attack Command and Control System (SCACS) Aircraft Operations, 12-2-1. SCACS Aircraft, Chapter 12. Special Military Flights and Operations, Order 7610.4K, Special Military Operations, Air Traffic Publications.
- Order 7610.4K, Special Military Operations, Night Watch, Special Military Flights and Operations, Air Traffic Publications, Effective Date: 19 February 2004.

Fort Bragg   www.bragg.army.mil

- 18th Weather Squadron Unit History, Simmons Weather,

GCHQ   www.gchq.gov.uk

- ULTRA:

Globalsecurity   www.globalsecurity.org

- Weapons of Mass Destruction (WMD).
- REFORGER, Military.
- Site-R Raven Rock, Alternate Joint Communications Center (AJCC),
- Weapons of Mass Destruction.

Google Books   http://books.google.com.
Government Accountability Office   http://redbook.gao.gov
Headquarters Air Combat Command   www.cevp.com/docs/ColdWar.
HF Active Auroral Research Program University of Phoenix   www.angelfire.com
Holy Loch, Scotland at Work   www.geocities.com/Pentagon/3499.
Hyperbolic Radio Navigation Systems   www.jproc.ca.
Hyperbolic Radio Navigation Systems   jproc.ca/hyperbolic

- LORAN-C Introduction
- CFS Masset,

International Loran Association   www.loran.org.

- Airworthiness approval of LORAN-C navigation systems for use in the US National Airspace System (NAS) and Alaska, US Department of Transportation Federal Aviation Administration Advisory Circular.

Joint Interoperability Test Command,   http://jitc.fhu.disa.mil/it/
JSTOR   www.jstor.org

- Rasmussen J and McCormick JM, British, Misperceptions of the Anglo-American Relationship, Political Science Quarterly, Volume 108, No. 3, (Autumn 1993), pp.515-541.

National Security Agency (NSA)   www.nsa.gov.

- 50th Anniversary Brochure
- The Venona Story, Origins of the NSA

National Security Archives,   http://nsarchive.chadwyck.com/nsa.

- Cold War Project, Interview with Robert McNamara.
- CIA Foreign Missile and Space Analysis Centre.

- Memorandum from Joseph Charyk, Director NRO, Organisation and functions of the NRO, Top Secret, 23 July 1962.
- Analysis of "A $1.5 Billion Secret in Sky" Washington Post, 9 December 1973.
- Memorandum of Agreement concerning NSA Participation in the (S) National Reconnaissance Office. Top Secret, 1 August 1962.
- Cost Reduction Program, FY 1966 - FY 1967, Central Intelligence Agency, 1 September 1965. DDI-3077-65.
- Organisation and Management of the US Foreign Intelligence Community.,
- "Project Clear Sky," 6 February 1964
- Document Four: Department of State Airgram enclosing "Secretary McNamara's Remarks to NATO Ministerial Meeting, December 15-17, 1964," 23 December 1964.

National Security Agency   www.nsa.gov
- Securing Record Communications, The TSEC/KW-26, Center for Cryptologic History.

NATO and the Warsaw Pact   www.isn.ethz.ch/php.
Naval Mobile Construction Battalions   www.seabee.navy.mil.
NSC   www.whitehouse.gov/nsc/
- Long-Range Nuclear Forces.

NATO   www.nato.int
- NATO Ministerial Communiqué Athens 4th-6th May 1962.
- 50 Years of Infrastructure; NATO Security Investment Programme, NATO, 2001.

Naval War College Press,   www.nwc.navy.mil.
- Lyle J Goldstein and Yuri M Zhukov, 'A Tale of Two Fleets: A Russian Perspective on the 1973 Naval Standoff in the Mediterranean', Naval War College Review, Spring 2004, Vol LVII, No 2,

Navy Directives   http://neds.daps.dla.mil/Directives.
- SECNAVINST 5212.SD, 22 April 1998, Chapter 2, Telecommunications Records, pp III-2-1 to III-2-24.

Navy CT/SECGRU   www.navycthistory.com
Parallel History Project   www.php.isn.ethz.ch
- Beatrice Heuser: NATO and the Warsaw Pact.

Policy Review   http://policyreview.org.
- Robin Harris, 'The State of the Special Relationship',

Richard Kimber's Political Science Resources,   www.psr.keele.ac.uk.
- UK General Election Results October 1964,

Rota Base   *www rota.navy.mil;.*
Royal Navy   www.royal-navy.mod.uk
- HMS Gannet, History.

Scotsman.com   http://heritage.scotsman.com
- Alastair Jamieson, World War View, Heritage & Culture.

SCOPE Command   www.militarycomms.tripod.com/scope_command/
- DISA, JITC Networks, Transmissions and Intelligence Division High Frequency Test Facility.

Tender Tale   www.mississippi.net.
- USS Hunley (AS 31).
- Submarine Tenders.

Realinstitutoelcano
   http://www.realinstitutoelcano.org/publicaciones/libros/ChislettEsp-EEUU-
   ingles.pdf

The Department of the Navy Information Technology Magazine   www.chips.navy.mil
- Peter B Mersky, Autovon: The DoD Phone Company.

The Irish Era   http://193.63.162.100/machihan.html.
The Radar Pages   http://radarpages.co.uk.
The Telecommunications Review,   www.mitretek.org/telecomm2000.
Time Archive,   www.time.com/time/archive.
The Telecommunications Review   http://www.noblis.org/Publications/TR00_8.doc
- Dr Martin J Fischer et, al. The Circuit Switched Network Design and Analysis
   Model.

The Bulldog,   www.mcl-london-uk.org
- Issue 5 Spring 2005, Scottish Edition.

US Army, Europe,   www.hqusareur.army.mil
- Source SIGNAL, November 1960 and January 1964, Communications in the
   European Theater,
- Communications in the European Theater.
- 5th Signal Command Briefing , Communications in the European Theater.

US Coast Guard   www.uscg.mil.
- Coast Guard Long Range Aids to Navigation Program.
- Loran History.

US Naval Research Lab Space Applications Branch   www.heseweb.nrl.navy.mil/,
- T.C. Jewel1 and J. D. Geist, A Time and Frequency Reference System for the
   TACAMO Aircraft, 38th Annual Frequency Control Symposium – 7984.

US Navy Historical Center   www.history.navy.mil.
- OPNAV Report 5750-1, Command History for Calendar Year 1974, paragraph
   1(3) 'Mission of the Command. Pursuant to NAVSECGRUINST S5210.3.'
- NSGINST 5450.53A, Ser G142/133?/7272, 3 Dec 1979. From: Commander
   Naval Security Group Command. Subj: Mission and Functions of US Naval
   Security Group Detachment, London England/ US Naval Current Support Group,
   US Naval forces Europe.

Navy CT/SECGRU   www.navycthistory.com/secgru
- USNAVSECGRUACT Keflavik.

Naval Historical Center   www.history.navy.mil/
- CNO Report on Cuban Missile Crisis.
- Annual Report of the Secretary of Defense: July 1, 1962, to June 30, 1963,
   extract. The Cuban Crisis.

US Navy Office of Information   www.chinfo.navy.mil.
- Technical Innovations of the Submarine Force, CNO, Submarine Warfare
   Division.

US Naval Research Lab Space Applications Branch   https://goby.nrl.navy.mil.

US Navy War College Press   www.nwc.**navy**.mil/press
- Captain Joseph F Bouchard, US Navy, Guarding the Cold War Ramparts, The U.S. Navy's Role in Continental Air Defense.
- Vice Admiral Stansfield Turner, Missions of the U.S. Navy, March 1974 Issue.

USS Patrick Henry   navysite.de/ssbn/ssbn599.htm

USS Will Rogers   www.usswillrogers.org/
- Cycle of a typical patrol and off-crew period for a pre-trident FBM,

The World Wide Military Command and Control System Evolution and Effectiveness
   www.airpower.maxwell.af.mil/airchronicles/bookrev/pearson.html

Undersea Warfare   www.navy.mil/navydata/cno/n87/mag.html
- SOSUS, The Secret Weapon of Undersea Surveillance.

USAFSS   www.usafss6952ndkirknewton.org

War College Press   www.nwc.navy.mil/press

Policy Review   www.policyreview.org
- Robin Harris, The State of the Special Relationship.

BOOKS

Allin, Dana H, *Cold War Illusions; America, Europe and Soviet Power, 1969-1989*, (New York: St Martin's Press, 1994).

Ambrose, Stephen, *Rise to Globalism: American foreign policy since 1938*, (New York: Penguin, 1991).

Ambrose, Stephen, Eisenhower Soldier and President,(New York: Simon & Schuster, 1990).

Arbatov, Georgi and Oltmans, Willem, *Cold War or Détente? The Soviet Viewpoint*, (London: Zed Books, 1983).

Ashton, Nigel J, *Kennedy, Macmillan and the Cold War: The Irony of Interdependence*, (Basingstoke: Palgrave Macmillan, 2002).

Baer, George W, One Hundred Years of Sea Power: The US Navy, 1890-1990, (Stanford: Stanford University Press, 1997).

Baker, Anni P*, American Soldiers Oversees: the global military presence*, (London: Praeger, 2004)

Bamford, James, *The Puzzle Palace: A Report on America's Most Secret Agency*, (Boston: Houghton Mifflin. 1982).

Barnett, Corelli, *The Special Relationship: A Political History of Anglo-American Relations Since 1945*, (London & New York: Longman, 1992).

Baylis John, *Anglo-American Defence Relations 1939-1984: The Special Relationship*, Second Edition; (London: Macmillan, 1984).

Baylis, John, *Anglo-American Relations Since 1939: The Enduring Alliance,* (Manchester: Manchester University Press, 1997)

Berry, Peter, *Prestwick Airport and Scottish Aviation*, (Stroud: Tempus, 2005).

Bivens, Arthur Clark, *Of Nukes and Nose Cones: A Submarine Story*, (Gateway Press Inc, 1996).

Bluth, Christopher, *Soviet Strategic Arms Policy before SALT*, (Cambridge: Cambridge University Press, 1992).

Bracken, Paul, *Command and Control of Nuclear Forces*, (New York: Vail-Ballou Press, 1983).

Brandon, Henry, *Special Relationships: A Foreign Correspondent's Memoirs from Roosevelt to Regan,* (New York: Macmillan, 1988).

Brinkley, D and Griffiths R, *John F. Kennedy and Europe*, (Baton Rouge: Louisiana State University Press, 1999);

Burrows, W, *By any means necessary: America's secret air war in the Cold War*, (New York: Farrar, Straus and Giroux, 2000).

Campbell, Duncan, *The Unsinkable Aircraft Carrier: American Military Power in Britain,* (London: Paladin, 1986).

Chant, Chris, *Submarine Warfare Today*, (Wigston: Silvermark Books, 2005).

Coletta, Paolo E and Bauer, Jack, *United States Navy and Marine Corps Bases, Overseas*, (London: Greenwood Press, 1985).

Daalder, Ivo, *The Nature and practice of Flexible Response: NATO Strategy and Theater Nuclear Forces since 1967*, (New York: Columbia University Press, 1991).

Dallek, Robert, *Nixon and Kissinger: Partners in Power*, (London: Penguin Books, 2008).

Dobson, Alan P., *Anglo-American relations in the twentieth century: of friendship, conflict and the rise and decline of superpowers*, (London, New York : Routledge, 1995);

Dockrill, Saki and Hughes, Geraint (eds), *Palgrave Advances in Cold War History,* (Basingstoke and New York: Palgrave Macmillan, 2006).

Duffield, John S., *Power Rules: The Evolution of NATO's Conventional Force Posture*, (Stanford: Stanford University Press, 1995).

Duke, Simon, *United States Military Forces and Installations in Europe*, (Oxford: Oxford University Press, 1989).

Duke, Simon, *U.S. defence bases in the United Kingdom: a matter for joint decision?* (Basingstoke: Macmillan, 1987).

Dumbrell, John, *Special relationship: Anglo-American relations in the Cold War and after*, (New York: St. Martin's Press, 2001);

Duncan, Francis, *Rickover and the Nuclear Navy: The Discipline of Technology*, (Annapolis: Navy Institute Press, 1990).

Freedman, Lawrence, *Kennedy's Wars: Berlin, Cuba, Laos and Vietnam,* (Oxford: Oxford University Press, 2000).

Freedman, Lawrence, *The Evolution of Nuclear Strategy,* Third Edition, (New York and Basingstoke: Palgrave Macmillan, 2003);

Gaddis, John Lewis, *Russia, the Soviet Union and the United States*, (New York: John Wiley and Sons, 1978).

Gaddis, John Lewis, *Strategies of Containment; A Critical Appraisal of American National Security Policy during the Cold War,* Revised and expanded edition, (Oxford: Oxford University Press, 2005).

Gaddis, John Lewis, *The Cold War,* (London: Allen Lane, 2005).

Giarchi, George Giacinto, *Between McAlpine and Polaris*, (London; Routledge & Kegan Paul, 1984).

Greenwood, Simon, *Britain and the Cold War, 1945-1991*, (Basingstoke: Palgrave Macmillan, 2000).

Haftendorn, Helga, *NATO and the Nuclear Revolution: A Crisis of Credibility 1966-67,* (Oxford: Clarendon Press, 1996).

Hanhimaki, J and Westad, OA, *The Cold War: A History in Documents and Eyewitness Accounts,* (Oxford: OUP, 2003).

Harkavy, R, *Great Power Competition for Overseas Bases*, (Oxford; Pergammon, 1982).

Heuser, Beatrice, *NATO, Britain, France and the FRG*, (London: Macmillan, 1999),

Isaacs, Jeremy and Downing, Taylor, *Cold War*, (London: Bantam Press, 1998).

Jackson, Robert, *Strike Force: The USAF in Britain since 1945*, (London: Robson Books, 1986)

Jamison, Brian, *Scotland and the Cold War*, (Dunfermline: Cualann Press, 2003).

Jeffreys-Jones, Rhodri, *Cloak and Dollar: A History of American Secret Intelligence*, (New Haven: Yale University Press, 2002).

Kissinger, Henry, *Diplomacy*, (London: Simon & Schuster, 1994).

Kokoshin, Andrei A, *Soviet Strategic Thought 1917-1991,* (Cambridge: Harvard University, 1998, and Mezhdunarodnye Otnosheniia, 1995).

Lavery, Brian, *Shield of Empire: The Royal Navy and Scotland*, (Edinburgh: Birlinn, 2007).

Leitenberg, Milton, *Soviet Submarine Operations in Swedish Waters 1980-1986*, (Washington: CSIS, 1987).

Lewis, William R and Bull, Hedley (eds), *The 'Special relationship': Anglo-American relations since 1945,* (Oxford: Clarendon, 1986).

Lilleker, Darren J, *Against the Cold War: the History and Political Traditions of Pro-Sovietism in the British Labour Party, 1945-89*, (London and New York: Taurus Academic Studies, 2004).

Lockwood, Samuel J and Lockwood, Kathleen O, *The Russian Views of US Strategy: Its Past, Its Future*, (New Brunswick and London: Transaction Publishing, 1993).

Manderson-Jones, Ronald B, *The special relationship: Anglo-American relations and Western European unity, 1947-56*, (London: London School of Economics and Political Science, Weidenfeld and Nicolson, 1972);

Messersmith, Andrene, *'The American Years, Dunoon and the US Navy,* (Glendaruel: Argyll Publishing; 2003).

Miller, David, *The Cold War: Military History*, (London: John Murray, 1998).

Murray, D, *Kennedy, Macmillan and Nuclear Weapons,* (Basingstoke: Macmillan, 2000);

Nailor, Peter, *The Nassau Connection: The Organisation and Management of the British POLARIS Project*, (London: HMSO, 1988).

Nichols, Thomas M., *The Sacred Cause: Civil-Military Conflict over Soviet National Security, 1917-1992*, (Ithaca: Cornell University Press, 1993).

Odom, William E., *The Collapse of the Soviet Military*, (New Haven: Yale University Press, 1998).

Ovendale, Richard, *Anglo-American Relations in the Twentieth Century*, (Basingstoke: Macmillan, 1998);

Pearson, David E, *The World Wide Military Command and Control System Evolution and Effectiveness*, (Maxwell Air Force Base, Alabama: Air University Press, 2000).

Podvig, Pavel (ed), *Russian Strategic Nuclear Forces*, (Cambridge: MIT Press, 2004).

Raft, Bryan and Still, Geoffrey, *The Sea in Soviet Strategy*, Second Edition, (Basingstoke: Macmillan, 1989).

Reynolds, David & Dimbleby, D, *An Ocean Apart: the Relationship between Britain and America in the Twentieth Century,* (London: BBC/Hodder & Stoughton, 1988);

Reynolds, David, *One World Divisible: a global history since 1945*, (London: Allen Lane, 2000);

Reynolds, David, *Rich Relations: the American Occupation of Britain*, (London: Phoenix Press, 2000).

Richelson, Jeffrey T, *Sword and Shield: The Soviet Intelligence and Security Apparatus*, (Cambridge: Ballinger Publishing, 1986),.

Roya D, *United States Navy Base Two: Americans at Rosneath 1941-45,* (Colintraive: Douglas Press, 2000).

Ryan, D, *US foreign policy in World History*, (London: Routledge, 2000).

Sandars, Christopher T, *America's Overseas Garrisons: the Leasehold Empire,* (Oxford: Oxford University Press, 2000).

Schmidt, Gerhard, *A History of NATO: The First Fifty Years* (3- volumes), (New York: Palgrave, 2001).

Schwarz, DN, *NATO's Nuclear Dilemmas,* (Washington DC: Brookings Institute. 1983).

SIPRI Yearbook of World Armaments and Disarmaments 1968/69, (Stockholm: Almqvist & Wiksell, 1969).

SIPRI Yearbook of World Armaments and Disarmaments 1969/70, (Stockholm: Almqvist & Wiksell, 1970).

SIPRI Yearbook of World Armaments and Disarmaments, 1974, (Cambridge and London: MIT Press; and Stockholm: Almqvist & Wiksell: 1974).

Smith, David J, *Action Stations: 7. Military airfields of Scotland, the North-East and Northern Ireland*, (Cambridge: Patrick Stephens,1983).

Spaven, Malcolm, *Fortress Scotland: a guide to the military presence*,(London: Pluto Press/Scottish CND, 1983).

Stanley, T and DeWhitt, D, *Détente Diplomacy: United States and European Security in the 1970s,* (New York: Dunellan, 1970).

Stromseth, Jane E, *The Origins of Flexible Response: NATO's Debate over Strategy in the 1960s,* (New York: St Martin's Press, 1988).

Tamnes, Rolf, *The United States and the Cold War in the High North*, (Aldershot: Dartmouth, 1991).

The History of Submarine Squadron Fourteen, (Argyll and Bute Libraries, 355.941423 LC).

US Naval Security Group Activity Edzell: Introductory Public Relations Booklet, (London: US Navy, 1976).

Watt, Donald Cameron, *Succeeding John Bull: America in Britain's place, 1900-1975: a study of the Anglo-American relationship and world politics in the context of British and American foreign-policy-making in the twentieth century*, (Cambridge: Cambridge University Press, 1984);

Watson Bruce W, *Red Navy at Sea: Soviet Naval Operations on the High Seas, 1956-1980*, (Westview Press: Boulder, Colorado, 1982),

West, Nigel, *GCHQ: The Secret Wireless War 1900-86*, (London: Weidenfeld & Nicolson, 1986).

Wittner, Lawrence S, *Resisting the Bomb: A History of the World Nuclear Disarmament Movement, 1954-1970*, Volume Two, (Stanford: Stanford University Press, 1997).

Zaloga, Stephen J, *Target America: The Soviet Union and the Strategic Arms Race 1945-64*, (Novato: Presidio Press, 1993).

Zaloga, Stephen, *The Kremlin's Nuclear Sword: The Rise and Fall of Russia's Strategic Nuclear Forces, 1945-2000,* (Washington and London: Smithsonian Institution Press, 2002).

CHAPTERS IN BOOKS

Aldrich Richard, 'Intelligence', in *Palgrave Advances in Cold War History*, ed by Saki Dockrill and Geraint Hughes (Basingstoke and New York: Palgrave Macmillan, 2006), pp.229-32.

Borresen Jacob,' US carrier operations in the North Atlantic and the Norwegian Sea', in *Soviet Sea Power in Northern Waters,* ed. by John Skogan and Arne Brundtland,(London: Pinter Publishing, 1990), pp.107-8.

Cameron Watt D, 'Demythologising the Eisenhower Era', in *The Special Relationship: Anglo-American Relations Since 1945*, (Oxford: Clarendon Press, 1986), pp.81-98.

Freedberg Aaron L, 'The Evolution of US Strategic Doctrine, 1945 to 1981', in *The Strategic Imperative: New Policies for American Security*, ed by Samuel Huntington (Cambridge: Ballinger Publishing, 1982).

Freedman Lawrence and Hughes Geraint, 'Strategy', in *Palgrave Advances in Cold War History*, ed by Saki Dockrill and Geraint Hughes (Basingstoke and New York: Palgrave Macmillan, 2006).

Gunnarsson Gunnar, 'The Impact of Naval Developments in Iceland,' in *Soviet Sea Power in Northern Waters,* ed. by John Skogan and Arne Brundtland (London: Pinter Publishing, 1990), p.92.

Huntington Samuel, 'The Renewal of Strategy', in *The Strategic Imperative: New Policies for American Security*, ed by Samuel Huntington, (Cambridge: Ballinger Publishing, 1982).

Kaiser Wolfram, 'Trigger-Happy Protestant Materialists? The European Christian Democrats and the United States', in *Between Empire and Alliance: America and Europe during the Cold War,* ed by Marc Trachtenberg (Lanham and Oxford: Rowan & Littlefield, c2003), p.77.

Leitenberg M, 'Background on Tactical Nuclear Weapons primarily in a European context', cited in *SIPRI: Tactical Nuclear Weapons: European Perspectives*, (London: Taylor and Francis, 1978), p 16.

May ER & Treverton GR, 'Defence Relationships: American perspectives', in *The 'Special Relationship'; Anglo-American Relations Since 1945,* ed by WM Roger Louis and Hedley Bull (Oxford: Clarendon Press, 1986), p.161.

Oliver Cote, 'The Third Battle: Innovation in the U.S. Navy's Silent Cold War Struggle with Soviet Submarines', *Newport Paper Number Sixteen*, (Newport, Rhode Island: Center for Naval Warfare Studies, 2003).

Rohwer Jurgen, 'Russian and Soviet naval strategy', in *Soviet Sea Power in Northern Waters*, ed. by John Skogan and Arne Brundtland (London: Pinter Publishing, 1990), p.13.

Skogan John Kristen, 'The evolution of the four Soviet fleets, 1968-87', in *Soviet Sea Power in Northern Waters: Facts, Motivation, Impact and Responses,* ed by John Skogan and Arne Brundtland (London: Pinter, 1990).

ARTICLES IN JOURNALS

Aid Mathew M, 'The National Security Agency and the Cold War', *Journal of Intelligence and National Security*, Vol 16, No 1 (2001) p 41-42.

Aid Mathew & Wiebes Cees, 'The Importance of Signals Intelligence in the Cold War', in *Journal of Intelligence and National Security*, Vol 16, No 1 (2001) p9.

Aldrich Richard, 'GCHQ and Sigint in early Cold War, 1945-70' in *Journal of Intelligence and National Security*, Vol 16, No 1 (2001).

Coker Christopher, 'Britain and the New World Order: The Special Relationship in the 1990s', *International Affairs* (London. Royal Institute of International Affairs, 1992), pp.407-421.

Cryptolog: (Magazine of the US Naval Cryptologic Veterans Association), Edzell Special, August 1998, Vol 19, No 4, Corvallis Oregon.

Danchev Alex, 'On Specialness', *International Affairs* (London. Royal Institute of International Affairs, 1996), pp.737-50.

Fursenko, Aleksandr and Naftali, Timothy, 'The Pitsunda Decision: Khrushchev and Nuclear Weapons', *Cold War International History Project Bulletin 10* (1998), pp.223-27.

Heuser Beatrice, 'Victory in a Nuclear War? A Comparison of NATO and WTO War
    Aims and Strategies', *Contemporary European History 7* (1998): 311-27.

Lavery Brian, *The British Government and the American Polaris Base in the Clyde'*,
    (Journal for Maritime Research, September 2001).

Middeke M, 'Anglo-American Nuclear Weapons Co-operation After the Nassau
    Conference: The British Policy of Interdependence', *Journal of Cold War Studies,*
    (Volume 2, Number 2, Spring 2000), pp. 69-96.

Reynolds David, A 'Special Relationship'? America, Britain and the International Order
    Since the Second World War', *International Affairs* Vol 62, Number 1, (London.
    Royal Institute of International Affairs, 1985), pp.1-20

Wallace, William, 'Foreign Policy and National Identity in the United Kingdom',
    International Affairs, (London. Royal Institute of International Affairs, 1994),
    pp.65-80.

NEWSPAPERS

Walter Wagoner, 'Britain will get US Polaris base', *New York Times*, 18 October 1960,
    p.11.

Robert Kleiman, 'Europe and NATO: the coming crises', *New York Times*, 30 August
    1965, p.24.

'US Defence Mission in London Talks', *The Times*, 27 April 1962, Issue 55376, Page 10,
    Col G;

'US Commander's Visits', *The Times*, 16 August 1965, Issue 56401, Page 10, Col G.

'Nuclear danger at Holy Loch reduced,' *Times*, 26 March 1966, p.7.

'Seven years in gaol for a 'ham-handed spy,' *Times*, 24 June 1967;

'Polaris man sentenced to gaol,' *Times*, 28 August 1967.

'Nationalists seek £500m from US for Polaris base,' *Times,* 4 March 1971, p.2:

'Demand for withdrawal of nuclear bases,' *Times,* 5 October 1972, p.7:

'Party defeats Mr Callaghan over Holy Loch,' *Times*, 19 April 1973, p.4:

'American gives Black power sign in Court,' *Times*, 2 April 1974, p.2.

'US seaman awaiting trial 'kept in solitary,' *Times*, 4 April 1974, p.2.

'Submarines in N Sea collision,' *Times,* 2 January 1975, p.5;

'Messages of UK firms "being monitored", *The Times*, 29 July 1976, Issue 59768, Page 7, Col A.

David Leigh, 'National party plan for Scots defence forces,' *Times,* 28 August 1976, p.4.

'Proposed defence cuts 'a threat to communities,' *Times,* 2 October 1976, p.3.

'NATO Air Base in Kintyre', *Glasgow Herald*, 28 April 1959;

'Polaris Protests Deplorable', *Glasgow Herald*, 16 January 1961:

'Church and the Bomb', *Glasgow Herald*, 17 January 1961.

'Proteus Captain and Marchers, Sincerity Not Doubted,' *Glasgow Herald*, 12 April 1961,

'US Base for North Scotland, Another link in DEW line, *Glasgow Herald*, 27 July 1961.

'£2m. NATO Base for Scotland', *Glasgow Herald*, 17 March 1962;

'Nuclear Depth Charges: New Weapons for Coastal Command', *Glasgow Herald*, 2 April 1962.

'Holy Loch to be NATO Base', *Glasgow Herald*, 7 May 1962, p.4;

'Proteus returns to Clyde', *Glasgow Herald*, 1 November 1962,

'Mikoyan's Call at Prestwick', *Glasgow Herald*, 2 November 1962

'US Admiral on Visit to Holy Loch; Change of Polaris Command', *Glasgow Herald*, 22 November 1962;

'Visit of US Navy Secretary', *Glasgow Herald*, 18 December 1962.

'Proteus Says Farewell; Friendly Departure', *Glasgow Herald*, 16 March 1963;

'STUC Opposition to Polaris Bases; Almost as many abstainers as voters', *Glasgow Herald*, 27 April 1963;

'NATO Base for Kintyre, Machrihanish Airfield runway to be extended', *Scotsman*, 28 April 1959;

Press and Journal, 14 December 1972.

'Mormond Hill Base Open Day Put Off,' *Press and Journal*, 27 July 1973.

'President pays tribute to Fessenden,' *Campbeltown Courier & Advertiser*, 26 January 2007.

'Sandbank Holy Loch petition', *Dunoon Observer*, 2 December 1960.

INTERVIEWS

15 March 2006:
> Interview with electrician from Thurso, who carried out contract work on the two bases during the period 1965-90.

30 June 2006:
> Interview with former RAF armourer inspection officer (wing commander) who was responsible for inspecting all UK government military nuclear facilities during the period 1972-80.

27 May 2006:

> Interviews with two Campbeltown residents who worked at RAF Machrihanish during the period 1962-85.