

WHAT DROVE MARITIME PATROL AIRCRAFT PROCUREMENT IN THE
POST-WAR ERA?

by

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ABSTRACT

During the period 1946 – 1996, the Royal Air Force procured three separate and distinct generations of Maritime Patrol Aircraft (MPA). The first was the Avro Shackleton, which was introduced in three variants, MR1, MR2 and MR3 during the period 1951 to 1956. These aircraft continued in service until replaced by the Hawker Siddeley Nimrod MR1 from 1969, a design that was updated to MR2 specification in 1979. The final procurement cycle was for a Replacement Maritime Patrol Aircraft (RMPA), which saw the ordering of the British Aerospace Nimrod 2000 in 1996. The selection of these aircraft was governed by the prevailing political imperatives of the times, combined with the efforts of the aerospace industry to promote their products, and the need for the government to balance the needs of Defence, the Treasury, and the international diplomatic environment with that of domestic voters. This thesis examines the three procurements to build a picture of how, during a period of British political and economic decline, RAF procurements moved from being a military-led exercise, to one where, as the Cold War progressed, political and industrial considerations both at home and abroad took precedence.

ABBREVIATIONS

ACAS	Assistant Chief of the Air Staff
AOC-in-C	Air Officer Commander-in-Chief
AST	Air Staff Target
ASR	Air Staff Requirement
ASW	Anti Submarine Warfare
BAC	British Aircraft Corporation
BAe	British Aerospace
DDOps(M)	Deputy Director Operations – Maritime
EEC	European Economic Community
FLA	Future Large Aircraft
GR	General Reconnaissance / Ground Reconnaissance
MEA	Middle East Airlines
MoA	Ministry of Aviation
MoD	Ministry of Defence
MPA	Maritime Patrol Aircraft
MR	Maritime Reconnaissance
MRAF	Marshal of the Royal Air Force
NATO	North Atlantic Treaty Organisation
OR	Operational Requirement
PR	Photographic Reconnaissance
RAF	Royal Air Force
RMPA	Replacement Maritime Patrol Aircraft
RN	Royal Navy
UKIT	United Kingdom Industrial Team
VCAS	Vice Chief of the Air Staff
VLR	Very Long Range
VTOL	Vertical Take Off and Landing

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Chapter One

INTRODUCTION

As an island nation Britain has a long held requirement to protect both her shores and the large volume of trade that uses the sea lines of communication in order to provide the United Kingdom with the essential flow of materials to sustain the economy. The Battle of the Atlantic during the Second World War highlighted both how dependant Britain was on imported foodstuffs and materials, and also how vulnerable the convoys were to enemy attack.¹ The destructive power of the submarine was central to this threat, and thus advanced long range aircraft were developed throughout the war in order to combat the German U-Boats.² This threat from Germany was replaced by the threat of the Soviet Union from the late 1940s onwards, and therefore there was a requirement to continue the development of Maritime Patrol Aircraft (MPA). This type of aircraft had to be capable of long endurance operations over the sea, primarily the Atlantic Ocean, in order to provide protection for both merchant convoys and Royal Navy fleets. The aircraft thus had to be capable of engaging both shipping and submarines, with Anti-Submarine Warfare (ASW) being the primary role. Alongside an offensive capability, MPA were required to provide long range Search and Rescue, border protection and law enforcement roles in many air forces and navies around the world. Within the

¹ TNA AIR 15/931, *Air Defence of North Atlantic Convoys Against Submarines*, Research Branch, Coastal Command, No.394, Jun 1952

² Terraine, J., *The Right of the Line; The Royal Air Force in the European War 1939-1945* (Wordsworth, Ware, 1985) p.453

United Kingdom, MPA have traditionally fallen under the command of the Royal Air Force, whilst receiving the majority of their daily tasks from the Royal Navy.³

Since the Second World War, Britain has had three primary MPA procurements during the period 1946-1996, resulting in the Avro Shackleton, the Hawker-Siddeley Nimrod and the BAe Nimrod 2000. Throughout the fifty year period under examination, the strategic requirements for these aircraft shifted. The British defence and aerospace industries also evolved through the period, from multiple manufacturers dominating the foreign and domestic markets at the end of the 1940s, to there being only a handful of companies who were struggling to survive by the end of the Cold War.⁴ Britain's standing within the world diminished throughout the second half of the Twentieth Century, with the retreat from Empire and the emergence of the superpower stand-off between the United States of America and the Soviet Union.⁵ This new climate resulted in the continuation of the wartime alliance between Britain and America, and consequently the increased likelihood of Britain purchasing American military equipment. At the same time Britain was becoming financially more reliant on America as the domestic economy struggled with falling industrial output and shifting markets.⁶ As a result the defence budget came under pressure at various stages throughout the period to the extent to which procurement was not simply a matter of selecting the most tactically

³ TNA AIR 2/17197, Loose Minute from D. of Ops to DGSR (A), *The Interim Shackleton Replacement*, 6 Mar 1964 and TNA AIR 2/17199, *Interim Shackleton Replacement (ASR 381) – Policy*, Loose Minute from D. Air Plans to D. of Ops, *Flying Task of the LRME Squadron of Coastal Command*, 4 Aug 1964

⁴ Hayward, K. 'Industrial Perspectives on Air Power' in Gray, P. (ed.) *British Air Power* (HMSO, London, 2003) p.191

⁵ Ferguson, N., *Empire; How Britain made the modern world* (Penguin, London, 2004) pp.358-361

⁶ Moggridge, D., *The Collected Writings of John Maynard Keynes, Volume 24; The Transition to Peace* (MacMillan, London, 1979) p.405 and Cairncross, A., *The British Economy Since 1945; Economic Policy and Performance, 1945-1995* (Wiley-Blackwell, Oxford, 1995) p.296

capable item of hardware, as greater consideration had to be given to both global political issues, and to the domestic employment picture.

The Literature

The specific question of MPA procurement is seldom visited by authors, with the exception of those who are writing the history of a particular type of aircraft. These works are typified by Ashworth's book, *Avro's Maritime Heavyweight: The Shackleton*.⁷ Whilst these works give a thorough background on the development and operational use of the aircraft, they do not go into any detail on the reasoning behind the procurements and why each model was selected. Typically these texts do not utilise the wide range of primary sources and government papers that are available. The market for aircraft histories are lay readers who wish to garner a broad understanding of how the particular aircraft was employed in military service, rather than an academic audience who may use them as a basis for research.

More detailed analysis of the procurement process is covered by journalists who were either writing at the time, or producing a retrospective piece on events. As the relationship between the press and both the military and government has developed, so the amount of coverage given has increased. With the MoD viewing the media as a means of aiding recruitment and defence exports, there was a desire for the correct version of events to be passed to the media in order to avoid

⁷ Ashworth, C., *Avro's Maritime Heavyweight: The Shackleton* (Aston, Bourne End, 1990) similar works exist for the Nimrod and tend to cover both MR1 and MR2, along with Nimrod 2000 in each volume. An example of this being Evans, A., *The Nimrod: Mighty Hunter* (Dalrymple & Verdun, Stamford, 2007)

politically damaging inaccurate coverage.⁸ In 1964 *The Daily Telegraph* revealed that the proposed British built VC-10 MPA would cost three times that of the European twin engined Atlantic which was under consideration for the RAF, thus making the VC-10 potentially unaffordable.⁹ This information is corroborated in the government files and demonstrates that articles in the press were both well informed and accurate, and also that the wider pressures facing defence procurement at that time were being assessed within the media.¹⁰ This trend became more marked during the 1990s as specialist publications such as *Flight International* and *Jane's Defence Weekly* evaluated the merits of the competing bids for the Replacement Maritime Patrol Aircraft (RMPA) on the basis of how they were contributing to the British economy and the sustainment of British jobs.¹¹ As contemporary works, these articles considered the specific hurdles facing each company, such as Dassault's lack of a British corporate partner,¹² in order to establish the what, rather than the why, and as such only provide an insight into the mechanics of procurement, rather than evaluating the driving forces behind them. In academic texts, discussions on defence procurement in Britain focus on both failed and troublesome programmes, such as TSR.2, with the aim of understanding

⁸ Taylor, P.M., *War and the Media; Propaganda and Persuasion in the Gulf War* (Manchester UP, Manchester, 1992) pp.37-46

⁹ AIR 2/17197, Daily Telegraph Air Correspondent, "RAF Wants 50 Foreign Patrol Planes", *Daily Telegraph*, 14 May 1964

¹⁰ AIR 2/17197, Loose Minute AUS(AS) to P.S. to Minister (RAF), *The Shackleton*, 8 May 1964; VC-10 costs for the period 1966-1973, £330m. Atlantic costs for the period 1966-78, £120m.

¹¹ For examples see Flight International Staff Writer, "GE improves CF43 bid for Nimrod 2000", *Flight International*, 17-23 April 1996 and Bickers, C., "Briefing – Making designs on the UK's sub chaser", *Jane's Defence Weekly*, 9 December 1995

¹² Tusa, F., "The Silent Competition", *Armed Forces Journal*, December 1995

where the process had failed and warrants improving.¹³ As such successful cycles, or those without controversy, are largely ignored. Hence Nimrod MRA.4 will undoubtedly be subject to further studies in the future covering the period 1997-2010, where problems updating the airframes and large cost overruns resulted in its dramatic cancellation in the 2010 Defence Review. Such studies at the moment are solely within the remit of journalists and the aircraft histories.¹⁴

Thus whilst there are no academic works that cover the entire question of MPA procurement throughout the period, there are multiple works that cover the individual areas that affect it. Military strategy continually altered through the Cold War as Britain moved from conventional to nuclear focused forces. Paret's *Makers of Modern Strategy* considered the strategic importance of nuclear armed submarines and the need for ASW; however, it, like many others, placed the issue within the broader sweep of Cold War developments and does not subject the question to further examination.¹⁵ The post Cold War period and the subsequent shift back towards conventional forces is a central theme of Gray's *Modern Strategy*, but this does not detail how such a shift affected the MPA requirement, instead providing a foundation of identifying the diminished ASW threat, which

¹³ Moore, D. (ed.) *Case Studies in Defence Procurement and Logistics, Volume I: From World War II to the Post Cold-War World* (Cambridge Academic, Cambridge, 2011) pp.127-145, an examination of the TSR.2 procurement.

¹⁴ Blackman, T., *Nimrod: Rise and Fall* (Grub Street, London, 2011) and Almond, P., 'Air Power and the Media: A Personal View from the Media World' in Gray, P. (ed.) *British Air Power* (HMSO, London, 2003) p.36 – Almond considers the issue that only bad news is worthy of making the news.

¹⁵ Paret, P., (ed.) *Makers of Modern Strategy; from Machiavelli to the Nuclear Age* (Oxford UP, Oxford, 1986) p.757, Miller, D., *The Cold War: A Military History* (Thomas Dunne, London, 1998) pp.117-123, Hennessy, P., *The Secret State; Whitehall and the Cold War* (Allen Lane, London, 2002) pp.13-69 and Peden, G.C., *Arms, Economics and British Strategy: From Dreadnoughts to Hydrogen Bombs* (Cambridge UP, Cambridge, 2007) p.291 are examples of texts that consider the tactical application of nuclear armed submarines and their political role, rather than the tactical means of combating them.

through further research can be seen to have reduced the need for a dedicated airborne ASW platform.¹⁶ The works on strategy provide an understanding of the strategic considerations in force at the time of the procurements, but by having to cover such a broad range of topics and events, they cannot provide any more than background reading on the military in this period.

Whilst it is not unexpected for the broad strategy texts to ignore MPA, it is surprising that the specialist ASW books also give little consideration to the role. Instead, the focus is on ship-borne strategy with MPA providing assistance, such as in Moore and Compton-Hall's *Submarine Warfare; Today and Tomorrow*.¹⁷ Those that do cover MPA do so at a tactical level, rather than providing an insight into the procurement process. Therefore these are studies that are useful for understanding why an MPA may be required, but not how they were acquired.¹⁸

The decline of the British aerospace industry is cited as an example of British post-war economic failings in a number of works, however it is the central theme in very few. Hayward's *The British Aircraft Industry* is the primary text, which lays out how the difficulties in maintaining a diverse civilian and military domestic aviation industry in the post-war period were unsustainable in the long term, due to government cuts and unrealistic expectations of export successes.¹⁹ Other studies such as Loadsman's *Government and the British aircraft industry 1945-1979* have

¹⁶ Gray, C.S., *Modern Strategy* (Oxford UP, Oxford, 1999)

¹⁷ Moore, J.E., & Compton-Hall, R., *Submarine Warfare; Today and Tomorrow* (Joseph, London, 1986) pp.156-161, Hill, J.R., *Anti Submarine Warfare* (Ian Allan, London, 1984)

¹⁸ Examples of this are; Daniel, D.C., *Anti-Submarine Warfare and Superpower Strategic Stability* (Macmillan, Basingstoke, 1986) pp.61-89 and Gerken, L., *ASW versus Submarine Technology Battle* (American Scientific Corp, Chula Vista, 1986) pp.326-346

¹⁹ Hayward, K., *The British Aircraft Industry* (Manchester UP, Manchester, 1989) pp.64-98 and Hayward, K. 'Industrial Perspectives on Air Power' in Gray, P. (ed.) *British Air Power* (HMSO, London, 2003) pp.190-192

remained as unpublished doctoral theses, and other dedicated texts are rare.²⁰ The decline of the aviation industry surfaces in economic texts as it forms part of the general malaise in British industry during and after the Cold War.²¹ Some, such as Geiger's *Britain and the Economic Problem of the Cold War [1945-1955]* use the overinvestment in the build up of military forces as a cause of this broader decline, in which MPA procurement is just one of many projects cited as a trigger.²² There are detailed facts and figures on industrial output and employment in economic texts. However, these focus on the failures such as TSR.2, rather than the less controversial procurements such as Shackleton and Nimrod.²³

The economic decline as an aspect of diminishing British political influence on the world stage is central to studies on the politics of the period, with the growing dependence on the United States a key theme. MPA procurements in the 1960s and 1990s considered American made options, and the need for American military assistance in Europe featured in Wyn Rees' *Brothers in Arms: Anglo-American defence co-operation*.²⁴ Political memoirs by politicians such as Healey and Jenkins cover the struggle over Concord and integration in Europe, both of which were key battlegrounds during the 1960s procurement processes, and do

²⁰ Loadsman, G.H., *Government and the British Aircraft Industry* (Ph.D dissertation, Royal Holloway, University of London, 2003) and Allman, S.P., *The British Aircraft Industry post 1989: Threats and Opportunities on the Institutional Merry-Go Round* (Ph.D dissertation, University of Hull, 1994)

²¹ An example being; Coker, C., *British Defence Policy in the 1990s; A Guide to the Defence Debate* (Brassey's, London, 1987) pp.25-35

²² Geiger, T., *Britain and the Economic Problem of the Cold War; the Political Economy and the Economic Impact of the British Defence Effort, 1945-1955* (Ashgate, Aldershot, 2004) pp.131-143, p.168

²³ Hartley, K., "The United Kingdom Military Aircraft Market" *Yorkshire Bulletin of Economic and Social Research*, Vol.19, No.1 (May, 1967) and Mottershead, P., 'Industrial Policy' in Ed. Blackaby, F.T., *British Economic Policy 1960-74* (Cambridge University Press, Cambridge, 1978) pp.450-461

²⁴ Wyn Rees, G., 'Brothers in Arms: Anglo-American defence co-operation' in Gorst, A., Johnman, L., & Scott Lucas, W. (ed.), *Post-War Britain, 1945-64, Themes and Perspectives* (Pinter, London, 1989) p.205

mention, albeit fleetingly, the commissioning of the Nimrod MR1 programme.²⁵

These works are similar to other political texts covering the wider period, in that they are broad in both timescale and spread of examples, and the relatively uneventful MPA procurements do not feature prominently.²⁶

The question of how the changing political landscape and the economic struggles impacted the defence budgets is examined in a number of works. An example of early in the period is Cairncross' *The British Economy Since 1945* which details the impact of rearmament and the growing defence budgets of the early 1950s on Britain's efforts to recover from the decimation of the Second World War.²⁷ The continual threat of devaluation in the 1960s and how this impacted defence procurement are covered in the Royal Historical Society's *Harold Wilson's Cold War*, and this serves to contextualise the aim of identifying the most cost effective Shackleton replacement.²⁸ The end of the Cold War and the cuts to the defence budget are covered in several articles in Clarke and Sabin's volume *British Defence Choices for the Twenty-First Century* where the possibility of cutting the MPA force in order to achieve the required financial saving is considered as a viable option.²⁹

²⁵ Healey, D., *The Time of My Life* (Politico's, London, 2006) pp.250-274 and Jenkins, R., *A Life at the Centre* (MacMillan, London, 1991) pp.160-172

²⁶ Gorst, A., 'Facing Facts? The Labour Government and defence policy, 1945-50' in Tiratsoo, N. (ed.), *The Attlee Years* (Pinter, London, 1991) pp.190-207, Boxer, A., *The Conservative Governments, 1951-1964* (Longman, London, 1996) pp.66-67 and Tusa, F., "Buying Defence" *BBC Radio 4*, 27 Dec 2011

²⁷ Cairncross, A., *The British Economy Since 1945* (Oxford, 1995) pp.99-104

²⁸ RHS, *Harold Wilson's Cold War; the Labour Government and East-West Politics, 1964-1970* (RHS, Chippenham, 2009) pp.26-34 & pp.85-87

²⁹ Smith, R., 'Resources, Commitments and the Defence Industry' pp.73-83 and Towle, P., 'Maintaining Balanced Forces' pp.98-101 in Clarke, M. & Sabin, P. (ed.), *British Defence Choices for the Twenty-First Century* (Brassey's, London, 1993)

The historiography of MPA procurement is highly fragmented, and there is no single volume that covers the topic in any detail. Those that do focus on the particular aircraft are not intended as academic pieces, and as such do not provide much insight into the process. The more detailed general academic works only provide elements of the picture, and when considered in isolation they do not identify the driving forces of MPA selection. Therefore the existing body of literature is suitable only for background information when considering such a specialised aspect of history.

Thesis Content

Due to the fifty year timespan of the period and the specific set of circumstances surrounding each procurement, the most logical means of examination is to look at each programme individually in chronological order, drawing primarily on government files and contemporary sources. Whilst there are common themes that run through all three procurements, the impact of these varied dramatically at the differing times. Each of the procurements will be examined in relation to the influence of various political, military, industrial and economic factors. By assessing these key areas, the primary motivations behind each selection can be established. When all three procurements are considered as a progression throughout the period certain trends and themes begin to emerge. The overarching factors of a declining domestic aviation industry, combined with a shrinking defence budget and associated fall in required aircraft numbers are common to all three programmes. At the same time, the political need to forge

closer alliances with both the United States and Western Europe grew during the post-war period, and as such all contribute to both the generic procurement landscape, and to the MPA question in particular. The military requirement and government intent behind an MPA in 1996 was distinctly different from that in 1946, when the first post-war requirement for a maritime Lincoln aircraft was published.

Chapter Two

THE COMPETITION FOR THE REPLACEMENT OF THE AVRO LANCASTER GR.3 AND SHORT SUNDERLAND MK.V, 1946-1954

The situation in Europe in the late 1940s and the early 1950s was one of dramatic change, both socially and economically.³⁰ Defence was not isolated from these changes and saw dramatic manpower and budget cuts, particularly in Britain, as the effort was made to transition from a war economy to one that would allow for recovery and growth. By the first anniversary of VE day the British armed forces numbered just 488,000.³¹ The Attlee government was committed to reducing the defence budget to £500m per year, and this was made a priority ahead of long term strategic planning considerations.³² One country that did not reduce their wartime force was the Soviet Union, as they continued to build up a large standing force.³³ The increased military posturing across Europe, and the desire to keep America involved in European affairs contributed to the creation of NATO in 1949.³⁴ This shift to a proactive form of collective defence moved beyond the traditional nature of treaties and alliances by allowing signatory nations to contribute to a broader standing defensive requirement. By 1951 this was evident for MPA with the NATO aircraft requirements for the Atlantic standing at 448 aircraft; of which 100 would be provided by Britain, with the majority of the balance coming from the United States

³⁰ Hennessy, P., *Having it so Good; Britain in the Fifties* (Allen Lane, London, 2006) pp.16-25

³¹ Lord Ismay, *NATO; the First Five Years 1949-1954* (NATO, Utrecht, 1955) p.4

³² Gorst, A., 'Facing Facts? The Labour Government and defence policy, 1945-50' in Tiratsoo, N. (ed.) *The Attlee Years* (Pinter, London, 1991) p.191

³³ Ismay, *NATO*, (Utrecht, 1955) p.4

³⁴ Keohane, D., *Labour Party Defence Policy Since 1945* (Leicester UP, London, 1993) p.19

of America.³⁵ The system was such that those European countries who bordered a given area were expected to bear the greatest burden for its defence. Thus in the Mediterranean theatre the UK contribution was to be 16 aircraft from a total requirement of 148, yet crucially it was still a burden shared between members, thereby reducing the individual defence expenditures for each country.³⁶ At a time when European economies were struggling to recover, despite the introduction of American Marshall Aid, this was an important means of maintaining a defence force.³⁷ Once Marshall Aid ceased and government spending yet again came under even more pressure, the Chiefs of Staff failed to alter their spending targets to reflect this. The 1953/54 defence budget proposed by the Treasury stood at £1,570m, yet the Chiefs of Staff stated that they could not accept a figure of less than £1,645m on 'military grounds'.³⁸ With the rearmament programme expecting to cost upwards of £2,000m on equipment alone, the strategic prioritisation of assets based around collective defence and the immediate threat was the only way forward.³⁹ This was especially important following the 1954 review of defence expenditure, and although the radical review did not see a cut to the maritime force, it set out the future direction of defence in the Cold War.⁴⁰

Defence policy in Britain in the late 1940s was built around a three pillar model, comprising defence of the United Kingdom, the Middle East and sea

³⁵ TNA ADM 1/23062, *Requirement for Maritime Aircraft*, letter from AVM Macfadyen (Air Ministry) to Admiral Anstice (Fifth Sea Lord) dated 21 December 1951

³⁶ Ibid.

³⁷ Howarth, T.E.B. *Prospect and Reality; Great Britain 1945-1955* (Harper Collins, London, 1985) pp126-129

³⁸ TNA AIR 20/8714, *Plan K; Defence Programme Review*, Minutes of Defence Committee D.(52) 11th Meeting on Defence Expenditure, 5 Nov 1952

³⁹ TNA CAB 21/3567 *NATO Meeting of Defence Ministers*, 7 Sept 1951

⁴⁰ TNA AIR 2/11845

communications.⁴¹ This saw the defence of Western Europe and Mediterranean from Soviet aggression as the immediate concern, and with it the protection of the vital North Atlantic sea lanes. This is pertinent to the question of MPA procurement as it demonstrated a shift in thinking from the more expansive pre-war Empire model. First, the continued retreat from Empire throughout this period saw the emphasis placed on the Middle rather than Far East, thereby having a strategic effect on the traditional operating theatre of Coastal Command's flying boats. Second the natural prioritisation of the defence of the United Kingdom within the strategy opened up the possibility of a short range maritime aircraft to deal with enemy activity in the coastal regions and the Channel. Finally, the explicit emphasis on sea communications, of which the Atlantic was clearly the focus, demonstrated that the lessons of the Battle of the Atlantic had been at least partially understood, and would play a key role in shaping the MPA procurement issue, as aircraft would have to be capable of operating in this harsh environment. This was therefore an area that would see competition between the RAF and RN over which service was best suited to carry out the protection of the supply convoys and would therefore be entitled to the greater share of that portion of the rearmament budget.⁴² As the rearmament programme accounted for fourteen percent of national income,⁴³ the objectives of government, balanced against the desires of the military and the ambitions of Industry, would shape how the

⁴¹ Slessor, J. *The Great Deterrent, A collection of lectures, articles, and broadcasts on the development of strategic policy in the nuclear age* (Cassell, London, 1957) p.78

⁴² As had been experienced in the Second World War, sustained convoys would be made up of the supply of food and raw materials for Britain and Western Europe. They would also have been needed to bring reinforcements from Canada and the United States should the Soviet Union invade Western Europe.

⁴³ Howarth, T.E.B. *Prospect and Reality* (London, 1985), p.158

procurement programme would play out, both in terms of how many aircraft could be bought, and also to what specification those aircraft would be fitted out to.

The highest level economics of the country throughout the period are too broad and complex for detailed examination within this study, save for the areas that immediately impact the MPA debate. The same is also true of the finer details of the aircraft specifications. While, for example, there is ample evidence of negotiations over the positioning of the pilot's air speed indicator in the Shackleton Mk.3, it is not something that has a bearing on the building up of the picture of the driving forces behind MPA procurement.⁴⁴ There are therefore two levels of enquiry, firstly that of establishing a need for a capability, and secondly of what form that capability should take. That the Shackleton emerged as the long term MPA solution for the United Kingdom was not a straightforward process, and the issues laid out above all contributed to shaping the immediate post war procurement of all MPA.

The requirement for a VLR MPA was laid out in 1948, with the issuing of 'OR 200 for adaptation of the Lincoln for marine reconnaissance duties' (Shackleton) and 'OR231 for a marine reconnaissance flying boat' (R.2/48). The Operational Requirements stated that the primary role for both assets was the ASW battle in the North Atlantic, with a secondary role being to deal with a small harassing enemy force in the Indian Ocean.⁴⁵ Coastal Command preferred having a flying

⁴⁴ See TNA AVIA 65/289, *Aircraft Specification R5/46 issue.3 Shackleton*, which lays out the negotiations covering the detailed specifications of the aircraft, including the positioning of instrumentations. These negotiations were to strike a balance between ease of production and ease of use and demonstrate the continual compromise involved in procuring an aircraft.

⁴⁵ TNA DSIR 23/18125

boat similar to the Sunderland that could fulfil both roles, thereby allowing the RAF to maintain a flexible presence in the Far East.⁴⁶ The case for the flying boat was backed by a 1950 report into running costs which put the Shackleton as being cheaper when operating at a range of 600 nautical miles, but the R.2/48 as more cost effective when operating in the very long range bracket of 1000 nautical miles.⁴⁷ Those within the Air Ministry argued that the new flying boat was not only essential to the RAF, but that due to its inherent flexibility it could replace the Shackleton in all theatres due to that aircraft's problems of weight, requirements for large airfields and mobility of support crews.⁴⁸ This optimism for the future of flying boats was to change rapidly and by 1952 a combination of financial constraints and shifting strategy forced the future of flying boats into question.⁴⁹ Unlike the Shackleton the flying boat operational requirement had been made open to tender, and the problems of dealing with multiple bidders was a key reason for it failing as the primary MPA for the RAF.

The OR for the Sunderland replacement was issued at the same time as that for the marine Lincoln (Shackleton), yet while the Shackleton was in service by 1951, the flying boat issue would continue unresolved until the mid 1950s. Initial proposals were put forward by Short Brothers, Saunders-Roe, and Vickers

⁴⁶ TNA AIR 2/12101, letter from AOC Coastal Command to DDOR1 dated 1 Jul 1952

⁴⁷ TNA AIR 77/109, *Comparative performance and costs of certain types of maritime aircraft on convoy escort and anti-submarine search duties*, 1 Dec 1950 – the figures were based on 65 flying hours per aircraft per month, with the Shackleton quoted at £18,930 and the R.2/48 at £23,964 at a range of 600nm, and the Shackleton at £58,535 and R.2/48 at £52,132 when operating at 1000nm.

⁴⁸ TNA AIR 20/6955, *Production Maritime Aircraft*, loose minute; D.D.Ops(M) [Gp Capt Moreton] *Flying Boat Policy*, 3 Aug 1949, and loose minute; D.D.Pol(AS)1 to ACAS(P) *Flying Boat Policy*, 9 Aug 1949

⁴⁹ AIR 20/6955, loose minute; ACAS(P) to ACAS(OR) *Maritime reconnaissance aircraft*, 26 Jan 52

Supermarine, with the Shorts and Saunders-Roe bids being the most competitive.⁵⁰ By 1949 an order had been placed with Saunders Roe for two prototype aircraft as the Air Ministry had assessed that the Saunders Roe proposal was the most suited to the military need, going so far as to state that “The Air Staff have a clear right to ask for the best technical solution to their requirement.”⁵¹ This defensive posture was a response to two problems that had arisen within the flying boat procurement programme. Firstly was the policy from the Minister of Supply that any future flying boat would have to be made by Shorts of Belfast.⁵² This put the Ministry of Supply in direct conflict with the Air Ministry, who wanted to protect both the superior design of the Saunders Roe R.2/48, but also the company. Their argument ran that whereas Shorts were capable of building both land based aircraft and flying boats, Saunders Roe could only manufacture flying boats, and that the company would fail without the contract. Such an outcome would result in a serious loss of expertise within the British aviation industry.⁵³ The second issue was the financial constraints that were put on the RAF during the rearmament phase, with the priority given over to fighter and bomber forces.⁵⁴ As the Shackleton was already in production and about to enter service in 1951, it is understandable that it formed the core of the building up of a suitably sized MPA force. The flying boat programme, which was yet to produce a working prototype, was therefore exposed

⁵⁰ TNA AIR 2/10749, memo from ACAS(OR) [AVM Pelly], *Comments on CMS, 1950/51 dated 21 May 51*, 26 May 1951

⁵¹ Ibid.

⁵² AIR 2/10749, *loose minute to VCAS*, 25 Jun 51

⁵³ AIR 2/10749, memo from ACAS(OR) [AVM Pelly], *Comments on CMS, 1950/51 dated 21 May 51*, 26 May 1951

⁵⁴ Tiratsoo, N., *The Attlee Years* (London, 1991) p.196

to a global defence strategy that was beginning to look to the Middle East rather than the Far East, and the deterrence policy of the V-Bomber force.⁵⁵ MRAF Slessor, a former AOC-in-C of Coastal Command, had to be highly pragmatic in 1951 in writing to VCAS and questioning the merits of retaining flying boats, and highlighting that despite the increased budgets of rearmament the drive should still be to spend on what was vital for defence. In this letter Slessor raised two points that in effect sum up the factors that killed off the development of the R.2/48; that the project represented a huge amount of work for what could well be only one squadron of five aircraft operating within the Far Eastern Air Force (FEAF), and that; "...does our survival in the early stages or our ultimate ability to win a future war depend on having a big, long-range flying boat..?"⁵⁶ The shifting strategic focus of a future war being almost solely fought in the European theatre, put the MPA requirement more on conventional land based aircraft rather than flying boats. So, by not having a Sunderland replacement either in service or at the very least in a highly advanced prototype stage by 1951, the flying boat was an easier target for strategically focused economic cuts and the short term focus prevalent in the period.⁵⁷ Despite the benefits demonstrated by the Sunderland in both the Berlin Air Lift and the Korean War, the flying boat was to be phased out. RAF rearmament Plan K of 1953 saw the Sunderland remaining in service with two squadrons only until 1958.⁵⁸ This process was exacerbated by the 'do not resuscitate' instruction on the Sunderland fleet, whereby no funds were to be allocated to allow for the

⁵⁵ Boxer, A., *The Conservative Governments, 1951-1964* (London, 1996) p.66

⁵⁶ AIR 2/10749, letter from CAS (Slessor) to VCAS, 6 Feb 1951

⁵⁷ Tiratsoo, N., *The Attlee Years* (London, 1991) p.192

⁵⁸ TNA AIR 20/8714, *Plan K: Defence Programme Review*, 6 Feb 1953

refurbishment and recovery of damaged airframes and further demonstrating the fact that short term financial considerations had primacy.⁵⁹

The broad strategic MPA requirement of the period was built around an ideal fleet structure of short, medium, and long range aircraft. While the Shackleton and R.2/48 fought out the medium to long range needs of the RAF, the short range aircraft capability was equally troublesome, and ultimately suffered a similar fate to the R.2/48 programme. Plans for a short to medium range MPA to fulfil the requirement for defence of the United Kingdom coastline were in progress by the end of 1950, with a modified Vickers Varsity as the primary candidate. The Varsity compared favourably with the Shackleton and R.2/48 in terms of short range running costs,⁶⁰ however financial considerations again came to the fore. The Varsity programme was halted, and the cheaper American Lockheed P2V5 Neptune, which could be made available under the United States military aid programme, selected instead.⁶¹ It was hoped that the same operational effect could be achieved this way, but without the high financial outlay. As such a bid was placed for fifty aircraft as part of the military aid programme in 1951.⁶² This strategy demonstrates that financial considerations could even overrule the traditional

⁵⁹ AIR 2/10749, loose minute from D.D.O(P) to D.D.POL(AS)1, 19 Oct 1954 – stating that as there was no plan to replace the Sunderland, repairing them could make the 21 available airframes last until 1962. This request was denied by D.D.POL(AS)1 on 22 Oct 1954

⁶⁰ AIR 77/109, *Comparative performance and costs of certain types of maritime aircraft on convoy escort and anti-submarine search duties*, 1 Dec 1950 – the Varsity, operating at 600nm and based around 65 flying hours per aircraft per month was costed at £15,539, compared to the Shackleton at £18,930

⁶¹ AIR 2/10749 letter from CinC Coastal Cmd to Under Secretary of State for Air, *Aircraft Requirements*, 26 Jan 1951 – stating that there was no allowances made in Plan G to build up a Varsity force. In response ACAS(P) wrote to ACAS(Ops), 1 Feb 1951, stating that the Neptunes had been bid for to fulfil this requirement.

⁶² *Ibid.*

political objective of sustaining British employment at the cost of military requirements.

This apparent deviation from the policy of safeguarding British companies and their employees regardless, was however not as straightforward as it may appear. The government policy had not completely changed, it was just that in this case Vickers must have been assessed to have a suitably full order book (including the Varsity RAF trainer variant) that it could do without the Varsity MPA project. This was not the case at government owned Shorts of Belfast. By early 1951, when doubts began to be raised over the future of the flying boat procurement, the issue of what to do with the workforce at Shorts was raised at the Air Ministry: "Being fully conscious of the reliance placed on the R.2/48 contract to keep the technical and industrial labour force at Shorts I am wondering if, in the event of the contract not going ahead you could, in the now changed circumstances, find enough work to keep them usefully employed."⁶³ Thus by late 1952 there was a re-emergence of the requirement for an MPA to operate at shorter ranges than the Shackleton and Neptune in and around home waters.⁶⁴ The cancelling of the R.2/48 project was clearly a blow to Shorts, and by 1955 the Seamew short range MPA project, originally designed for the Navy Reserve as a carrier borne aircraft, was expanded to include an order of thirty aircraft for the RAF.⁶⁵ It was an aircraft that the RAF did not want, nor arguably need. Discussions went back and forth across the Air

⁶³ AIR 2/10749, loose minute from DOR(A) [Air Commodore Satterly to DGTD(A), *R.2/48 Flying Boat*, 12 Feb 1951

⁶⁴ ADM 1/23062, *Report of Maritime Air Committee; Investigation into relative merits of the Shackleton 2A and the Gannet*, 2 Dec 1952

⁶⁵ AIR 20/6955, loose minute from DDO(F) to S.8(A) *Requisition for Seamews Aircraft*, 3 Feb 1955

Ministry as to the specification of the aircraft, as, due to the Navy wishing to pull out of the project entirely, the RAF would have been forced to accept naval specification aircraft that were not ideal for land based operations, and the purchase of which would place a heavy burden on the budget for 1955/56. The Admiralty was far more prepared to stand up to the Ministry of Supply than the Air Ministry, even though it meant paying for the redundancy of the workforce at Shorts, whereas the Air Ministry was prepared to accept an aircraft with folding wings, arrestor gear and unsuitable mission equipment in order to avoid confrontation with the Ministry of Supply.⁶⁶

The lack of Treasury approval for the project to be funded from outside of the Defence budget finally killed off the Seamew, but it did demonstrate how the actual products of procurement could be driven by government policy, with military strategy only having an impact at the conceptual level of setting the requirement for *an* aircraft, rather than dictating *the* aircraft. The Seamew had been presented to the Navy as a replacement for their Grumman Avengers in the Naval Reserve, rather than as a full front line aircraft. For this role the Navy already had the Fairey Gannet as their fixed wing ASW platform, and was strongly advocating for this aircraft to take on the role as Britain's primary MPA within the strategy of convoy protection in the North Atlantic.⁶⁷

The squeeze on budgets by late 1951, coupled with the strategic focus on the protection of convoys in the North Atlantic led to studies being carried out into

⁶⁶ AIR 20/6955, multiple loose minutes from February to May 1955, detailing the short comings of the Seamew and the reluctance of the Air Ministry to accept it into service without extra funding from the Chancellor.

⁶⁷ ADM 1/23062, loose minute from Director of Naval Air Warfare to Maritime Air Committee, 12 Dec 1952

the best aircraft type and delivery means for role.⁶⁸ These papers were centred on the Shackleton Mk.2 and the Gannet, giving a comparison between two dissimilar sized aircraft, operating from both land and carrier borne environments, yet with a similar purpose within this context. Future orders for both types of aircraft would be affected by how each could perform within this vital theatre of operations, with the crux of the matter being the 'gap'. This was the central area of the ocean that had been outside the range of land based MPA during the Battle of the Atlantic, and thus a stretch of ocean in which the U-Boats had been able to operate with relative freedom. The closing of the gap was seen as the vital turning point in the Battle, and as such great emphasis was put on having a VLR MPA that was capable of a range of 3000 miles.⁶⁹ Despite these requirements the Shackleton Mk.1 and Mk.2 were not capable of operating in the gap, and this gave both a cause for concern within the RAF, but also gave the Navy an opportunity to push the case for all convoy protection to be not only Naval but also carrier based.⁷⁰ An RAF Coastal Command report into the defence of North Atlantic convoys came down, naturally, on the side of the Shackleton, citing that the extreme weather experienced in the gap made a sole reliance on carrier based aircraft too risky. It did, however, propose the natural compromise of land based aircraft providing coverage out to 550 miles, with carrier aircraft taking over from that point. By stating that land based aircraft were the ideal, the report based all minimum force numbers on

⁶⁸ These included, ADM 1/23062, *Report of Maritime Air Committee; Investigation into relative merits of the Shackleton 2A and the Gannet*, 2 Dec 1952, AIR 15/931, *Air Defence of North Atlantic Convoys Against Submarines*, Research Branch, Coastal Command, No.394, Jun 1952 and AIR 2/10749, *Report of Maritime Air Defence Committee*, Jan 1951

⁶⁹ TNA AVIA 15/3900, *Research Aircraft 11089 part I*, Air Staff Requirement OR 200, Mar 1946

⁷⁰ ADM 1/23062, loose minute from Director of Naval Air Warfare to Maritime Air Committee, 12 Dec 1952

Shackletons alone, thereby emphasizing the strategic need to grow the Shackleton force during rearmament.⁷¹ The RAF were keen to stress the vulnerability of the carrier in the era of new and more powerful submarines, and to use this as a key driving force for promoting land based MPA.⁷² Despite this the Gannet did offer the distinct advantage over the Shackleton by being a new design, with scope to be developed and improved, and coupled with naval plans for new larger, all weather carriers, suggests that there was merit in the Navy's proposals.⁷³ One of the conclusions of the report into the Shackleton and Gannet carried out by the Maritime Air Committee in late 1952 was that the Shackleton was more effective than the Gannet at range due to its greater payload and endurance, only natural for a larger aircraft, but that Gannet outperformed it in operations close to shore due to its increased manoeuvrability.⁷⁴ This highlights the unsolvable issue of comparing the two different types of aircraft for fundamentally the same role in order to justify procuring more airframes. The greatest concern for the Navy was whether they could procure the new aircraft carriers, with the 1949 'Revised Restricted Fleet' concept calling for two carriers and three light fleet carriers, equipped with a total of 250 aircraft.⁷⁵ The ASW fight was seen as a key component in demonstrating the continued relevance of the carrier, despite the successes of using carriers in the

⁷¹ AIR 15/931, *Air Defence of North Atlantic Convoys Against Submarines*, Research Branch, Coastal Command, No.394, Jun 1952

⁷² AIR 2/12101, comments by DCAS on COS(M.A.)(52)7, undated [mid-1952] and Slessor, p.79

⁷³ ADM 1/23062, loose minute from Director of Naval Air Warfare to Maritime Air Committee, 12 Dec 1952

⁷⁴ ADM 1/23062, Report of Maritime Air Committee; *Investigation into Relative Merits of the Shackleton Mk.2 and the Gannet*, 2 Dec 1952

⁷⁵ Gorst, A., Johnman, L., Scott Lucas, W. (ed.) *Post War Britain, 1945-64; Themes and Perspectives* (London, 1989) p.158

Korean War as a platform for launching ground attack missions.⁷⁶ The staunch RAF defence of the Shackleton is particularly pertinent when considered that the Shackleton Mk.1s and 2s did not have the range to carry out convoy protection on their own. The development of the Mk.2A, which would become the Shackleton Mk.3, was intended to close the gap, but it still begs the question as to why the Shackleton programme was persevered with when the early versions were clearly not up to the task. Not only did it see off challenges from within the RAF with the shorter range MPA and flying boats, but also from the Navy with their Gannet, to become the sole long range maritime asset in the British inventory.

The success of the Shackleton procurement owed as much to luck over timings, as it did to the suitability and effectiveness of the aircraft. The first version of the requirement was issued in March 1946, and it was for a particular airframe from one company, rather than a broader competition as seen on the R.2/48 flying boat. By having initial development carried out in the immediate post-war years, and by being the only new aircraft capable of fulfilling the role, the shortcomings of the aircraft were largely forgiven. The simple fact was that the maritime variant Lancaster GR.3s needed replacing, and the Shackleton was the only aircraft under development that could take over the maritime role at that time.⁷⁷ One of the key requirements issued with OR.200 in 1946 had been that the new aircraft should have improved comfort and sound proofing to reduce crew fatigue, good ditching and floatation characteristics, and the ability to operate within the North Atlantic

⁷⁶ Ibid. p.159

⁷⁷ See Appendix A for aircraft details.

Gap.⁷⁸ Yet these same issues were still present in 1952 when A.V.Roe were proposing the Shackleton Mk.3.⁷⁹ A company that proposed a new and improved variant of their own aircraft months before the original version is in full front line service is one that was clearly very confident of receiving more orders, despite their original efforts clearly not having been up to the task.⁸⁰ The basis for this confidence is, however, hard to find. By late 1951 it was accepted within both the Air Ministry and the Ministry of Supply that the initial versions of the Shackleton were unsatisfactory, with the Ministry of Supply keen to press for a formal requirement and a replacement aircraft from Shorts.⁸¹ The prospect of Neptune aircraft from America, coupled with the continued flying boat and Varsity projects, suggest that the long term future of the Shackleton and the A.V.Roe contract was far from secure. Therefore what both saved the project and led to future orders was the timing of the rearmament programme, which required a build up forces to be achieved over a very short timeframe and within the financial limitations imposed. The introduction to OR.320 did not try and hide this fact, and stated that the Mk.3 would; "...provide the cheapest and quickest interim solution."⁸²

The constraint this put on procurement was that only projects that could display immediate results and allow for the extra funds to be spent within the relevant years could get the go ahead. The Maritime Air Defence Committee, reporting in January 1951 into the procurement options, assessed that the

⁷⁸ AVIA 15/3900, Air Staff Requirement OR 200, Mar 1946

⁷⁹ AIR 2/12101, letter from AOC Coastal Cmd to DDOR1, *AVRO 719 Shackleton Mk.3*, 1 Jul 1952

⁸⁰ AIR 2/12101, letter from A.V.Roe to ACAS(OR) [AVM Pelly], 3 Jan 1951

⁸¹ See AIR 2/12101 and AIR 2/10749

⁸² AIR 2/11845, Air Staff Requirement No. O.R.320 Development of the Shackleton Mark 2 for Long Range Anti-Submarine Duties, 20 Mar 1953

Shackleton was the preferable option compared to the Varsity on the grounds that it was over the worst of its development difficulties, while the Varsity was still an unproven design. Additionally the Shackleton was already rolling off the production line, and while increasing the capacity of the line would be a challenge, the Varsity would require the construction of a completely new factory, further adding to the delays of getting an alternative aircraft into service.⁸³ By Spring 1952 the Bristol 175, an MPA variant of the Britannia transport aircraft, was tabled as a rival to the Shackleton Mk.3. Despite the 175 proving to be a far superior design it was not seen as being a viable option until 1958 at the earliest – too late for the rearmament programme, and with no long term planning over the size and shape of the ASW force in place, the project could not be committed to.⁸⁴ Therefore in terms of the actual aircraft, the Shackleton procurement saw off the competition because it was readily available, rather than because it was the best strategic solution.

The readily available nature of the Shackleton was also key in the context of aircraft numbers. The 1951 requirement from NATO for the United Kingdom to contribute 140 MPA to European defence, with the Royal Navy requiring 120 such aircraft for convoy protection alone, came at a time when Coastal could put up less than 100 aircraft, of which a large proportion were out of date Lancaster GR.3s.⁸⁵ While the procurement of Neptunes was partly intended to bridge this shortfall in

⁸³ AIR 2/10749, Report of *Maritime Air Defence Committee*, Jan 1951, further backed up by C-in-C Coastal who favoured the Shackleton as it was already in production.

⁸⁴ See ADM 1/123062, Report of Maritime Air Committee, Annex 2, 2 Dec 1952 and TNA AIR 2/11846, *Shackleton Mk.III O.R. 320*, 1 Sept 1953

⁸⁵ ADM 1/23062, letters between C-in-C Coastal Command and C-in-C East Atlantic, Sept 1951

numbers, the refusal of the United States in late 1952 to supply 16 Neptunes to replace the 16 Lancasters of the Mediterranean force, resulted in the requirement for an extra 34 Shackletons to both cover the Mediterranean and to increase the available war reserve under Plan K.⁸⁶ Purchasing extra Shackletons was taken as the simplest option on multiple occasions, seemingly without much lobbying from A.V.Roe. When, in early 1953, it was deemed essential that the Lancaster GR.3s of the Maritime Reconnaissance School were replaced, the concept of an MPA variant of the Varsity was again raised, however the same issues of cost defeated the plan, and instead Shackleton Mk.1s were retired from the front line and moved to the School.⁸⁷ These retirements resulted in a requirement for 13 extra Shackletons on the front line, which were ordered to Mk.3 specification, thereby improving the quality of active aircraft while at the same time giving the impression that a lengthy and expensive procurement cycle had been avoided.⁸⁸

The Shackleton was at the right stage of development at the right time to meet RAF requirements during rearmament. The continually tightening financial constraints were such that the preference was to see how the Shackleton developed, and that there was little benefit to be had in developing a long term replacement in a period when future tactics and equipment were unknown.⁸⁹ While this is logical for a continuation of production on the Mk.2 variant, the Mk.3 is

⁸⁶ AIR 2/12101, loose minute from D.POL(AS) to ACAS(P) *Maritime Reconnaissance Force*, 10 Oct 52 and AIR 20/8714, *Plan K*, 6 Feb 1953

⁸⁷ AIR 20/6955, Minutes from conversation between DO (FP) and F.6, *Shackleton Mark 2A*, 10 Apr 1953

⁸⁸ AIR 20/6955, letter from Treasury [C.H.W. Hodges] to Air Ministry [R.J.Penney] approving purchase of 13 aircraft at a cost of £2 million, 15 Jun 1954, and loose minute from Air Ministry [R.J. Penney] to D.D.POL(AS)1 on the transfer of Mk.1s to the MR School, 18 Jun 1954

⁸⁹ AIR 2/12101, Comparative Study of the Bristol 175 and AVRO 719 in the long range Maritime Reconnaissance Role, May 1952

slightly different. A.V.Roe put the design forward as an evolution of the Mk.2 by highlighting that it had extended range, new landing gear and greater sound proofing.⁹⁰ Yet the Air Ministry in June 1951 considered that the Mk.3 should have been viewed as a completely new aircraft and rival to R.2/48 and should therefore be put out to tender; a situation that would not have been in A.V.Roe's best interests, and may well have lead to the project being cancelled along with the other new designs of the time.⁹¹ The language used by A.V.Roe in correspondence with the Air Ministry was of the Mk.3 being an updated version, building on the experience gained in working on the Mk.1 and Mk.2, and utilising the existing jigs and tooling.⁹² All of this suggests a natural progression of the Shackleton from initial requirement through to the Mk.3, however given that other designs of MPA such as the Varsity and Britannia projects did not make it into service, the level of influence exerted by politicians, the military, and industry varied from project to project.

From the moment the draft specification of O.R.200 was issued in 1946, A.V.Roe were unable to meet it, despite the fact that the text was written specifically for one of their own products. The company highlighted that there was a; "...necessity for giving us final requirements and that these should be as close to 'Lincoln' requirements as you can get..."⁹³ That the specification was subsequently changed points to the company having the upper hand in negotiations with the Ministry of Supply. Rather than battling to ensure that the military requirement was

⁹⁰ AIR 2/12101, letter from A.V.Roe to ACAS(OR) [AVM Pelly], 3 Jan 1951

⁹¹ AIR 2/12101, loose minute from D.M.A.R.D to DOR(A), *Shackleton with Nomad Engines*, 14 Jun 1951

⁹² AIR 2/12101, letter from A.V.Roe [JARK] to DOR(A), *Shackleton Mk.3*, 29 Feb 1952

⁹³ AVIA 15/3900, letter from A.V.Roe to Ministry of Supply [S. Scott Hall], 30 Apr 1946

met, the Ministry preferred to cede to A.V.Roe's requests by altering the specification such that the take off distance was increased, and the range and payload were reduced to bring them closer to that of the Lincoln.⁹⁴ By only having one company to work with the Ministry effectively had no choice in the matter, yet this contrasts sharply with the political preference for Short Brothers expressed over flying boats and the Shackleton Mk.2 replacement. This was done in such an overt manner that in an unattributed loose minute to VCAS on 25 Jun 1951, it was remarked that as; "...the Government owns the majority of the shares in Shorts [this] may have something to do with their preference for this firm."⁹⁵ The sequence of events of MPA procurements awarded to Shorts in this period demonstrates the high level of government support for the company. Even after the directive from the Minister of Supply, George Strauss, which stated that all RAF flying boats should be built by Short Brothers, the project was still ultimately cancelled. Subsequently the contract for the Seamew was awarded to the company, and in 1954 Bristol purchased a fifteen percent share of the company, on the provision that the Britannia would be built at Shorts.⁹⁶ The Britannia at the time was still considered to be the best long term option for the replacement of Shackleton Mk.2s. In a Commons debate on 17 July 1950, the Minister of Supply was asked about the reasoning behind 160 redundancies at Shorts, to which he replied it was simply a

⁹⁴ AVIA 15/3900, comparing draft specification dated Mar 1946, with formal specification R5/46 'Maritime Reconnaissance Lincoln', 29 Oct 1946

⁹⁵ AIR 2/10749, *loose minute to VCAS*, 25 Jun 51

⁹⁶ Barnes, C.H., *Shorts Aircraft Since 1900* (Brassey's, London, 1967) p.510

case of there not being enough military work for the company.⁹⁷ While defence spending had doubled through the period 1949-1953, the strategic direction still had primacy over simply manufacturing aircraft to meet politically set employment levels.⁹⁸ This demonstrates a fundamental difficulty of the rearmament period, where due to full employment across much of the country, an increase in military production would have resulted in a fall in vital commercial production, which was certainly the case for the Lancashire manufacturing region, of which A.V.Roe was a part.⁹⁹ The rosy employment picture was not evenly distributed across the country and, in order to support a particularly struggling area, military contracts would have to be awarded to the region that needed them the most, rather than necessarily to the company who produced the best proposal. MPs would still stand up for their constituencies, though the effect this actually had was marginal. In a debate over defence orders on 23 October 1950, in response to a question over orders for Scottish Aviation, Mr. Leslie Hale, Labour MP for Oldham West and therefore for the A.V.Roe factory where the Shackleton was being made, remarked that “the firm of A.V.Roe, of Chadderton, is larger, better equipped and more adequately staffed than Scottish Aviation Ltd, and that Lancashire has more people, more brains and more money than Scotland.”¹⁰⁰ This approach, while undoubtedly popular with his constituents, was unlikely to have won much praise from within the Ministry of Supply.

⁹⁷ Hansard Commons Records, *Oral answers to questions – Ministry of Supply*, 17 Jul 1950 (<http://www.theyworkforyou.com/debates>, retrieved 06 Jun 2012)

⁹⁸ Ismay, p.111

⁹⁹ CAB 21/3567 *NATO Meeting of Defence Ministers*, 7 Sept 1951

¹⁰⁰ Hansard Commons Records, *Oral answers to questions – Ministry of Supply: Defence Orders*, 20 Oct 1950 (<http://www.theyworkforyou.com/debates>, retrieved 08 May 2012)

Just because the military were in favour of producing an aircraft, and the Treasury was in agreement over the allocation of funds, did not automatically mean that the project could be accelerated. An Air Council paper from late 1949 stated that an increase in Shackleton numbers would require a reduction in Canberra numbers, as they were both made at the same factory.¹⁰¹ At that stage the build up of the medium bomber force was a strategic priority, one that certainly outweighed the production of MPA. However by 1952, in a meeting over defence expenditure, Prime Minister Churchill was prepared to see a reduction in the production of medium bomber aircraft such as the Canberra, but as this was a cost saving measure it would not necessarily translate into the spare factory capacity seeing an increase in production rates of the other aircraft manufactured there.¹⁰² This was due to the issue at hand being yet again about the financial situation rather than the strategic one. The strategic military influence was carried out at Air Ministry level, and Coastal Command only had a significant say once the aircraft had been selected and the question was over the actual detailed specification of the airframe. When the R.2/48 was under consideration in 1949, D.D.Ops(M) stated that great care should be taken to get the design right “not forgetting Coastal Command.”¹⁰³

The involvement of Coastal Command in the specification setting was then hampered by the interests of industry, for whom the underlying motivation would always be profitability. This was despite a key campaign pledge of Churchill during the 1951 general election being the introduction of an ‘excess profits tax’ during the

¹⁰¹ AIR 2/10749, *Air Council Paper, the replacement of the Sunderland, note by VCAS*, Undated, Est. late 1949

¹⁰² AIR 20/8714, *Minutes of Defence Committee*, 5 Nov 1952

¹⁰³ AIR 20/6955, loose minute by D.D.Ops(M) [Gp Capt Moreton], *Flying Boat Policy*, 3 Aug 1949

rearmament programme.¹⁰⁴ A.V.Roe were adamant that the upgrade from Mk.2 to Mk.2A should be as simple as possible, and that requests for extending fatigue life of all major components to 10,000 hours, and the fitting of modern navigation and homing aids were dismissed as being an unnecessary set of “new fangled ideas...”¹⁰⁵ The letters that went back and forth between the Air Ministry and A.V.Roe were written in a friendly tone between people who were used to conversing with each other outside of the formal environment of the Ministry, and these relationships were important in facilitating the smooth running of the Shackleton procurement once the project had been signed off at Treasury level. Despite this the Company was able to shape the exact specification to what was achievable by them in the shortest possible timeframe, and the Air Ministry had little choice but to adapt the OR accordingly.¹⁰⁶ The issue of Industry lobbying was therefore powerful at the lower levels in dealings with Coastal Command and the Air Ministry, but not necessarily that influential during the initial dealings with the Ministry of Supply and the Treasury. The failing of Short Brothers to secure at least one of their MPA bids, even when they were the explicitly preferred bidder, is testament to that.

The viability of an aircraft on the export market was an important factor working on a financial level for both industry and the politicians. The potential export of Shackleton Mk.2A to South Africa occurred at the same time as the

¹⁰⁴ Butler, D.E., *The British General Election of 1951* (Macmillan, London, 1952) p.45

¹⁰⁵ TNA AIR 2/11845, *Shackleton Mark III OR/320*, Letter from A.V.Roe [JARK] to ACAS(OR) [AVM Tuttle] 28 Jan 1953

¹⁰⁶ See AIR 2/11845, Examples of this include the initial requirement for operating from the shorter runways and in the higher temperatures of the tropical environment, which were necessitated by the withdrawal of the flying boat requirement. As the Company were unable to meet this standard, it was quietly dropped.

aircraft was being considered by the Air Ministry. The subsequent signing of the export agreement and a demonstration of the aircraft to the Canadians could only have helped a company's proposals, particularly at time when the international market was moving away from British designs towards American built aircraft, both in the military and civilian markets. In the case of the Canadian bid A.V.Roe were critical of comments made by RAF officers overseas with regard to the Shackleton, and wanted them stopped. The case was also put to the Air Ministry that a Canadian acceptance of what would have been the Mk.4 would allow the RAF to purchase the upgraded aircraft with lower development costs due to the production costs being shared between the two nations.¹⁰⁷ The successful sale of the Mk.3 to South Africa and its subsequent acceptance by the RAF, compared to the failure of the sale of the Mk.4 to Canada and the aircraft then not being bought by the RAF, demonstrated the importance of export sales to the MPA force. When considered that of the sixteen aircraft types subsequently accepted into RAF service between 1955 and 1964 only two were successfully exported, it could be said that the emphasis on the export market was only a driving factor with maritime procurement, rather than defence as a whole.¹⁰⁸ Industry lobbying was important in MPA procurement, but ultimately, as with the wishes of the military, the Treasury would have the final say on the aircraft that fitted the politically driven strategy.

¹⁰⁷ AIR 2/11845, letter from A.V.Roe [Sir Roy Dobson] to AVM Ivelaw-Chapman, 25 May 1953, Canada were examining four American designs and the Shackleton. These critical observations were endorsed by AVM Ivelaw-Chapman in a loose minute to the RAF Senior Air Liaison Officer in Ottawa, 28 May 1953

¹⁰⁸ Hayward, K., *The British Aircraft Industry* (Manchester, 1989) p.65

Chapter Three

THE COMPETITION FOR THE REPLACEMENT OF THE AVRO

SHACKLETON MK.1 & 2, 1963-1966

The Cold War, during the first half of the 1960s, saw a shift in defence focus within NATO, primarily in response to the Berlin and Cuban Missile Crises, to one of nuclear weapons as a first strike option against Soviet aggression.¹⁰⁹ In Britain this shift was typified by the decision by the Conservative government of MacMillan in December 1962 to purchase submarine-launched Polaris nuclear weapons, thereby allowing Britain to maintain a modern independent nuclear capability in the deterrent era.¹¹⁰ British defence policy was centred on three core roles; the defence of Western Europe through membership of NATO, retaining a strategic nuclear force, and maintaining a world-wide military presence to preserve peace.¹¹¹ The world-wide commitment, commonly referred to as Britain having a presence 'East of Suez', was a formidably expensive undertaking, and formed the last vestiges of Britain as an imperial power. The economic stagnation of the early 1960s, coupled with the continued threat of devaluation of the Pound, led to the realisation that Britain could not undertake these commitments alone.¹¹² Thus there was an increased level of internationalism within British policy throughout these

¹⁰⁹ RHS, *Harold Wilson's Cold War; the Labour Government and East-West Politics, 1964-1970* (RHS, Chippenham, 2009) p.29

¹¹⁰ Fisher, N., *Harold MacMillan, A Biography* (Weidenfeld and Nicolson, London, 1982) p.303

¹¹¹ TNA CAB 129/120, *Defence White Paper*, 9 Feb 1965 and TNA CAB 128/39, *Cabinet meeting minutes of Thursday 26 November 1964*

¹¹² Wyn Rees, G., *Brothers in Arms: Anglo-American defence co-operation* in Ed. Gorst, A., Johnman, L., & Scott Lucas, W., *Post-War Britain, 1945-64, Themes and Perspectives* (Pinter, London, 1989) p.205

years as the Government was forced to look to both the United States and Europe for mutually beneficial co-operation. This need to win favour on both sides of the Atlantic can be seen, with regard to America, in the purchase of Polaris missiles and the subsequent aircraft and equipment orders placed with American companies under the Wilson administration.¹¹³ In Europe, the efforts to gain French support for British entry into the European Economic Community (EEC) were seriously dented by French President De Gaulle's veto on the subject on 14 January 1963.¹¹⁴ This made the Anglo-French Concord [*sic*] airliner programme of vital importance, for although it was barely affordable, the French Fifth Republic saw it as a matter of international prestige, and therefore in order to keep the door open to EEC membership, Britain had no choice but to support the endeavour.¹¹⁵ Whilst the question of co-operation with the French is common throughout the period, with regard to working with the Americans there were differences between the Conservative and Labour governments over the importance of supporting American foreign policy in order to retain their economic support.¹¹⁶ Although it was a Conservative decision to purchase Polaris - something that Labour claimed in their 1964 manifesto that they would renegotiate - it was Labour that took up the mantle of future trans-Atlantic integration through the increased level of military

¹¹³ TNA PREM 13/716, Telegram from BDS Washington [Armstrong] to MoD [Cooper], 4 Jan 1966, detailing British military purchases from the United States totally £1,800m

¹¹⁴ Butler, D.E. & King, A., *The British General Election of 1964* (MacMillan, London, 1965) p.18

¹¹⁵ Feldman, E.J., *Concorde and Dissent; Explaining High Technology Project Failures in Britain and France* (Cambridge University Press, Cambridge, 1985) p.88 – The British spelling of 'Concord', rather than the French 'Concorde' was used in British government documentation of the time, and has therefore been used throughout this thesis.

¹¹⁶ Wilson, C., "Rhetoric, reality and dissent: The Vietnam policy of the British Labour Government, 1964-1970" *The Social Science Journal*, Vol.23, No.1 (1986) p.18 and p.28

equipment purchases.¹¹⁷ The concept of buying American aircraft had been a sensitive subject under MacMillan following the backlash in the press over the Royal Navy's decision to replace Sea Vixen with American Phantoms rather than British P.1154s.¹¹⁸ That loss of the Royal Navy deal was estimated to have cost Hawker Siddeley £150m.¹¹⁹ Yet despite this, after the General Election there was a greater willingness to forgo the needs of British industry and buy equipment off the shelf from America, if it carried the twin benefits of diplomatic advantage and economic rationalisation.

The growing financial and technological need for interdependence between Britain and other nations was evident within the MPA field, as attempts were made with both Canada and France to establish a working arrangement that would not only be beneficial militarily, but also economically, and serve as a springboard for the domestic aviation industry.¹²⁰ This was all at a time when it was accepted by the Ministry of Defence that world-wide, up until 1975, the submarine threat would predominantly come from conventional diesel powered boats,¹²¹ and that nuclear powered submarines were effectively undetectable.¹²² The concern was that there was a definite need for a step up in research and development into vital new ASW

¹¹⁷ Butler & King, *British General Election 1964* (London, 1965) p.130

¹¹⁸ TNA AIR 2/17197, *Interim Shackleton Replacement (ASR 381)*, Loose Minute from P.S. to DCAS to ACAS (OR), *Shackleton Replacement*, 11 Feb 1964

¹¹⁹ TNA AIR 2/17199, *Interim Shackleton Replacement (ASR 381) – Policy*, MacPherson, A., “Missile Blow”, *Daily Mail*, 17 Aug 1964

¹²⁰ TNA AIR 2/17265, *Maritime Reconnaissance Aircraft – Shackleton Replacement, Type Requirements – AST/OR 350/357*, Letter from Solly-Flood, Dept of Defence Production [Canada] to Haviland, Ministry of Aviation, 9 Apr 1964 and AIR 2/16777, Loose Minute from DCAS to Secretary of State, 27 Mar 1963

¹²¹ TNA AIR 2/16777, *Maritime Reconnaissance Aircraft – Shackleton Replacement, Type Requirements*, Loose Minute from DCAS to Secretary of State, 27 Mar 1963

¹²² AIR 2/16777, Loose Minute from Secretary of State for Defence to Minister of Aviation, *Submarine Detection Methods*, 6 May 1963

technologies, rather than the purchase of new airframes in the short term, and the RAF considered that international co-operation was the best way of achieving this breakthrough.¹²³ The apparent invulnerability offered by nuclear submarines was a major consideration in the British decision to transfer the delivery of nuclear weapons from the RAF's V-Force to the Navy's submarines, and this belief resulted in MPA procurement not focusing on the issue of protecting the deterrent during the 1960s.¹²⁴ This difficulty of detecting nuclear submarines gave the Polaris fleet the ability to evade surprise attacks, offer a second strike capability, and gain flexibility of positioning of the delivery vehicle outside of Britain.¹²⁵ The matter of replacing the ageing Shackleton force instead rested on the key areas outlined above, namely whether an aircraft could be procured that was not only economically viable, but was also a technological leap forward. In order to achieve this economic value both overseas and domestic offerings were considered, and ultimately the Labour government decided in early 1965 to purchase the British H.S.801 maritime Comet, designated Nimrod MR.1.¹²⁶ In the light of the priorities of interdependence and financial prudence, the Nimrod programme is almost unique in being a British programme that appeared to counter the broad Labour policy of buying foreign

¹²³ AIR 2/16777, Letter from Canadian CAS [AM Dunlop] to CAS [MRAF Pike], 22 May 1963

¹²⁴ The ability of an airborne platform to ensure that the deterrent-armed submarines were not followed by Russian submarines when transiting to or from port, became a key role for MPA as the Cold War progressed. See Cm2550, *Statement on the Defence Estimates 1994* (HMSO, London, 1994)

¹²⁵ Pierre, A.J., *Nuclear Politics, the British Experience with an Independent Strategic Force 1939-1970* (Oxford University Press, London, 1972) p.200 and TNA CAB 164/713, *Deployment of UK Polaris Submarines*, Letter from Reid to Wright (Cabinet) ref. O.P.D.(O)(66)2, *United Kingdom Nuclear Policy*, 13 Feb 1966

¹²⁶ TNA AIR 2/171200, *Interim Shackleton Replacement (ASR 381) – Policy*, Loose Minute from Treasury [Hall] to MoA [Airey], *Comet MR*, 14 May 1965

aircraft, and equally uniquely saw financial savings during production.¹²⁷ The factors that need to be considered in understanding this decision are centred on why the attempts to purchase the French led NATO MPA, the Atlantic, were unsuccessful, and how much influence the British aviation industry and the Ministry of Aviation were able to exert on this process. The Nimrod was not the only British proposal tabled during this procurement, and as such the question arises as to what made it successful where so many others failed. Finally, the political landscape of the time was highly dynamic, and the way Britain was trying to integrate with the world in the post-colonial period had a bearing on every aspect of government policy, of which MPA procurement was but a part.¹²⁸ By assessing these various areas the reasoning behind such an apparently unlikely procurement can be reached.

The need for a new MPA to replace the Shackleton came to the fore in the early 1960s due to the high fatigue rates experienced across the fleet, particularly on the older Mk.2 aircraft.¹²⁹ The rapid increase in MPA tasking from the RN in order to fulfil the role of surveillance of the Soviet Navy, had effectively worn the aircraft out.¹³⁰ This strategic shift saw a move away from the convoy protection mantra of the 1950s into one more in keeping with the new policy of deterrence, by

¹²⁷ TNA DEFE 13/286, *The Shackleton Replacement*, Handwritten Note from P.S. to Under Secretary of State (RAF) to Under Secretary of State (RAF) on MO.26/11/12 [TNA DEFE 24/67, Enclosure 10], 9 May 1968, despite project costs rises of 5%, this was partly offset by a saving of £3.5m on production costs.

¹²⁸ Ferguson, N., *Empire* (London, 2004) pp.358-361

¹²⁹ AIR 2/171200, MoD Brief, *Comet HS801 Maritime Aircraft*, undated [est. Jan 1965] the structural integrity of the airframes were deteriorating due to high use in corrosive salty air of the Atlantic.

¹³⁰ AIR 2/17199, *Interim Shackleton Replacement (ASR 381) – Policy*, Loose Minute from D. Air Plans to D. of Ops, *Flying Task of the LRME Squadron of Coastal Command*, 4 Aug 1964 – Each aircraft required an addition five flying hours per month (10%) to meet the surveillance tasking objectives.

being proactive rather than reactive in nature, the demands on the fleet changed dramatically.¹³¹ Although a programme of reconditioning and modernisation of both the Mk.2 and Mk.3 was underway, this would only have extended the life of the Mk.2 until 1972, thus the RAF was forced into giving it an out of service date of 1970.¹³² The expectation was that the Mk.3 could remain in service until the late 1970s, therefore there was an interim requirement for a cost-effective aircraft to be introduced by 1969, and which could be replaced in the late 1970s, along with the Shackleton Mk.3s. This replacement would be a highly advanced aircraft built to the heavily armed and near supersonic specification laid down in AST 357.¹³³ The problem of replacing the Mk.2s was identified in early 1964, and there was a need for this project to be quickly authorised, as in order to make it financially viable, the RAF had to have the bulk of the expenditure fall in the period 1966-69, as 1970-73 would see the huge outlays on the TSR.2, HS.681 and P.1154 programmes.¹³⁴ Thus a cheap off the shelf solution would have solved both the issue of financial timings, and an early introduction of the type would have allowed for the final Mk.2 modernisation phase to be cancelled, saving £15m.¹³⁵ These off the shelf options were limited to two foreign aircraft, the American Lockheed Orion, and the French

¹³¹ AIR 2/17197, Loose Minute from D. of Ops to DGSR (A), *The Interim Shackleton Replacement*, 6 Mar 1964. Operational flying by Coastal Command rose from 260hrs in 1960 to 6000hrs in 1963 as a result of the surveillance tasking.

¹³² AIR 2/17197, *A Proposal for keeping Coastal Command viable from 1970 until the introduction of a new aircraft to AST 357*, Feb 1964

¹³³ Ibid.

¹³⁴ Ibid. see Appendix A for details on these aircraft.

¹³⁵ AIR 2/17197, DCAS & VCAS, *Draft Air Council Paper, the Shackleton Replacement*, undated [est. Mar 1964]

led NATO Breguet Atlantic.¹³⁶ Whilst the British aviation industry did propose conversions of the BAC VC10 and the Hawker Siddeley Trident, these aircraft were hampered by being too large, expensive and would take too long to enter service, the very things the RAF was desperate to avoid.¹³⁷ Thus the decision for the Ministry of Defence was not one based around which aircraft would be tactically superior, but instead which would be politically favourable and economically viable.¹³⁸

The question of political favourability was not just an international issue, but a domestic one as well. A purchase of the Orion would simply be an import of a complete aircraft and associated equipment from America with no scope for having some of the work carried out by British industry. The Atlantic programme however, was a joint NATO project, and thus the engines were already sourced from Rolls-Royce, and the propellers from de Havilland. This workload totalled six percent of the project. However, a British buy would have resulted in an increase to ten percent on foreign orders and twenty one percent on British orders.¹³⁹ In February 1964 ACAS (OR) summed up the situation by stating that “a further buy overseas following the Phantom is not going to be popular but might be more digestible if French rather than American and if it can be part of a package deal which will put

¹³⁶ When the Atlantic was upgraded by the French Navy in the 1980s it was renamed ‘Atlantique’. The contemporary term ‘Atlantic’ is used throughout this thesis.

¹³⁷ Ibid.

¹³⁸ TNA AIR 2/17198, *Interim Shackleton Replacement (ASR 381) – Policy*, Minutes of Research and Development Board, 22 Jun 1964 and Brief for Minister of Defence (RAF), *Shackleton Replacement*, Jun 1964. Both documents state that the Trident aircraft is the preferred option on operational grounds, but accept that it is unaffordable.

¹³⁹ AIR 2/17199, Letter from Messmer [French Minister of Armies] to Secretary of State for Defence, 22 Jun 1964

work into British Industry.”¹⁴⁰ It is this factor of British industry that firmly swung the balance in favour of the Atlantic.

The factor of British industry carried two main benefits. Firstly, through the increased work on foreign orders for the Atlantic, revenue would have been generated that would have assisted the balance of trade, and thereby lowering the perceived unit cost of the aircraft bought by the RAF. Secondly, it could be presented to the press as Britain partaking in a European consortium rather than the procurement simply being a foreign buy.¹⁴¹ There was also a strong belief that European integration could lead to further shared defence contracts and thus increased domestic employment.¹⁴² Although the involvement of British industry was seen as an excellent driver to gain political approval for the procurement, all such factors would ultimately come second to economic considerations. As the French were only prepared to see a maximum of twenty one percent of the Atlantic build programme transferred to Britain, it was determined that this alone was not a sufficient financial incentive to buy the aircraft. The political line throughout the summer of 1964 was the need for a ‘quid pro quo’ to come from the French.¹⁴³ The preferred British option was a French purchase of the P.1154 supersonic VTOL fighter which had been turned down by the Royal Navy. With the programme struggling with only the RAF as a customer, a replacement buyer for the Navy’s aircraft was given a high priority. The main stumbling block to this was the French

¹⁴⁰ AIR 2/17197, Response to P.S. to DCAS paper 690/64 by ACAS (OR), *The Shackleton Replacement*, 28 Feb 1964

¹⁴¹ AIR 2/17198, Brief for Minister of Defence (RAF), *Shackleton Replacement*, Jun 1964

¹⁴² Ibid.

¹⁴³ The term quid pro quo was widely used in correspondence on the Atlantic procurement, for examples see TNA DEFE 25/15, *The Shackleton Replacement*, AIR 2/17198 and AIR 2/17199

Mirage IIIV [*sic*], an aircraft that fulfilled a similar role and was therefore in direct competition with the British design.¹⁴⁴ There were efforts by Rolls-Royce to have their engine fitted to the Mirage IIIV, however these were rebuffed by the French, who stated that the only way this could occur was if Britain purchased the fighter.¹⁴⁵ This is not to say that the French were completely against the concept of establishing a quid pro quo arrangement over the purchase of Atlantic; however, their proposal of a French procurement of Bloodhound surface-to-air missiles was turned down by the MoD as being insufficient.¹⁴⁶ The British need for a highly lucrative incentive to justify an Atlantic purchase was what ultimately killed the project off, such that by July 1964 the Cabinet view was firmly that only a French purchase of P.1154 would allow the Atlantic deal to go ahead.¹⁴⁷ Even with last ditch efforts to react to French interest in first the Canberra PR.9 reconnaissance variant, and then, as late as November 1964, with the possibility of a sale of the Hunter as a low level trainer as a quid pro quo for the Atlantic, all failed to convince the Cabinet as to the merits of the proposal.¹⁴⁸

These final efforts demonstrate both how keen the MoD was on obtaining the Atlantic, and equally how stubborn Cabinet was in refusing it. Despite the overarching desire to promote British involvement in Europe in an effort to reignite

¹⁴⁴ AIR 2/17199, Loose Minute from ACAS (OR) to DCAS, *Maritime Replacement*, 21 Jul 1964 – The aircraft name is Mirage III (Roman numerals) ‘V’ (alphabetic) variant, there were also IIIC and IIIT among others.

¹⁴⁵ AIR 2/17197, Loose Minute from DOR (B) to P.S. to DCAS, *Anglo-French Collaboration*, 14 Feb 1964

¹⁴⁶ See AIR 2/17198, Loose Minute from ACAS (OR) to Dep. Sec. C/MoA, *The Atlantic ‘Quid Pro Quo’*, 22 Jun 1964 – for the offer, and AIR 2/17199, Loose Minute from ACAS (OR) to DCAS, *Maritime Replacement*, 21 Jul 1964 – for the refusal.

¹⁴⁷ DEFE 25/15, Notes on Defence Council Meeting 16 Jul 1964, prepared by Gp Capt Trotman, *Shackleton 2 Replacement*, 21 Sept 1964

¹⁴⁸ AIR 2/17199, Loose Minute from DOR2 (RAF) to P.S. to DCAS, *French Interest in Canberra PR9*, 11 Aug 1964, and AIR 2/17199, Cypher Signal, British Air Attaché (Paris) to ACAS (OR), 10 Nov 1964

the entry bid for the EEC, it is clear that such a move would have to come at a price. What is also apparent through the detailed attempts to procure Atlantic over the British proposals, and the ultimate result which was the British Nimrod, is that both the Treasury and the Ministry of Aviation held greater sway over the process than the Ministry of Defence. In the case of the Treasury this is understandable, particularly at a time of economic hardship and difficult defence procurements. The Atlantic purchase was seen by the MoD as a way around difficult domestic procurements, and given that the MoA was seen as responsible for the large scale cost overruns on the other aircraft projects, their influence, and that of the aircraft industry in general, must have been a crucial factor in Britain deciding on a brand new high cost, low volume, domestic aircraft – the very thing the MoD and arguably the Treasury were trying to avoid.

Initially the MoA had proposed conversions of the VC10 and Trident as rivals to the Atlantic and Orion, and these were aircraft that had originally been intended to meet AST.357 rather than the later Atlantic based ASR.381. These proposals, which, as even the BAC Technical Director admitted, did not quite meet AST 357,¹⁴⁹ were viewed with suspicion from within the military. Air Cdre Knott (DOR2) remarked that, “there are signs that a body of opinion within MoA would force an adapted British aircraft on us at almost any price.”¹⁵⁰ The VC10 bid was reported in *The Daily Telegraph* to cost three times that of the comparative Atlantic

¹⁴⁹ AIR 2/17197, Letter from E.E. Marshall (BAC) to DGSR(A), *VC10 as Interim Replacement for the Shackleton Reconnaissance Aircraft*, 2 Mar 1964

¹⁵⁰ AIR 2/17197, Loose Minute DOR (B) to S.6, *Shackleton Interim Replacement*, 10 Mar 1964

procurement,¹⁵¹ demonstrating that financial concerns were in the public domain, even though such details would have been closely guarded.¹⁵² The financial pressures of the time put the Atlantic as the clear favourite, but this did not stop the MoA looking at the benefits to British industry over and above the actual product to be delivered. A letter regarding the budget for an interim aircraft sent by the Assistant Under-Secretary of the MoA to his opposite number in the MoD, stated that “This sum [£100m] would be much better spent in the British aircraft industry.”¹⁵³ This was despite the fact that the most optimistic quote for the Trident programme, which was the cheapest of the British submissions, was already running at £342m.¹⁵⁴ The Trident programme would therefore never be able to meet the tight budget requirements, and regardless of the socioeconomic benefits, giving the money to British Industry would be a waste for the MoD. The delays in gaining approval for the Atlantic were seen within the MoD as having originated from within the MoA. The Chief of the Air Staff remarked to the Minister for the RAF in June 1964 that the MoA would welcome a delay that put the decision back until after the summer recess,¹⁵⁵ and the decision to refer the procurement to the Weapons Development Committee at the behest of the MoA further slowed the process and gave British industry more time to lobby for their designs.¹⁵⁶ The disquiet with the actions of the other side was equally fierce on the side of the MoA

¹⁵¹ AIR 2/17197, Daily Telegraph Air Correspondent, “RAF Wants 50 Foreign Patrol Planes”, *Daily Telegraph*, 14 May 1964

¹⁵² AIR 2/17197, Loose Minute DOR (B) to P.S. to DCAS, *Anglo-French Collaboration*, 14 Feb 1964 – estimated the unit cost of Atlantic at £1.14m, the VC-10 conversion unit cost excluding R&D was put at £3.5m – AIR 2/17197 Loose Minute DOR2 to S.6, *Shackleton Interim Replacement*, 10 Mar 1964

¹⁵³ AIR 2/17198, Letter from Bullock [MoA] to Cooper [MoD], *Shackleton Replacement*, 25 May 64

¹⁵⁴ AIR 2/17197, Loose Minute, Cooper to P.S. to Minister [RAF], *The Shackleton*, 8 May 1964

¹⁵⁵ AIR 2/17198, Loose Minute, CAS to Minister [RAF], *Shackleton 2 Replacement*, 24 Jun 1964

¹⁵⁶ AIR 2/17198, DOR2 prepared summary to [Shackleton Interim Replacement] Report, 17 Jun 1964

and Industry. The head of Hawker Siddeley, Arnold Hall, in a meeting with the Permanent Under-Secretary to the MoD in July 1964 pushed the emotive case that unless the Government had decided “under no circumstances would they buy British aircraft” that he hoped the Hawker proposals would be given full consideration.¹⁵⁷ Not all Industry figures were as indirect with their implications in their lobbying. Sir George Edwards, the Executive Director of BAC, stated in autumn 1964 that the Government image in the aviation industry needed a boost before the General Election, and that a purchase of the BAC 1-11 maritime variant could make it easier for the Conservatives to retain the Preston seat.¹⁵⁸ That the Preston South seat swung to Labour with a small majority may or may not have been due to Industry lobbying, but the intent to influence political decision making cannot be ignored.¹⁵⁹

This aggressive stance taken by the MoA on behalf of British Industry, is in contrast to the Ministry of Supply during the 1950s, when the Air Ministry and Ministry of Supply worked together rather than against each other. The fundamental reasoning behind this is due to the shift in both civilian and military aircraft procurements throughout this period as American aircraft began to dominate the international stage.¹⁶⁰ The initial requirement for the Shackleton, issued in 1946, was for one specific aircraft design with no competition.¹⁶¹ Even with the early 1950s Shackleton Mk.3 bidding, the competition was only between

¹⁵⁷ AIR 2/17199, Letter from PUS MoD [H. Hardman] to PS MoA [R. Way], 7 Jul 1964

¹⁵⁸ AIR 2/17199, Loose Minute from ACAS (OR) to VCAS, *The Shackleton Replacement*, 2 Sept 1964

¹⁵⁹ Butler & King, *British General Election 1964* (London, 1965) p.322

¹⁶⁰ Cm2853 *Report of the Inquiry into the Aircraft Industry* (HMSO, London, 1965) p.11

¹⁶¹ AVIA 15/3900, Loose Minute from RDT.2(d) to F.2(a), *Requisition of Lincoln Aircraft/E2/6/45 Lincoln MR Aircraft*, 30 Jun 1946

British firms.¹⁶² However, the ASR.381, like other RAF procurements at the time was not only open to foreign bidders, but in some cases, such as this, the overseas companies' offerings were the preferred option. The Navy's purchase of Phantom had clearly concerned the MoA and Industry, whilst the Navy had played on the fact that as there were a large number of aircraft projects underway for British industry, and therefore had hoped that the MoA would not object to a comparatively small foreign purchase for the Fleet Air Arm.¹⁶³ Although equipping the US designed Phantoms with Rolls-Royce engines helped the balance of trade, there was still concern for the MoA that in financially tough times other procurements would go the same way.¹⁶⁴ Not only was there the issue of foreign competition in the military market, but the civilian market was also moving heavily towards the United States. When in March 1965, and after the selection of the Comet MR as the Shackleton Mk.2 replacement, Middle East Airlines (MEA) needed to replace their fleet of Comets, the decision was between BAC VC10s or Boeing 707s. Unless BAC could offer a suitable price to buy the old Comets from MEA, the airline would state that the British Government had let them down, and buy their aircraft from Boeing.¹⁶⁵ The issue became highly important politically to the Government's export drive and thus became one where both Transport Command and then Coastal Command were offered the MEA Comets. In the case of

¹⁶² AIR 2/12101, Comparative Study of the Bristol 175 and AVRO 719 in the long range Maritime Reconnaissance Role, May 1952

¹⁶³ TNA ADM 1/29055, *Replacement of Sea Vixen by F4J Version of the Phantom*, Minutes of meeting between First Lord of the Admiralty and Minister of Aviation, 24 Jan 1964

¹⁶⁴ Mottershead, P., 'Industrial Policy' in Ed. Blackaby, F.T., *British Economic Policy 1960-74* (Cambridge University Press, Cambridge, 1978) p.453

¹⁶⁵ AIR 2/171200, Loose Minute, P.S. to Parliamentary Secretary MoA to P.S to Minister (RAF), 26 Mar 1965

Transport Command it was in place of newly ordered VC10s, and this was seen as tactically unacceptable due to the smaller size and range of the Comets.¹⁶⁶ For Coastal Command the position was slightly more flexible, as they were prepared to accept the reconditioned aircraft provided they did not cost more than the new build aircraft.¹⁶⁷ The needs of Industry and overseas influence were intrinsically linked, demonstrating the significant impact that Industry could have. For Industry it was not only the problem of foreign competition, but also the fact that, as cuts to the defence budget took their toll, so the size and number of aircraft procurements also fell, with average production runs for military aircraft falling from 620 in 1944–1954 to 168 in the period 1955–1964.¹⁶⁸ The announcement by the MoA to the state controlled airlines and Industry in March 1963 that there would be no new large scale orders placed, further heightened the tension and put the emphasis on competing for overseas orders instead.¹⁶⁹ From a political and military perspective this was reason to move away from expensive, low volume British designs, and instead to either 'buy foreign' or join with other nations in interdependence programmes.¹⁷⁰ For Industry, interdependence made sense when dealing with fighter aircraft such as working with the French on a light strike / trainer aircraft.¹⁷¹ However, with larger aircraft based around existing civilian designs such as MPA, it

¹⁶⁶ AIR 2/171200, Loose Minute, ACAS (Pol) to P.S. to Under Secretary of State (RAF), *Middle East Airlines Comets*, 26 Mar 1965

¹⁶⁷ AIR 2/171200, Loose Minute from DCAS to DCA (RAF), *Middle East Air Line [sic] Comets*, 19 Mar 1965

¹⁶⁸ Hartley, K., "The United Kingdom Military Aircraft Market" *Yorkshire Bulletin of Economic and Social Research*, Vol.19, No.1 (May, 1967) p.18

¹⁶⁹ Mottershead, P., 'Industrial Policy' in Ed. Blackaby, F.T., *British Economic Policy 1960-74* (Cambridge University Press, Cambridge, 1978) p.453

¹⁷⁰ AIR 2/17198, Note by Minister of Defence (RAF), *Defence Council; the Shackleton 2 Replacement*, undated [est. Jul 1964] and AIR 2/16777, Brief for Secretary of State by S.6, 12 Jul 1963

¹⁷¹ AIR 2/17197, Loose Minute from DOR (B) to P.S. to DCAS, *Anglo-French Collaboration*, 14 Feb 1964

was a means of extending the life of a design and giving the perception of value to the Government through it being an adaptation rather than a new costly design, but also as an opportunity for increased profitability as the majority of the expensive research and development work would have already been carried out.¹⁷²

Whilst this may explain the continual, and in the case of Nimrod successful, lobbying by both the MoA and Industry, the question that it throws up is why the relatively late Hawker Siddeley submission of HS.801 was successful where the other British proposals had failed. The decision not to procure the Atlantic was not one that could be considered in isolation. As there was an urgent requirement for a Shackleton Mk.2 replacement the question was not whether an aircraft was needed, but which one it should be. Therefore to decide against one design is reliant on there being another to take its place. The proposals from BAC and Hawker Siddeley for the VC10 and Trident had been based around the concept of a high specification aircraft that would last until the year 2000.¹⁷³ The Comet MR proposal was pitched in a much smarter manner and in direct contrast to the previous British proposals. The starting point for the VC10 and Trident bids had appeared to have been one of simply reacting to an Air Staff Target and then submitting a bid based around that, regardless of the competition, or whether it would conform to budget constraints. The opening meeting between Hawker Siddeley and the MoD where the Comet MR was proposed saw the aircraft

¹⁷² TNA T 225/1405, *NATO Maritime Patrol Aircraft*, Letter from Padmore to Bligh [Treasury], *Conversion of DC7 aircraft for use on Maritime Patrol*, 16 Dec 1958

¹⁷³ AIR 2/17198, Brief by D.D.Ops (M) to 'Director', *The Shackleton Replacement*, undated [est. Jun 1964]

proposed at the same price as the Atlantic - £1.5m per aircraft.¹⁷⁴ This immediately put the proposal at an advantage, as the underlying theme with the Trident bid had been that it was the preferred aircraft from the perspective of the MoD, but the cost and timescale of the project ruled it out.¹⁷⁵ By quoting a timescale and cost similar to the Atlantic, Hawker Siddeley was able to get attention paid to their proposal, even if the difficulty of delivering it to schedule and price were still to come. In this sense the bid represented a definite shift in the aviation industry's approach to MPA procurement with the realisation that it was the Treasury that would ultimately have the casting vote on which aircraft programmes to proceed with. The price quoted did rise to £2.2m per aircraft by October 1964, however this figure was seen as being favourable as it was offered as a fixed price contract.¹⁷⁶ This was highly unusual as the MoA were against fixed price contracts for non off the shelf projects, as the normal course of events was price escalation and delays due to the unknown nature of research and development, and a fixed price would force the burden of the extra costs onto the Company.¹⁷⁷ This position was further enhanced through political efforts to include penalty clauses into the contract, and demonstrated that, unlike in earlier periods, it was the Government and the military that held the upper hand in the initial contract setting requirements rather than Industry.¹⁷⁸ There was a small amount of interest in the HS.801 from both Canada and South Africa. However, Canada was predominantly turning towards the United

¹⁷⁴ AIR 2/17199, Letter from PUS MoD [H. Hardman] to PS MoA [R. Way], 7 Jul 1964

¹⁷⁵ AIR 2/17198, Brief for Minister of Defence (RAF), *Shackleton Replacement*, Jun 1964

¹⁷⁶ AIR 2/17199, Minutes of Meeting held between MoD and MoA, *Shackleton Replacement*, 27 Oct 1964

¹⁷⁷ AIR 2/17200, Brief on Comet HS 801 Maritime Aircraft, undated [est. Jan 1965]

¹⁷⁸ AIR 2/17199, Presentation by Coastal Command and DOR2 (RAF) to Minister of Defence (RAF), *Future ASW*, 20 Nov 1964

States for its aircraft whilst also integrating its defence structure, and South Africa was not formally in a position to purchase a replacement for their Shackletons.¹⁷⁹

This interest was not however because of the specific merits of the HS.801 over the VC10 and Trident, as it formed part of the general resurgent push to sell designs overseas, and was not a crucial deciding factor between the British offerings. Despite the continual attempts to push the design on the overseas market, it was never exported, and ultimately this added to the financial burden of the multiple large aircraft procurements that were underway in late 1964.

The Comet airframe was an aircraft that was in extensive RAF service in Transport Command. It was therefore seen as a known quantity in terms of its handling and servicing and would not require the same expensive new ground equipment as the Trident.¹⁸⁰ The speed with which the Maritime Comet emerged as a viable concept – the earliest reference in the Archives is from July 1964 – to it being formally announced as the preferred option for replacing the Shackleton Mk.2 in January 1965, is unusually rapid.¹⁸¹ What this timeframe suggests is that Hawker Siddeley were initially focusing on the Trident bid, as the aircraft, by being a newly designed airliner, offered a greater longevity of both the combined civilian and military production line and the associated possibility of exports sales. However, as the Comet proposal only surfaced after it was clear that the Government were

¹⁷⁹ AIR 2/17200, Loose Minute from RAF RIO at CFHQ to OR37, *Maritime Aircraft Replacement – HS 801*, 7 Jul 1965, Report by RAF Requirements, *Present Influences Affecting the Formation of a Canadian ASW Policy*, 14 Dec 1964, and AIR 2/17265, Loose Minute from D.D.Ops (M) (RAF) to DOR2 (RAF), *South African Interest in Shackleton Replacement*, 30 Sept 1964

¹⁸⁰ AIR 2/17199, Letter from AOC Coastal Command [Selway] to DCAS [Hartley], 31 Jul 1964

¹⁸¹ AIR 2/17199, Letter from PUS MoD [H. Hardman] to PS MoA [R. Way], 7 Jul 1964 and PREM 13/716, Minutes of Prime Minister Wilson summing up OPD Meeting of 29 Jan 1965, prepared by Burke, 30 Jan 1965

seriously considering proceeding with the Atlantic, it would suggest that the extra time that the MoA were stalling for was so that the aviation industry could formulate a direct Atlantic rival, while at the same time pushing the Trident and VC10 as competition, as these would have given greater benefits to Industry. Given the difficulties of establishing a quid pro quo over the Atlantic, the Comet was able to appear, in the words of AOC Coastal Command, as “the answer to the maiden’s prayer.”¹⁸² Hawker Siddeley were able to give the impression that the Comet was a better option than the Trident, whereas in reality it was never in competition with its stable-mate. Instead, the issue had been over where the Comet sat in relation to the Atlantic, and it was here that lobbying by the MoA and Industry was able to bear fruit. In theory, given that the costs between the Atlantic and Comet were broadly similar, the Comet should have been as unaffordable as the French offering was presented as being. However, a domestic offering would always have the upper hand as the initial cost of the aircraft, if spend on a British design, could be effectively reduced through corporation tax, employee tax, and the benefit of these employees spending their wages within the British economy.¹⁸³ Therefore a British offering pitched at the same price as a foreign offering could be massaged to look like much better value, and therefore achieve the desired savings that would please the Treasury. It was this parity of costs that gave the Comet MR the edge over the earlier British submissions in the battle with the Breguet design, and drove

¹⁸² AIR 2/17199, Letter from AOC Coastal Command [Selway] to DCAS [Hartley], 31 Jul 1964

¹⁸³ Hartley, K., “Choices in Defence Expenditure” *Economic Affairs*, Vol.1, No.1, (October, 1980) p.33 and Sinclair, P.J.N., ‘Public Finances’ in Morris, D. (ed.) *The Economic System in the United Kingdom* (Oxford UP, Oxford, 1977) p.65

the procurement question back towards a British buy rather than an off the shelf foreign purchase.

This logic alone would give a strong indication as to why the Comet MR was ordered if it had been the sole major aircraft procurement of the period. However, there were three other large scale projects that were cancelled in early 1965, and it is this complex picture that demonstrated what drove the selection of the specific maritime aircraft type in a period of mass British cancellations. The election of Labour in October 1964 marked the tipping point for the large Defence procurements of TSR.2, HS.681, P.1154, P.1127 and HS.801.¹⁸⁴ Of these, TSR.2, HS.681 and P.1154 had been signed off by the preceding Conservative government and development was well underway.¹⁸⁵ The primary issue for the incoming government was a need to make up to £800m of cuts due to a balance of payments deficit, which was threatening devaluation of the pound.¹⁸⁶ The easiest way to make such a large scale cut was to cancel defence projects and the RAF was forced to bear the brunt of these savings. Outside of military aviation the Polaris, Concord and future aircraft carrier programmes were also put at risk, although the international nature of Polaris and Concord resulted in them being the most complicated to consider cancelling. As a result of this, the political demands had to be balanced against the economic realities and the wants of the Treasury. Callaghan, as Chancellor, was in a difficult position as he was a supporter of the policy of Britain remaining committed militarily East of Suez, yet had no choice but

¹⁸⁴ See Appendix A for details

¹⁸⁵ Butler & King, *British General Election 1964* (London, 1965) p.136

¹⁸⁶ RHS, *Harold Wilson's Cold War* (Chippenham, 2009) p.34

to insist on cuts, and particularly to the TSR.2, which was central to a British strategy East of Suez.¹⁸⁷ Wilson, Defence Secretary Healey and Foreign Secretary Gordon Walker were all considered Atlanticists, and saw the link with the United States as a vital part of Britain's make up, thus the question of cancelling Polaris raised in the Labour manifesto was not ultimately considered. Instead, a saving was made by reducing the number of boats ordered from five to four.¹⁸⁸ The political effect at the heart of the deterrent allowed the Chief Scientific Advisor Solly Zuckerman to justify the decision as "the smallest subscription we need to pay to achieve these political purposes."¹⁸⁹ The Concord project was also seen as a means of reducing expenditure by cancelling the prototypes and instead focusing on research and development, a move that had the support of the Americans who wanted to slow down the pace of their own supersonic airliner programme.¹⁹⁰ This strategy was actively pursued by the Labour government, and was communicated to the French less than two weeks after the General Election.¹⁹¹ The French response was firm, and the British government were informed that any such move would lead to damages being sought in the International Court in The Hague for £200m, negating any saving that the government had hoped to achieve.¹⁹² For the RAF procurements the future worsened with both the Secretary of State for Economic Affairs and the Chancellor stating in January 1965 that the continuation

¹⁸⁷ Jenkins, R., *A Life at the Centre* (MacMillan, London, 1991) p.172

¹⁸⁸ TNA CAB 148/19, SoS (MoD) brief to Cabinet, *Polaris Submarine Building Programme*, 12 Jan 1965

¹⁸⁹ TNA CAB 21/5727, *Defence Review 1964-65*, Loose Minute from Solly Zuckerman to the Prime Minister, 14 Nov 1965

¹⁹⁰ TNA PREM 13/117, *1964-1965-Aircraft*, Minutes of meeting between the Foreign Secretary [Gordon Walker] and U.S. Secretary to the Treasury [Dillon], 26 Oct 1964

¹⁹¹ PREM 13/117, Telegram from FO London to FO office in Paris, *Future of the Anglo-French Concord Project*, 26 Oct 1964

¹⁹² Jenkins, *A Life at the Centre* (London, 1991) p.165

of Concord was conditional on Defence savings being made to the military aircraft programmes.¹⁹³ The issue was therefore ultimately over where the Government's priorities truly lay, and whether a strong nuclear deterrent could outweigh conventional forces, which had been the Conservative line.¹⁹⁴ By choosing Concord over British defence programmes the Labour government demonstrated that they were committed to the future of British civilian aircraft manufacture, over and above military production.¹⁹⁵

As a result of this policy direction the government had to make cuts to some or all of the RAF programmes. However in order to maintain the worldwide commitments that British strategy dictated, the costly British-built designs would need to be replaced by cheaper alternatives. Due to the Polaris programme and the ever increasing economic reliance placed on them, the United States was a natural source of alternative aircraft. The danger though was that France would see this as Britain moving away from Europe and would thus negatively impact any future British attempts at entry into the EEC.¹⁹⁶ This would have theoretically made a purchase of the Atlantic aircraft more appealing. However, there was a third group that Labour had to placate, and that was the British aviation industry who were about to lose a large amount of work through the cuts. The P.1154 project had already suffered through the withdrawal of the Royal Navy, and earlier checks had revealed that the aircraft it was due to replace in RAF service, the Hunter

¹⁹³ PREM 13/117, Loose Minute from Treasury [Bancroft] to Mitchell [No.10], 7 Jan 1965, and Letter from DEA [Caulcott] to Mitchell [No.10], 14 Jan 1965

¹⁹⁴ Pimlot, B., *Harold Wilson* (Harper Collins, London, 1992) p.383

¹⁹⁵ TNA CAB 130/229, Minutes of Meeting of Ministers, Cabinet, *TSR.2 Announcement*, 5 Apr 1965

¹⁹⁶ Young, J.W., *The Labour Governments 1964-70; Volume 2, International Policy* (Manchester UP, Manchester, 2003) P.36-38

GR.9, was proving more durable than had been initially anticipated.¹⁹⁷ The precedence set by the Naval Phantom purchase opened the door for the P.1154 to be replaced by a cheaper American offering, yet by having them re-engined with Rolls-Royce Speys, British industry would still receive some work on the project.¹⁹⁸ With the decision to replace TSR.2 and HS.681 with American F-111 and C130 respectively, there was no scope for giving Industry work there to soften the blow. The economic rationale behind the two decisions was logical, as the TSR.2 was well over budget, and its enormous costs held the key to the whole cuts programme.¹⁹⁹ With the purchase of the C130 alongside the extra Phantoms and Polaris a deal was worked out with the United States Treasury Department that made the F-111 procurement effectively cost neutral, thereby maximising the apparent saving on TSR.2 whilst still being able to project air power to the same level in the East of Suez strategic plan.²⁰⁰ Any short term capability gap due to the longer delivery time of the F-111 was dismissed by Zuckerman, who advised the Prime Minister that simply by removing scenarios from the planning, in this case a conflict with Indonesia, the need for a capability to cover it was instantly deleted.²⁰¹ Whilst this view may hold at a theoretical level sufficiently strongly to satisfy the Treasury, it was never going to work across the broader spectrum of defence and

¹⁹⁷ TNA AIR 20/11175, *P.1154 V/STOL Ground Attack / All Weather Interceptor Aircraft*, Loose Minute from VCAS to Secretary of State, *The Hunter Replacement*, 30 May 1963

¹⁹⁸ Healey, D., *The Time of My Life* (Politico's, London, 2006) p.272

¹⁹⁹ PREM 13/716, Brief for Cabinet by SoS Defence [Healey], *Defence and Overseas Policy Committee – the RAF Aircraft Programme*, 26 Jan 1965

²⁰⁰ PREM 13/716, Telegram from BDS Washington [Armstrong] to MoD [Cooper] 4 Jan 1966, British spend on American equipment totalled \$2550m (Polaris \$550m, C130 \$300m, Phantom \$900m, Misc kit \$50m and F-111 \$750m) American spend and allowance to Britain totalled \$2550m (US troops in UK up to 1977 \$1800m, Misc kit \$450m, export preference \$300m) Therefore the F-111 purchase was cost neutral.

²⁰¹ CAB 21/5729, Loose Minute from Solly Zuckerman to the Prime Minister, 14 Nov 1965

the Soviet threat in Europe. What the comment does show is that financial considerations had primacy over military strategy, if not political ambitions, and the need to make economically driven cuts that maintained international political ties overruled all else.

The cuts left the P.1127, and the Comet MR as the only British aircraft procurements to survive and to go into production. The reasoning behind the Comet MR surviving was not a case of its role within British strategy being so vital that it could not have been cancelled, as ultimately it was only planned as an interim aircraft and there was no question of withdrawing the Shackleton Mk.3s at this stage. The TSR.2, HS.681 and P.1154 had been authorised by the Conservative Government, thus Labour cancelling them was presented as a painful but necessary means of making good on the mistakes of the previous administration. Even the chairman of Hawker Siddeley, whose company lost out on the HS.681 and P.1154, reportedly put the blame on the Conservative government and their poor management of the projects.²⁰² With the P.1127 and Comet MR having only been in development at a conceptual stage and not having been signed off by the Treasury under the Conservatives, Labour were able to put them into production as a sign that they were supporting British industry, thereby appeasing the third side of the triangle.

Healey's brief to Cabinet on 26 Jan 1965 stated that by cancelling TSR.2, HS.681 and P.1154, and replacing them with American alternatives, would save £817m over ten years. Proceeding with the Comet MR would save £28m over the

²⁰² Healey, *The Time of My Life* (London, 2006) p.272

same period. The limited government exposure to HS.681 and P.1154 made cancelling straightforward, and that the P.1127 and Comet MR would provide fresh work for the British aviation industry.²⁰³ Healey reiterated this point in his autobiography where he wrote that; “Though my initial savings depended on the substitution of three American aircraft for three British, I was able to provide valuable work for the British aircraft industry by ordering the Nimrod maritime reconnaissance aircraft and...the Harrier...”²⁰⁴ This explains why the Comet MR programme survived the 1965 Defence Cuts, and why it was a British design that was ultimately selected. The outcome was political and it is highly unlikely that the programme would have proceeded if it had been signed off under the Conservative government. The initial selection of Atlantic had already lost favour before the General Election. However, it would have been relatively straightforward to re-enter negotiations for it, particularly as appeasing the French over Concord was such a high priority. The pressure of Industry was therefore the paramount driving force behind the procurement as a whole, initially in a direct form through the lobbying against the Atlantic and the desire for more time to propose alternative cheaper British options, and then ultimately indirectly through the need for the Labour government to be seen to be supporting British Industry, even in a time of savage cuts. The shift in the procurement landscape from British-centric to open competition was, however, clear and the power of industry was already moving up from one of controlling the aircraft type and specification, and thus having influence

²⁰³ PREM 13/716, Brief for Cabinet by SoS Defence [Healey], *Defence and Overseas Policy Committee – the RAF Aircraft Programme*, 26 Jan 1965

²⁰⁴ Healey, *The Time of My Life* (London, 2006) p.274

in military strategy, into a political sphere of supporting British trade in the face of increased foreign competition both at home and abroad.

Chapter Four

THE COMPETITION FOR THE REPLACEMENT OF THE BRITISH AEROSPACE

NIMROD MR.2, 1993-1996

The global landscape of the 1990s was unrecognisable to that of even five years earlier. The end of the Cold War brought with it a massive reduction in defence spending and a pronounced re-prioritisation in military thinking. The shift in political objectives brought about a subsequent change in military objectives, and thus the procurement requirements also shifted. The fall of the Soviet Union and subsequent collapse of the Warsaw Pact removed the direct threat to mainland United Kingdom and Western Europe.²⁰⁵ As a result British defence strategy, in line with the rest of NATO, shifted towards the promotion of European security and the integration of former Warsaw Pact countries into Europe.²⁰⁶ This move towards Britain acting more as a peacekeeper than as a potential aggressor resulted in a reduction in ASW capabilities through the focus on land based interventions in the Balkans in particular. The RAF Nimrod, following a late 1970s refit to maintain it in service beyond its original interim life, was now in MR2 specification and was still the primary long range ASW and search and rescue platform in the British inventory. The ASW downsizing resulted in the relocation of the Nimrod fleet to one base, RAF Kinloss, and the reduction in the force size to thirty aircraft.²⁰⁷ The

²⁰⁵ Cm1559-I, *Statement on the Defence Estimates 1991, British Defence for the 90s* (HMSO, London, 1991) p.40

²⁰⁶ Keohane, D., *Security in British Politics, 1945-99* (MacMillan, Basingstoke, 2000) p.129

²⁰⁷ Cm1559-I, *Statement on the Defence Estimates 1991* (London, 1991) p.46

Nimrod also lost the ability to deliver tactical nuclear weapons.²⁰⁸ As part of this apparent peace dividend the Navy also lost all four of the Upholder class of diesel submarines, and a total of five frigates and destroyers due to the reduced threat from Russian submarines.²⁰⁹ Thus the entire question of whether there was need for a replacement for the Nimrod MR2 was up for debate. Philip Towle, writing in 1993, stated that “If economies have to be made, the four squadrons of Nimrod maritime patrol aircraft might not be replaced when they become obsolete...”²¹⁰ This viewpoint was based on a supposedly diminished Russian submarine threat and was not shared by everyone. Ross Tieman, writing in *The Times* in 1996, stated that the threat was arguably even higher than during the later stages of the Cold War given that advanced Russian conventional (diesel powered) submarines had been; “...sold to many second-rank navies since the end of the Cold War.”²¹¹ However, the role of the MPA was far broader than just ASW, and as ninety-two percent of British trade and ninety percent of British military logistics were moved by sea, the ability to keep the sea lanes clear was still an important aspect of British defence planning.²¹² The selection of Trident as the replacement for Polaris in the nuclear delivery role reaffirmed the need for an MPA to contribute to the protection of the independent nuclear deterrent. With the new Vanguard class

²⁰⁸ MoD Public Relations, *Britain's Defence 1992* (Portsmouth Design, Portsmouth, 1992) p.5

²⁰⁹ Barrie, D., “Cutting Compromise”, *Flight International*, 14-20 July 1993

²¹⁰ Towle, P., ‘Maintaining Balanced Forces’ in Clarke, M. & Sabin, P. (ed.), *British Defence Choices for the Twenty-First Century* (Brassey's, London, 1993) p.98

²¹¹ Tieman, R., “Dogfight over £2bn deal to replace Nimrods”, *The Times*, 10 April 1996 with a similar view expressed in Goulter, C., ‘The Ebb and Flow of Maritime Aviation’ in Gray, P. (ed.) *British Air Power* (HMSO, London, 2003) pp.103-104

²¹² Cm2800, *Statement on the Defence Estimates 1995, Stable forces in a strong Britain* (HMSO, London, 1995) p.9 and Orion 2000 Promotional Booklet, *Orion 2000, the United Kingdom's Replacement Maritime Patrol Aircraft*, (UKIT, 1996)

submarines required for Trident being launched throughout the first half of the 1990s, the question over the need for a Nimrod replacement in this period was perhaps not as doubtful as some commentators argued.²¹³ Twelve Nimrod aircraft were assigned as contingent forces for Military Tasks 1.1 and 2.1, Britain's nuclear forces, and as such were unlikely to be swept aside.²¹⁴

The marked disadvantage of working on a period within the thirty year rule for official secrets is that a large portion of the evidence to support this and similar arguments has to be formed from the writings of journalists and defence commentators. Despite this, there is no reason to suggest that the internal government discussions on the topic would differ greatly, particularly as the procurement questions were widely discussed in the media, and the use of confidential sources became more widespread over time.²¹⁵ As mentioned in the introduction, where earlier media reports can be compared to government files they are seen to accurate, and therefore form a suitable and broadly reliable source of research material. This is undoubtedly due to the fact that the MoD developed a close relationship with the media over the period, and particularly from the 1991 Gulf War onwards, when continual round the clock media coverage came into its own.²¹⁶ In this environment the MoD could not afford for inaccurate and damaging material to be circulated and thus a closer working relationship was fostered.²¹⁷

²¹³ Cm2550, *Statement on the Defence Estimates 1994* (HMSO, London, 1994) p.34

²¹⁴ *Ibid.* p.28

²¹⁵ Jones, N., *Soundbites and Spin Doctors; How Politicians manipulate the media – and vice versa* (Indigo, London, 1996) pp.83-86

²¹⁶ Taylor, P.M., *War and the Media* (Manchester, 1992) p.34

²¹⁷ Tumber, H. & Palmer, J., *Media at War; The Iraq Crisis* (Sage, London, 2004) pp.64-65

If there was therefore minimal doubt over the need for a replacement aircraft in concept, then there certainly were differing opinions on what type of aircraft should be procured. Of the four companies that tendered for the Replacement Maritime Patrol Aircraft (RMPA) contract issued in early 1995,²¹⁸ two companies proposed refurbished versions of existing airframes but with modern mission systems; Loral with ex USN P-3s renamed Valkyrie, and BAe with Nimrod MR2s renamed Nimrod 2000.²¹⁹ The remaining two bids were for new build aircraft, with Dassault offering Atlantique 3 and Lockheed Martin the Orion 2000, which in both cases would have had the United Kingdom as the launch customer.²²⁰ The BAe Nimrod 2000 was ultimately successful when the £2bn contract was finally announced in the House of Commons in July 1996.²²¹

The factors that shaped this selection were not just limited to the timeframe of the RMPA competition, as the Westland Affair of 1986 had an impact on the Nimrod replacement, as did the competitions for the C130 Hercules transport aircraft replacement in 1994, and the Army attack helicopter bidding in 1995. These three events shaped both the approach to the RMPA contract, and the political prioritisations involved, and are discussed below. When RMPA is considered alongside these other procurements it is clear that it was not simply a case of BAe winning the competition, but also that the other major bid from Lockheed Martin could be said to have failed to win the contract, irrespective of the actions of BAe.

²¹⁸ Cm2800, *Statement on the Defence Estimates 1995, Stable forces in a strong Britain* (HMSO, London, 1995) p.68

²¹⁹ Tusa, F., "The Silent Competition", *Armed Forces Journal*, December 1995

²²⁰ Ibid.

²²¹ Kemp, I., "Nimrod 2000 leads \$6b UK defence contracts", *Jane's Defence Weekly*, 31 Jul 1996

Both these aspects were governed by the political needs of balancing a viable British defence industry against the requirements from the Treasury to make budget cuts, and it was a combination of these that defined the driving force behind the RMPA procurement.

The crisis at Westland Helicopters in the mid 1980s was a crucial point in setting out both the British government approach to defence procurement policy and to the importance of the British defence industry that would be carried forward into the 1990s. By 1985 Westland was heavily reliant on orders from the British government, with the MoD as the biggest customer with total orders of £750m over the preceding eight years. However, there was no sign of another substantial order on the horizon and the company was becoming unviable as an independent entity.²²² Thus by 1986 the Government was faced with a choice of allowing Westland to be bought out by the American giant Sikorsky, or by a European consortium of helicopter manufacturers. The European option was favoured by Defence Secretary Michael Heseltine, but the Department of Trade and Industry headed by Leon Brittan favoured the American bid.²²³ The Sikorsky proposal was for Westland to manufacture the Black Hawk for export to what was traditionally seen as the main export market for Westland of the Middle East and Far East.²²⁴ Central to this proposal was that these export variants were to be fitted with Rolls Royce engines. The argument of access to large export markets and even a

²²² Cowton, R., "Battle on the Westland Front", *The Times*, 16 December 1985

²²³ Ibid.

²²⁴ Heseltine, M., *Life in the Jungle; My Autobiography* (Hodder & Stoughton, London, 2000) p.330

potential share of the American domestic market were key components of Lockheed Martin's Orion 2000 RMPA bid,²²⁵ and thus the fall out from the Westland Affair is highly likely to have had an effect in the consideration of the Orion 2000, as these promises made by Sikorsky never materialised.²²⁶ A single Black Hawk kit was put together by Westland, but no export models were ever produced.²²⁷ There were also fears, ultimately unfounded, that a Sikorsky purchase would force Britain to make an unnecessary purchase of Black Hawk, and that the merger would see the avionics and electronics aspects of the company moved to the United States.²²⁸ It was in this climate that, following Margaret Thatcher's endorsement of the Sikorsky proposal in January 1986, Heseltine resigned, seeing it as a clear attempt to sabotage the independent European helicopter industry which represented Sikorsky's main international rival.²²⁹ The issues that the Westland Affair raised over broken promises for export sales and the handling of British industry and jobs have clear links to the central offers of the Orion 2000 bid, but there was also a second important outcome when considering the British government's level of support for the maintenance of British Industry as a complete entity. Westland had been the only one of the eight Western helicopter manufacturers not having either American or State support.²³⁰ The Thatcher government had been keen to remain non-interventionist in the company, but the crisis demonstrated that without

²²⁵ UKIT Orion 2000 Promotional Material, *Orion 2000, Next Generation Maritime Patrol Aircraft* (UKIT, 1996)

²²⁶ Tieman, R., "Westland's fate in the air as Tories slug it out", *The Times*, 4 July 1995

²²⁷ Ibid.

²²⁸ Bevins, A., "Brittan accused by critics of 'misleading Commons'", *The Times*, 18 December 1985

²²⁹ Bevins, A., "Heseltine resigns over Westland: Defence Secretary quits over helicopter affair", *The Times*, 10 January 1986

²³⁰ Beavis, S., "Westland – the storm after the storm", *Flight International*, 1 March 1986

protectionist government support, domestic aviation companies would struggle to survive, and although British Aerospace was in a relatively healthy position during the mid-1980s, this situation would not continue into the mid-1990s when the RMPA competition was underway. Whilst this was nothing new, and the decline of the British defence sector had been underway since the Second World War, by this stage the impact was more pronounced given the comparatively small number of companies involved. The other aspect of selecting an American company over a European group was how this would affect the ability of European companies to compete for foreign sales. Westland had been part of the European NH.90 support helicopter consortium, which was in direct competition with the Sikorsky Black Hawk. With Sikorsky taking part ownership in Westland it was able to fracture the NH.90 consortium and thus reduce international competition for its products.²³¹ Without effective European competition, Britain would have been forced to procure a greater proportion of equipment from the United States, affecting the balance of trade and putting a large number of British jobs in the defence industry at risk, something that politically would have been unacceptable. Thus the importance of securing British jobs became a cornerstone of defence procurement, along with ensuring that British companies were able to remain independent, viable alternatives, to the American defence sector.

The principle of supporting British jobs was a key battleground throughout the RMPA bidding process. The Lockheed Martin promotional material was heavily weighted towards the securing of seven thousand jobs in the longer term,

²³¹ Ibid.

achievable through the large export market for Orion.²³² This approach of highlighting the export potential of the aircraft was a bold move given the experiences of the Westland-Sikorsky deal. However, the company had clearly understood the importance of being seen as a British consortium led by an American company, rather than simply being a foreign bid. The Orion 2000 was referred to in the press as being a Lockheed Martin proposal, which was understandable given that the P-3 Orion, upon which it was based, was a Lockheed aircraft. However, within their own press releases the aircraft was proposed by the United Kingdom Industrial Team (UKIT), a move designed to highlight the domestic nature of the bid team.²³³ The prominent role given to leading British firms such as GEC-Marconi for the mission systems was championed as opening the door for British work on the avionic systems in any future United States Navy purchase.²³⁴ However, ultimately UKIT could not promise that the entire project would be designed and built in Britain, and could only state that fifty percent of the technical content of the bid would go to British aerospace companies.²³⁵ Lockheed Martin thus had to rely on other aspects of the proposal carrying enough weight to distract from the smaller British industry involvement when compared to the BAe bid. This was centred on the success of their bid for the replacement of half the C130K Hercules fleet in 1994, won by their C130J.²³⁶ At the

²³² UKIT Orion 2000, *Orion 2000, Next Generation Maritime Patrol Aircraft* (UKIT, 1996)

²³³ Orion 2000 Promotional Booklet, *Orion 2000, the United Kingdom's Replacement Maritime Patrol Aircraft*, (UKIT, 1996) and previous footnote are examples of this approach.

²³⁴ Penney, S., "GEC-Marconi has teamed with Lockheed Martin to offer Orion 2000", *Aerospace*, May 1996 and Bickers, C., "Briefing – Making designs on the UK's sub chaser", *Jane's Defence Weekly*, 9 December 1995

²³⁵ UKIT Orion 2000, *Orion 2000, Next Generation Maritime Patrol Aircraft* (UKIT, 1996)

²³⁶ National Audit Office, *Major Projects Report 1996*, HC 238, Session 1996-97, 15 August 1997, p.132

heart of the Orion 2000 proposal were a similar set of circumstances to the C130J, that of a new build design that was based around a proven aircraft which was widely sold throughout the world, yet with increased size, power and modern avionics.²³⁷ The C130J had also involved British industry with Marshall's of Cambridge, a key UK contributor.²³⁸ The C130J would also have provided the flight deck and engines for the Orion 2000, and Lockheed Martin were keen to stress the benefits in savings on the costs and training that having this commonality would bring.²³⁹ Whilst this would carry undeniable benefits, the P-3 Orion was not in British service, and as such the ground equipment and infrastructure would need to be installed to enable it to operate, so the cost savings on the pilot training side were partially offset by expenses on the support side.²⁴⁰ Lockheed Martin, in its previous pre-merger guise of Lockheed, had bid and successfully won the United States Navy P-3 Orion replacement competition with their P-7 design in October 1988.²⁴¹ This contract, for 125 aircraft at a cost of \$4.9bn, had beaten Boeing's 757 based proposal and that from McDonnell Douglas with a variant of the MD-91.²⁴² The P-7 and Orion 2000 were fundamentally similar aircraft, and the success of the P-7 would have given Lockheed Martin confidence in the viability of a turbo-prop design when put in competition with a jet powered rival, such as the Boeing 757 and then latterly with the BAe Nimrod 2000.²⁴³

²³⁷ Tusa, F., "The Silent Competition", *Armed Forces Journal*, December 1995

²³⁸ Warwick, G., "Long live Hercules", *Flight International*, 5-11 January 1994

²³⁹ UKIT Orion 2000, *Orion 2000, Next Generation Maritime Patrol Aircraft* (UKIT, 1996)

²⁴⁰ Nimrod 2000 Promotional Material, *The Nimrod 2000 Platform*, (BAe, 1996)

²⁴¹ Bailey, J., "After Orion", *Flight International*, 2 September 1989

²⁴² Ibid.

²⁴³ Colver, H., "21 Nimrod 2000, Brimstone the AAW, Storm Shadow CASOM" *Army Quarterly and Defense Journal*, Vol.126, No.3, (July, 1996) pp.269-279

The P-7 programme was ultimately a victim of the military drawdown at the end of the Cold War and its demise revealed two important aspects of direct relevance to both the failure of the Orion 2000 bid and to the RMPA competition as a whole. Firstly, at the time of cancellation, the P-7 was running at a heavy loss for Lockheed.²⁴⁴ The procurement was a fixed price contract, designed to encourage the company to be as efficient as possible if they wanted to be able to make a profit on the programme. This went against the traditional format for American procurements of working on a cost plus basis, which put the risk of financial escalation on the Government rather than on the private firm.²⁴⁵ The RMPA contract followed the fixed price model, and despite being designed to remove the worry of price rises for the government, the original Nimrod procurement of 1965 had demonstrated that renegotiations due to price rises still posed a risk within a fixed price contract.²⁴⁶ Although Lockheed Martin had been working successfully to a fixed price contract on the C130J programme, that procurement was for an aircraft that had already been designed as a private venture by the company, rather than from scratch after the award of the contract as in the case of the P-7, and as would have been for Orion 2000. The second issue was that Britain was attempting to procure a new MPA just five years after the Americans had deemed there to be no immediate need to acquire a replacement for their similar vintage P-3s. So, rather than follow the conventional path of observing the American procurement

²⁴⁴ Bailey, J., "Lockheed loses to survive", *Flight International*, 1-7 August 1990

²⁴⁵ Cm1559-I, *Statement on the Defence Estimates 1991, British Defence for the 90s* (HMSO, London, 1991) p.72

²⁴⁶ TNA DEFE 13/286, *The Shackleton Replacement*, Handwritten Note from P.S. to Under Secretary of State (RAF) to Under Secretary of State (RAF) on MO.26/11/12 [TNA DEFE 24/67, Enclosure 10], 9 May 1968

choices and following suit, the RAF was attempting to be in the vanguard, in much the same way as it had been with the C130J. The issue that this raised for Orion 2000 was that, if the RAF was to lead the way in future MPA specifications, then the preference would undoubtedly have been to have this template as British as possible in order to increase British influence through worldwide sales, something that Lockheed Martin could not ultimately offer. The UKIT bid was not aided by having Lockheed Martin engaged in a legal dispute with the MoD over efforts to save £25m from the Merlin helicopter programme, for which Lockheed Martin were providing the mission systems.²⁴⁷ The bid of refurbished P-3s from Loral took a twist when Lockheed Martin bought the company in early 1996, yet retained their proposal in the competition, thus giving the RAF two completely differing options from the one company.²⁴⁸ Lockheed Martin were therefore covering both possible angles by offering both new and refurbished aircraft. However, the common theme for both bids was the American leadership of the consortiums, and therefore this was a major deciding factor in which company would win the competition.

The Orion 2000 bid suffered from the fallout of the Westland Affair when considering the promises of export sales and American leadership hence, despite the best efforts of the promotional team, it was unable to be presented as British enough. These two factors were keenly stressed by BAe in their bid as they promoted Nimrod 2000 on the key issue of nationality.²⁴⁹ The issue of being a foreign led consortium was not on its own an insurmountable problem. However,

²⁴⁷ National Audit Office, *Major Projects Report 1996*, HC 238, Session 1996-97, 15 August 1997, p.41

²⁴⁸ Cook, N., "Loral rides Valkyrie in UK's RMPA race", *Jane's Defence Weekly*, 13 March 1996

²⁴⁹ Cook, N., "Briefing – Maritime Patrol Aircraft, Nimrod hunts for export success", *Flight International*, 2 October 1996

the Orion 2000 would have represented an entirely new aircraft, simulator and ground equipment being entered into the inventory. Thus there would have had to have been a greater level of investment in the British support sector to justify the move away from a British-built and maintained legacy platform. The difficulties raised with this and the Westland affair caused problems for the Lockheed Martin led team, yet it could also be said to have been the making of the BAe proposal.

All the fundamental weaknesses of the Orion 2000 bid were the strengths of the Nimrod 2000 bid on an industrial level, but on the political level the BAe proposal had even greater driving force. The Westland affair had highlighted the importance of retaining a strong, independent British defence industry and this was further reinforced with the selection of an attack helicopter for the British Army in 1995. Westland was involved with McDonnell Douglas in putting forward the AH-64 Apache, whilst BAe was part of the European team behind the Eurocopter Tiger.²⁵⁰ The Army ultimately selected the Apache, but the BAe argument was compelling. If the Tiger had been selected then twenty percent of the work for all the aircraft sold around the world would be carried out by BAe. Thus a British purchase of Tiger would effectively be cost neutral, and Westland would have been expected to receive a proportion of the work as a subcontractor.²⁵¹ This promotion of work for Westland, such that even if a rival bid won they would still be employed, is very similar to that at Shorts and the MPA question in the 1950s. Both companies were struggling for orders and both had government interest in their survival. In the case

²⁵⁰ Tieman, R., "Westland's fate in the air as Tories slug it out", The Times, 4 July 1995

²⁵¹ Ibid.

of Shorts this was far more acute as it was majority owned by the Government.²⁵² McDonnell Douglas, aware of the importance of heavy British involvement through Westland promoted the bid on the strength of its 'Britishness', whereas BAe, taking their lead from President Chirac of France, who saw the contract as a watershed of British involvement in Europe, pitched the Tiger on the merit of its 'Europeanness'.²⁵³ The award of the contract to Westland to build, under licence, the Apache as the WAH-64 secured British jobs, and crucially also the viability of a major British company. The previous year, the failed BAe proposal for the C130K replacement had played to a similar theme of European integration, with the Future Large Aircraft (FLA) proposal.²⁵⁴ As an immediate replacement for the C130K, the FLA was unsuitable given its planned in service date of 2005, but BAe pitched to refurbish the existing Hercules fleet until FLA was available, and then to replace both the larger VC10s and C130Ks with the new aircraft.²⁵⁵ The stated position of the RAF that an early replacement of the C130K was essential, thereby ruling FLA out of the running, caused the Chief Executive of BAe, Dick Evans, to state at a press conference that the procurement "is too big a decision to be left with the RAF and MoD procurement Executive...if industrial planning and procurement aspects are not considered as a whole."²⁵⁶ With the decision on both the Hercules and Lynx

²⁵² AIR 2/10749, *loose minute to VCAS*, 25 Jun 51

²⁵³ Barrie, D., "Leaders of the Attack Pack", *Flight International*, 21-27 September 1994 and Tieman, R., "Westland's fate in the air as Tories slug it out", *The Times*, 4 July 1995

²⁵⁴ Gaines, M., "Labourer wanted...Apply RAF", *Flight International*, 24-30 March 1993

²⁵⁵ Evans, M., "Ministers to be quizzed on Lockheed lobbyist", *The Times*, 14 November 1994

²⁵⁶ Cook, N., "UK news blackout as RMPA conclusion draws closer", *Jane's Defence Weekly*, 7 February 1996 and Barrie, D., "BAe's chief warns on rushing C-130 choice", *Flight International*, 1-7 June 1994

TOW replacements going against BAe, the RMPA contract was thus of even greater importance to the company.

BAe were open about their need to maintain a flow of work between the completion of the Saudi Arabian Tornado contract, and both the upgrade work for the RAF Tornado GR1s and the commencement of work on the Eurofighter Typhoon.²⁵⁷ Even the company's own promotional material for Nimrod 2000 stated that, for the design team, there would be a need to maintain their competencies following the Eurofighter development and the future Harrier and Tornado replacements.²⁵⁸ This shortfall in work presented the possibility of BAe following Westland down the path of requiring either Government financial assistance or being subject to an international takeover should they not win the RMPA competition. By maximising the Britishness of the bid, BAe further increased the pressure on the RAF and the Government as it highlighted all that would be lost should BAe not survive. There had already been 100,000 jobs lost in the British defence industry in the first two years after the end of the Cold War,²⁵⁹ and the defence industry was assessed to support 560,000 in 1994.²⁶⁰ Whilst this is across the whole spectrum of defence, the contribution of BAe was high, with the company claiming that 10,000 British jobs would be directly involved in Nimrod 2000, thirty percent more than on Orion 2000.²⁶¹

²⁵⁷ Gribben, R., "Between the Nimrod and the deep blue sea", *Daily Telegraph*, 13 January 2001

²⁵⁸ Nimrod 2000 Promotional Material, *British Aerospace position paper for the United Kingdom Replacement Maritime Patrol Aircraft* (BAe, 1996)

²⁵⁹ Smith, R., 'Resources, Commitments and the Defence Industry' in Clarke, M. & Sabin, P. (ed.), *British Defence Choices for the Twenty-First Century* (Brassey, London, 1993) p.83

²⁶⁰ Cm2550, *Statement on the Defence Estimates 1994* (HMSO, London, 1994) p.66

²⁶¹ Nimrod 2000 Promotional Material, *Looking out the for the country* (BAe, 1996) and UKIT Orion 2000 Promotional Material, *Orion 2000, Next Generation Maritime Patrol Aircraft* (UKIT, 1996)

Thus, when considering BAe, the question is not so much about there being clear military need for a replacement MPA, but more that if a need could be generated then work could be given to BAe to ensure the survival of the company. This raises the issue of protectionism, with a 'senior MoD source', quoted in *The Times* in July 1996, just prior to the award of the RMPA contract, stating that "ministers were aware of the importance of promoting British defence equipment, although there would be no question of bending the rules in favour of British bids."²⁶² This line runs contrary to the situation with the selection of the Westland manufactured Merlin in a mixed support helicopter fleet with Boeing Chinooks, which was due, according to the Secretary of State, to the need to retain "an indigenous helicopter design, development and production capability."²⁶³ In 1990 a RUSI study on protectionism stated that; "The diminishing number of weapons platform contracts [is increasing the] costs of failure to win a major development competition. In the longer term this is likely to lead to a diminishing number of platform and major systems manufacturers."²⁶⁴ Therefore domestic Industry was not only important at the production level, but it could also have a considerable influence in the initial decision making process. In *Jane's Navy International* in March 1996, and in this case citing industry sources, Charles Bickers stated that if Lockheed Martin or Loral were to win, then the powerful BAe lobby within Cabinet would get the decision overturned in BAe's favour.²⁶⁵ Without access to the

²⁶² Evans, M., "Far from quiet on the Western Front", *The Times*, 01 July 1996

²⁶³ National Audit Office, *Major Projects Report 1996*, HC 238, Session 1996-97, 15 August 1997, p.42

²⁶⁴ RUSI Working Group, *Whitehall Paper 6, 1992: Protectionism or Collaboration in Defence Procurement* (RUSI, London, 1990) p79

²⁶⁵ Bickers, C., "Running the race for RMPA", *Jane's Navy International*, March 1996

government papers of the period, the conclusion must be drawn that BAe were able to exert a certain amount of influence on the political side of the decision-making process. However, this could not have been completely dominant given the failure of BAe to win the attack helicopter and tactical air transport competitions. Despite this, the powerful lobbying seen during the selection of Nimrod in the 1960s was unlikely to have abated, and indeed is more likely to have increased over time as the consequences of failure grew more severe for Industry. What does appear to have shifted is the move to a direct form of lobbying, rather than through the Department of Trade and Industry. Such a shift would potentially have given Industry greater sway as their views were not being watered down. However, they would have lost influence within internal Government communications due to the absence of an official political voice.²⁶⁶

In the case of RMPA, the BAe bid of refurbished Nimrods was judged by the RAF and the MoD Equipment Approvals Committee to be the most cost effective of the submissions, even though Lockheed Martin attempted to cut the price of their bid by £150m in the final stages.²⁶⁷ The combination of a near total spend in British industry for the BAe bid, combined with the clear necessity for work for the company, along with the costs being the lowest among the bidders, made the Nimrod 2000 the clear winner. The short term gains of the bid must have outweighed the longer term benefits of the Orion 2000 in the minds of the RAF, Cabinet and the MoD Equipment Approvals Committee.

²⁶⁶ Contemporary media coverage does not refer to the Department of Trade and Industry when considering lobbying by BAe. In the procurement of Nimrod in the 1960s the Ministry of Aviation was highly active in promoting the interests of British firms within government.

²⁶⁷ Evans, M., "Far from quiet on the Western Front", *The Times*, 01 July 1996

The C130J, Apache and Nimrod 2000 procurements represented the three major RAF equipment programmes of the 1990s. Crucially, all three competitions were won by the companies behind the pre-existing aircraft in their respective roles. Only the Apache was a completely new aircraft and design concept. However, there was no other way of configuring a new battlefield helicopter other than as a dedicated platform. The selection of C130J and Nimrod 2000 demonstrated a pattern that had been evident with the original selection of Nimrod in 1965, which was of selecting an aircraft that was either a newer or slightly different version of the one already in service – “...the best Hercules replacement is another Hercules.”²⁶⁸ This argument gives the incumbent bidder a distinct advantage, and BAe played to this with Nimrod 2000, stating that after twenty-five years of operations, they both understood the RAF requirements, and that by reusing elements of the Nimrod MR2, maximum investment in the vital mission systems could take place.²⁶⁹ The incumbent was also at an advantage through the fact that their proposal could be pitched as an upgrade or update, rather than as a completely new aircraft. The Orion 2000 promotional material played heavily on the fact that it was the only completely new build aircraft in the competition, taking the approach that this would give the design an advantage over its rivals.²⁷⁰ In contrast, BAe were keen to emphasise the abilities and advantages of Nimrod MR2, and how these could be enhanced through new engines and mission systems without

²⁶⁸ Gaines, M., “Labourer wanted...apply RAF”, *Flight International*, 24-30 March 1993

²⁶⁹ Nimrod 2000 Promotional Material, *Nimrod 2000 – The only British solution to the RAF Maritime Patrol needs*, (BAe, 1996) and Nimrod 2000 Promotional Material, *The Nimrod 2000 Platform*, (BAe, 1996)

²⁷⁰ Orion 2000 Promotional Booklet, *Orion 2000, the United Kingdom’s Replacement Maritime Patrol Aircraft*, (UKIT, 1996)

the need for an expensive new design.²⁷¹ BAe also stressed that extensive studies carried out by themselves in the 1980s concluded that there was no need to design a new aircraft, and that a modernisation of Nimrod MR2 was the best solution.²⁷²

The Treasury were keen to push through cuts to the defence budget in this period, with the Front Line First review of 1994 aiming for £3bn of savings by 1997,²⁷³ which had followed on from the Autumn statement of 1992 which had aimed for £1.3bn over three years.²⁷⁴ For the RAF, the cuts were primarily made in the aircraft already in front line service, with each fleet seeing a reduction in their numbers, and some, such as the Buccaneer and Phantom, being withdrawn altogether.²⁷⁵ This quest for savings had been part of the reason for moving to fixed price equipment programmes that included three years of in-service support in order to make the programmes more attractive to industry, and thus provide greater competition that would drive the costs down.²⁷⁶ In this environment, proposing an aircraft as an update to an existing design would appear more appealing to the Treasury and give the project a greater chance of success. When this position is combined with an aim to provide for a large number of British jobs then the investment becomes even more appealing. Dassault's bid of the Atlantique 3 suffered on both these counts. It was a new build aircraft that was not based

²⁷¹ Nimrod 2000 Promotional Material, *Nimrod 2000 – The only British solution to the RAF Maritime Patrol needs*, (BAe, 1996)

²⁷² Nimrod 2000 Promotional Material, *British Aerospace position paper for the United Kingdom Replacement Maritime Patrol Aircraft* (BAe, 1996)

²⁷³ Cm2801, *The Government's Expenditure Plans 1995/96 to 1997/98* (HMSO, London, 1995) and Deans, J., "Fall in for privatisation...to make our Forces fighting fit" *Daily Mail*, 02 December 1993

²⁷⁴ Smith, R., 'Resources, Commitments and the Defence Industry' in Clarke, M. & Sabin, P. (ed.), *British Defence Choices for the Twenty-First Century* (Brassey, London, 1993) p.73

²⁷⁵ Cm1559-I, *Statement on the Defence Estimates 1991* (London, 1991) pp.41 & 47

²⁷⁶ National Audit Office, *Ministry of Defence: Initiatives in Defence Procurement* (HMSO, London, 1991) and Cm2801, *The Government's Expenditure Plans 1995/96 to 1997/98* (HMSO, London, 1995)

around a design that was in current British service, and the company had been unable to find a substantial British partner.²⁷⁷ Although it would have played strongly on the European integration front, the failures experienced by BAe over the other two procurements that decade demonstrated that Europe was not the highest priority at that time. The lack of a domestic partner was an issue in 2002 when BAe attempted to enter the Nimrod 2000, by this stage renamed Nimrod MRA.4, into the United States Navy Multi Mission Aircraft (MMA) competition. BAe were unable to pair up with an American company in order to be competitive, and as a result, in October 2002, were forced to pull out of the contest, which was won by the Boeing P-8 Poseidon.²⁷⁸ The issue is therefore a question of the priorities of the government. Based around the selection of Nimrod 2000, the interests of British industry would appear to rank above British jobs. If jobs had been the government's priority then the longer term export potential of the Orion 2000 would have had a greater lasting impact, even if the total number of jobs created or saved had been slightly less than that from Nimrod 2000. Equally, the cost of the Orion 2000 bid was ultimately slightly less than Nimrod 2000. However, that was a last minute change in an effort to swing the competition in favour of Orion. Lastly, the question is of which proposal would be the easiest one for the government to present to the public in a period of cutbacks. The Minister of Defence, Michael Portillo, was under pressure from the Chancellor Ken Clark to make even further budget cuts

²⁷⁷ Tusa, F., "The Silent Competition", *Armed Forces Journal*, December 1995

²⁷⁸ Campbell, A., "Delays and market doubts cast shadow over BAE", *Flight International*, 31 December 2002 – 06 January 2003

throughout the spring and summer of 1996.²⁷⁹ By announcing the RMPA result before the summer recess, and by awarding it to a British company that would secure British jobs and provide taxation revenue to the Treasury, Portillo was able to make it much harder for the Chancellor to subsequently ask for defence cuts that would threaten the programme.²⁸⁰

The Nimrod 2000 was not necessarily the most capable aircraft in the RMPA competition. However, it sat the best in terms of meeting the priorities laid out above. The risk when considering the aircraft is that BAe's subsequent failing to meet the budgetary and design objectives, coupled with the programme's ultimate demise in 2010 after it was eight years late and £800m over budget, detract from the driving forces of the initial competition.²⁸¹ What the ultimate failure of the Nimrod MRA.4 does demonstrate is that BAe saw the project cost and the need to portray the aircraft as an upgrade by using as much of the Nimrod MR2 as possible, as being the focal points of the bid. The government's efforts to continue with the programme throughout the majority of the delays and difficulties, support the argument that awarding the contract to a British lead contractor, and thereby enabling them to survive and compete on the world stage, was the main driving force behind the RMPA procurement.

²⁷⁹ Evans, M., "Portillo puts up strong defence to avoid heavy budget losses" *The Times*, 06 November 1996

²⁸⁰ Kemp, I., "Nimrod 2000 leads \$6b UK defence contracts", *Jane's Defence Weekly*, 31 Jul 1996

²⁸¹ National Audit Office, *Major Projects Report 2001*, HC 330, Session 2001-2002, 23 November 2001, p.117 and National Audit Office, *Major Projects Report 2011 Executive Summary*, HC 1520-I, Session 2010-2012, 16 November 2011, p.6

Chapter Five

CONCLUSION

The differing primary driving force within each MPA procurement demonstrated that the environment was continually evolving. Whilst the power of the Treasury was ever present, and continually imposed strict financial spending limits, the wider considerations and influences shifted throughout the period. During the 1940s and 1950s the focus was on military strategy and rearmament and this drove the selection of the type of MPA. This is not to say that the strategy took primacy over all else. However, working within the defined political and budgetary constraints, it was considerations such as a shift in strategic focus from the Far East to the Atlantic that determined the demise of the flying boat as the primary VLR MPA.

By the 1960s the driving force had shifted to the political sphere, with all the major aircraft procurements fitting in with the broader objectives of the administrations. Rather than the procurements being a product of military strategy, in this period an aircraft contract could be used as a political tool. In the case of MPA the selection of British-made Nimrod satisfied both the overarching economic consideration for budget cuts, and was used by the Labour government as a way of continuing to provide work and demonstrating public support for the British aviation industry. Due to the number of aircraft projects that were under review at the time, the government was able to strike a balance between the needs of British industry, the Americans and those of Europe. With this in mind the awarding of the MPA

contract could so easily have gone to the European Breguet Atlantic if that had been what was required to gain stability on the Concord programme.

The transformation continued into the 1990s with the priority becoming that of maintaining a viable domestic defence industry. Although this had clear political and economic benefits, the issue of protectionism was in effect a culmination of the preceding forty years. The move from the 1960s towards greater foreign competition in defence procurements, combined with fewer orders, had reached a point where the award of a contract could decide the future of an entire company. In such a climate lobbying from Industry increased and their requirements became a central driving force.

Given this increasing pattern of Industry lobbying, it would be logical to suggest that domestic industry was the key driving force across the period as a whole. British industry, and more specifically the incumbent manufacturers, were awarded all three procurement contracts, and all demonstrated some of the difficulties that faced the domestic aviation industry throughout the period. When the three physical aircraft that resulted from the procurements are compared, it can be seen that, as technology advanced, so the size of each order decreased. This trend can be seen in the requirement for a force size of 72 Shackletons, to be replaced by 38 Nimrods and then 21 Nimrod 2000 aircraft.²⁸² This downward trend in fleet sizes was primarily due to three factors. Firstly, the strategic role of the MPA within the RAF shifted from convoy protection to broader maritime surveillance with

²⁸² AIR 20/8714, *Force strengths table 1953-1955*, 6 Feb 1953 and TNA AIR 2/17455, letter from Treasury [Fensome] to MoD [Durstun], *HS801 Maritime Comet*, 4 Jan 1966 and National Audit Office, *Major Projects Report 1997*, HC 695, Session 1997-1998, 13 May 1998, p.3

a war role of ASW. With this shift the need for large numbers of aircraft to provide continuous protection to merchant shipping lanes diminished. Secondly, the ability of the aircraft to use radar and acoustic equipment to search ever increasing areas of sea resulted in fewer aircraft being needed to achieve the same task, and as a result cost saving efficiencies could be achieved on the size of the fleets. Finally, the threat posed by the Soviet and then Russian surface and subsurface fleets decreased such that fewer aircraft were required to provide surveillance on their movements. Thus the decline in the influence of the military can partly be explained in the reduced size of the fleets and the diminished role they played in British defence planning. The change in RAF force structure in 1969, with the amalgamation of Coastal, Bomber and Fighter Commands into Strike Command, along with the earlier creation of the Ministry of Defence in 1964, would have reduced RAF and maritime air power influence at government level.

As military influence declined, so the importance of the procurements at a political level increased. This is a natural change during such a period. However, it is the rise in the influence of Industry that is most startling. Although the number of procurements and their size, in aircraft terms, for the RAF was falling, it was not simply a case of less money being spent on the procurements. Due to the rising levels of technology involved, the costs per unit were also increasing. Adjusted for inflation to 1996 prices, a Shackleton Mk.3 in 1952 cost £2m, a Nimrod Mk.1 cost £23m in 1964 and a Nimrod 2000 cost £95m in 1996.²⁸³ The total value of the

²⁸³ AIR 2/12101, letter from A.V.Roe [JARK] to DOR(A), *Shackleton Mk.3*, 29 Feb 1952 - details Shackleton Mk.3 aircraft at £125,000, AIR 2/17199, minutes of meeting, *Shackleton Replacement*, 27 Oct 1964 – details Comet MR aircraft at £2.2m, Tieman, R., “Dogfight over £2bn deal to replace Nimrods”, *The Times*, 10 April

contracts was also a factor, again adjusted to 1996 prices, the Nimrod Mk.1 cost £1.2bn compared to the £2bn of Nimrod 2000.²⁸⁴ Due to the fragmented nature of the Shackleton Mk.1, 2 and 3 purchases due to rearmament and attritional replacements, it is not possible to establish a complete cost of the contracts. However, based on a 1953 fleet size of 72 aircraft, the value would be approximately £110m in 1996 prices.²⁸⁵ When considered in this manner, the problem for domestic industry was not one of decreasing values on each order due to fewer aircraft being ordered, but instead the drop in the number of orders placed by the RAF, and particularly the reduced frequency of them.²⁸⁶ This increased the importance of the expensive orders for both the government and for Industry, as if a company failed to win the bid then it could be many years before another large contract was open for tender.

The post-war MPA procurements occurred at a time when Britain was in transition, both domestically and internationally. The roles that an MPA fulfilled in 1950 were strikingly different from those in both 1965 and 1996. As the Cold War progressed and then ultimately ended, these aircraft were required to carry out

1996 and National Audit Office, *Major Projects Report 1997*, HC 695, Session 1997-1998, 13 May 1998, p.3 – details the cost at £95m per aircraft, this figure is derived from the total cost of the contract (£2bn) divided by the number of aircraft (21), the contract included the training systems and logistical support so this figure will be slightly higher than actual per unit cost, however no breakdown was available.

<http://safalra.com/other/historical-uk-inflation-price-conversion/> was used for inflation conversion, accessed 06 Oct 2012

²⁸⁴ AIR 2/12101, letter from A.V.Roe [JARK] to DOR(A), *Shackleton Mk.3*, 29 Feb 1952 and DEFE 24/67, loose minute from ACAS(OR) to DCDS(OR), *ORC Re-Submission – Nimrod MR MK1*, 27 Mar 1968 – figure includes the originally quoted unit cost plus the R&D costs that were outside of the fixed price contract element. Tieman, R., “Dogfight over £2bn deal to replace Nimrods”, *The Times*, 10 April 1996.

²⁸⁵ AIR 20/8714, *Force strengths table 1953-1955*, 6 Feb 1953. With a Shackleton Mk.3 quoted at £125,000 a mixed fleet of Mk.1,2 and 3 was likely to balance out at £100,000 per frame.

²⁸⁶ The Shackleton in the MPA role had a service life of 20 years (1951-1971), the Nimrod MR was in use by the RAF for 41 years (1969-2010). Nimrod 2000 did not enter operational service prior to being cancelled in 2010.

different tasks as British military strategy developed. This shift was partly driven by a changing political landscape in which Britain evolved from being a worldwide Imperial power to simply a European one; and from being a world political leader to effectively being subservient to the United States. As political influence diminished, so too did the ability of the country to sustain a large aviation industrial base. As Britain shifted its political and strategic focus towards the United States, so the military followed, with a growing preference to procure more advanced and cost effective American equipment. The traditional export markets for British military aircraft were following a similar trend and purchasing American aircraft. The domestic aviation industry in both military and civilian fields declined as American market penetration grew, to the extent at which it was barely able to survive by the end of the period.

Falling political and industrial worldwide influence had a direct impact on the economic viability of the country, with a weaker aviation industry a prime example of this decline. The reduction in the size of the industry resulted in lower domestic tax revenues for the government, and also reduced balance of trade payments through lower exports. This weaker broad economic picture had political implications, as lower government incomes resulted in reductions in the defence budget.²⁸⁷ A decrease in defence spending impacted not only the strategic ambitions of the political and military leaders, but also reduced the ability of the military to procure new equipment from British suppliers. This decreasing order book from both home and abroad reduced the number of companies that were able

²⁸⁷ The defence budget of 1951 totalled 9.86% of GDP, this fell to 6.83% in 1964 and 3.16% by 1996.

to survive, leading to mergers and reduced income from taxation to the Treasury.

Therefore the pattern throughout the period is not circular, but is instead a downward spiral, with MPA procurement serving as prime examples of this general decline.

APPENDIX A

Aircraft projects and developments mentioned in Chapter One

Avro Shackleton	Long range land based MPA developed in Mk.1, 2 and 3 variants with all three accepted into RAF service as the replacement for the maritime version of the Lancaster – the GR.3. The Mk.3 was also exported to South Africa. It was initially referred to in government as the Maritime Lincoln.
Bristol 175	Proposed MPA variant of the Britannia airliner that lost out in competition to the Avro Shackleton Mk.3 in 1953 due to long delivery timescale and uncertain future of ASW force.
Fairey Gannet	Royal Navy ASW aircraft operated from aircraft carriers, considered as alternative option to heavy land based Shackleton as primary British ASW platform. Remained in Navy service until 1972.
Lockheed Neptune P2V5	American MPA procured by the RAF as an interim aircraft whilst Shackleton fleet numbers were increased during rearmament.
R.2/48	Flying boat designated as replacement for Short Sunderland in Coastal Command Service. Prototypes ordered from Saunders Roe but never flown, project cancelled in 1951.
Short Seamew	Single engined short range MPA ordered for RAF service in 1954. Cancelled in 1955 due to poor operational performance and budget constraints with three aircraft delivered.
Vickers Varsity	Proposed medium range MPA to operate in and around British coastal waters. Cancelled in 1951 due to budget constraints. Briefly revived in 1954 as possible training aircraft for Maritime School, however it was decided to provide Shackleton Mk.1s for the role.

Aircraft projects and developments mentioned in Chapter Two

BAC TSR.2	British long range all weather nuclear strike aircraft. Programme suffered from long delays and cost overruns leading to project being cancelled in 1965 Defence Review.
BAC VC10	British airliner offered to the RAF as an MPA for both AST.357 and ASR.381. Proposals were rejected for both competitions on grounds of cost.
Breguet Atlantic	French led, NATO standard MPA developed in the early 1960s. Was proposed as an interim RAF aircraft to replace the Shackleton mk.2, but never ordered due to political pressures. Later variants were referred to as the 'Atlantique', however British files from the period only refer to the aircraft as 'Atlantic'.
BAC Concord	Joint British and French supersonic airliner under development during the mid 1960s. The original British spelling 'Concord' was ultimately replaced by the French spelling 'Concorde'. British government files of the period refer to the aircraft as Concord.
General Dynamics F-111	American twin seat fighter bomber ordered as an off the shelf replacement for the TSR-2 in the 1965 Defence Review. Due to spiralling costs and delays this programme was replaced by an increased order for the British Blackburn Buccaneer in 1968.
de Havilland Sea Vixon	Naval two seat interceptor, originally due to be replaced by P.1154, however the Royal Navy opted for Rolls Royce engined McDonnell Douglas Phantoms in 1964.
Hawker Siddeley HS.681	Four engined transport aircraft design. It was cancelled in the 1965 Defence Review whilst still at the design stage and replaced by the American C130 Hercules.
Hawker Siddeley HS.801	Internal company designation for the maritime variant of the Comet airliner. Also referred to the Comet MR (Maritime Reconnaissance) and named in RAF service as Nimrod MR.1
Hawker Siddeley P.1127	Small single seat VTOL fighter under development for the RAF and Royal Navy during the early 1960s. It was

put into production by the incoming Labour government in 1965 and renamed Harrier.

Hawker Siddeley P.1154 VTOL fighter intended to be produced in two variants for the Royal Navy and RAF, both types cancelled and replaced by Rolls Royce engined American McDonnell Douglas Phantoms. The RAF order was cancelled subsequent to the Naval order during the 1965 Defence Review.

Hawker Siddeley Trident Airliner offered to the RAF as basis for Shackleton mk.2 replacement. It was rejected on the grounds of cost and timescales without the manufacture of any prototypes.

Lockheed C130 Hercules American transport aircraft that was procured as an off the shelf replacement for the Argosy and Belfast aircraft after their designated replacement, the HS.681, was cancelled in 1965.

Lockheed Orion American made MPA, considered alongside Atlantic as a replacement for the Shackleton mk.2. Not ordered by the RAF.

Aircraft projects and developments mentioned in Chapter Three

BAe FLA	Future Large Aircraft, a European design, led in the UK by BAe for a jet powered transport aircraft to replace the RAF C130K and VC10 fleets. It lost the competition to the Lockheed C130J. The design was later modified to a propeller driven model as the Airbus A400M, designated Atlas in RAF service.
BAe Nimrod 2000	British MPA proposed as a direct replacement for the Nimrod MR.2. It was an updated version of the Nimrod MR.2 and was selected as its replacement in 1996. Renamed MRA.4 in 1998 and cancelled in 2010 Defence Review due to cost overruns and delays after the production of four complete airframes.
Dassault Atlantique 3	Updated version of the Breguet Atlantic that had been proposed as the Shackleton mk.2 replacement. The Atlantique 3 was in design phase and the RAF would have been the launch customer had it been ordered as the replacement for the Nimrod MR.2
Eurocopter Tiger	A European consortium, including BAe, proposal for an attack helicopter for the British Army. It lost the competition to the Westland WAH-64 in 1995.
Lockheed P-7	Updated and enlarged P-3 Orion that won the contract to replace the P-3 in US Navy service in 1988. Cancelled in 1989 due to cost overruns and the easing of Cold War tensions reduced the urgency for an Orion replacement.
Lockheed Martin C130J	Updated Hercules design, produced in house by Lockheed Martin and offered as replacement for the older RAF C130K. A partial fleet replacement contract was awarded in 1994 for 25 aircraft.
Lockheed Martin Orion 2000	American designed aircraft proposed as a replacement for the Nimrod MR.2. RAF would have been the launch customer for the aircraft however lost the competition to Nimrod 2000.
Loral Valkyrie	American designed update to Lockheed P-3A Orion and proposed as a replacement for Nimrod MR.2. The proposal lost the competition to the Nimrod 2000 whilst at the design stage.

Westland WAH-64 Apache British built variant of the McDonnell Douglas AH-64 Apache attack helicopter built under licence. Was the successful bidder in the competition for the replacement of the Westland Lynx.

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