Article

The RAF and its Role in Reconnaissance Missions Over the Soviet Union

By Squadron Leader Mark Kennedy

Biography: Squadron Leader Mark Kennedy is an RAF Intelligence Officer who has served in various appointments and deployments. His professional experience has been accumulated in the Joint, Coalition and NATO Alliance domains. He has an MA in International Security Studies and is currently undertaking an MBA.

Abstract: The Soviet Union presented political and military leaders with a significant gap in information, intelligence, technological capabilities and perhaps more importantly, their intent. Almost no information or intelligence was available to the West. Tightly controlled borders and limited internal and external travel opportunities made gathering intelligence against the Soviet Union a near impossible task. The only realistic option available at the time was the intent and means to utilise aerial reconnaissance to develop an understanding of Soviet capabilities, military and scientific. This article seeks to highlight the RAF's involvement and its successes during the crucial period of the 1950s.

Introduction

Following the cessation of the Second World War, an arms and military capabilities race began between the West and the East. With this race came several significant intelligence gaps that the West sought desperately to answer. This article seeks to highlight how major intelligence gaps were answered, specifically with assistance from the RAF utilising aerial reconnaissance. It will address the specific problems they faced such as trying to answer the missile and bomber gap intelligence shortfalls that would affect the foreign policy intent of the British and American governments, and the platforms and those chosen to operate them to conduct such dangerous missions.[1]

The closed societal nature of the Soviet Union following the end of the War severely limited access and intelligence collection. The Soviet Union and its satellite states used landlines to communicate, limiting western collection capabilities and their wireless interception that had prominent success during the War.[2] Heavy restrictions and monitoring of travel, communication, and associations made espionage a difficult endeavour, reinforced by severe punishments for those caught engaged in such activities.[3] US and UK standoff collection capabilities offered a very limited insight into military capability progress within the Soviet Union.

During the latter stages of the War, the RAF had seen significant success in aerial reconnaissance utilising dedicated platforms such as the Spitfire and Mosquito which were specifically equipped for Photo Reconnaissance (PR) missions. With this came a development in specialist staff that could quickly analyse the findings of the missions and report them to key political and military decision makers.[4]

Very little was known about aerial reconnaissance missions over the Soviet Union during the early part of the Cold War until the Soviet May Day celebrations in 1960, when a U-2 flown by Central Intelligence Agency (CIA) pilot Francis Gary Powers was shot down in central Russia.[5] Although a reasonable amount of material discusses the exploits of US overflights into and along the borders of the Soviet Union, predominantly related to the U-2 aircraft, very little information exists in the public domain which directly refers to the impact of the RAF's involvement and participation. Britain's role in such activities was likely overlooked for several reasons. An analysis of the era suggests that those selected from the RAF came from a generation of modesty, understatement and a wish to play down their performances in such an exceptional activity.[6]

This article will tie together evidence highlighting how British efforts, primarily through the RAF and its dedicated small number of professionals, backed with political blessing, amplified the efforts to gauge and understand the capabilities of the Soviet military might and how its findings shaped the remainder of the Cold War period.

The Problem

Towards the latter stages of the Second World War, Britain and America began to consider where the next post-war threat would emanate, and quickly focused their attention on the

Soviet Union.[7] Both nations realised that, what intelligence they did have was dated and based on scant information. Such crucial intelligence gaps as Soviet military capabilities, the development stages of their nuclear weapons programme, military production and basing facilities, needed to be answered to successfully gauge the threat they were now facing.

In late August 1949, the Soviet Union detonated its first atomic bomb near Semipalatinsk in northeast Kazakhstan. The monitoring of Soviet atomic weapon progress had been a top intelligence priority for western intelligence, yet the testing in 1949 had caught western governments off guard. Britain's Joint Intelligence Committee (JIC) had assessed that the Soviets would be ready for initial testing in the middle of 1953, and America's CIA had also assessed a similar timeline. Blindsided by the rapidity of Soviet atomic weapon development, Britain and America sought to redouble their intelligence efforts.[8] British and American intelligence communities now faced the difficult task of gaining lost ground with regard to atomic weapon developments, and the need to also accurately assess how such a capability would be militarised for potential deployment against western targets. The intelligence gathered would assist twofold: it would provide an assessment of the level of military capability; and then assist with providing targeting information that would be used by British and American bombers and latterly, Inter-Continental Ballistic Missiles (ICBM).

The first significant issue for the USAF was the need for accurate targeting information that would support the navigators of their long-range bombers. The USAF's new jet powered bombers had the height, reach and speed to strike key targets in the western Soviet Union, but it did not have the means to identify where, and which, targets to deliver ordnance against. Whilst nuclear enabled weapons had the ability to affect a large area, USAF military planners desired to be as accurate as possible, to inflict maximum damage, so that targets would not need to be re-engaged. Long-range bomber aircraft would likely strike at night and ideally utilising cloud cover. Therefore, radar played a key role in identifying the ground features that bomber navigators would use to navigate to their respective targets, such as Moscow and Kiev.[9] Reconnaissance missions were required in order to capture radar screen images so that they could be used when required by the navigators of long-range bombers.[10] The second problem was, who would conduct this type of much needed mission? American senior political leadership, primarily the US President, was acutely aware of the political ramifications of an aerial reconnaissance mission that would penetrate deep into the Soviet Union. To overcome such a concern, the USAF developed a mitigating solution by having RAF pilots, engineers and navigators, fly these politically sensitive missions. The USAF would provide the aircraft in the form of their latest, long-range jet bomber, the RB-45C Tornado, converted specifically for reconnaissance missions. RAF roundels would be painted on to add further authenticity and deniability should the mission go awry.[11] These RAF crewed, and liveried Tornados successfully conducted a number of missions deep into the Soviet Union. Not only collecting radar imagery for future missions, but also providing proof that such penetration flights could be conducted if needed.

These deep penetration aerial reconnaissance missions were a success, but they did not go unnoticed.[12] Soviet Air Defences observed these missions, but were not able to counter them. During the early 1950s, Soviet Air Defence radars were few, sporadic and predominantly focused on serving the western part of the Soviet Union. Now aware of such aerial penetration missions, the Soviet military focused on developing and increasing the effectiveness of its capabilities. Aerial reconnaissance missions now expanded beyond radar imagery collection roles to include Signals Intelligence (SIGINT) missions that would probe and identify gaps in radar coverage along the borders and territorial limits of the Soviet Union. This included the interception of radar emissions to identify an opponent's electronic order of battle.[13] By assembling an order of battle, military planners and analysts would be able to identify potential areas of weakness for exploitation, as well as develop an understanding of how Soviet forces were functioning and operating.

Britain had excelled in the field of SIGINT during the latter stages of the War. Such success had made a deep impression on the Americans.[14] Building on recent operational success and experience, the RAF's specialist aircraft and aircrew would go on to excel further in this field, and by the nature of its importance, establish an important working link with the GCHQ. In order to identify the existence, function and subsequent actions of a Soviet air defence system, British and to a lesser extent American aircraft, would conduct aerial exercises that would intentionally trigger the Soviet air defence system to react. Soviet air defence systems would go active and pre-planned SIGINT collection would be undertaken, primarily in the air but also on the ground.[15] By intentionally triggering Soviet air defence activity with deliberate provocation, analysis of recorded Electronic Intelligence (ELINT) and Communications Intelligence (COMINT) data would provide an indication of radar facilities, their Order of Battle, an understanding of the Soviet Command Systems and their strategy and tactics.[16]

The requirement to gather intelligence on guided missile development was driven by two needs: understanding the stage which the development was at, and the capability of the systems being created. In order to answer these intelligence requirements, the RAF undertook a variety of missions overflying the Soviet missile range at Kapustin Yar.[17] Identifying the locations of such development and test sites was critical as it would provide an indication as to what activity and potential capability was being undertaken there, but it also allowed the location to be confirmed so that telemetric data could be collected at later dates. In addition, the identified locations would also become primary targets in the event of war.[18]

Telemetric data was fast becoming a growing field of interest that saw the use of radio waves to control missile guidance systems.[19] These guidance systems were utilised for three military capabilities of particular interest for the British and Americans: ICBM platforms that the Soviets were developing and a key strategic concern for the American government; surface-to-air missiles that were key to the Soviets' air defence systems that aimed to deter aerial reconnaissance incursions; and air-to-air radar and missile development, used by the aircraft of the Soviet Air Force against those aircraft intruding within the borders of the Soviet Union.

The latter two areas of concern were the focus of the RAF's specialist 199 Squadron, which was responsible for developing jamming capabilities and countermeasures to the Soviet air-to-air missile interdiction threat.[20] Dedicated and specialist RB-29 Washington aircraft, from the RAF's 192 Squadron, successfully monitored and recorded Soviet advances in fighter aircraft air interdiction radar.[21] A new and crucial finding, discovered by the specialist RAF collection aircraft, was that of the NATO designation codename 'Scan Odd', the Soviets' first Air Interdiction radar that was all-weather capable. This successfully indicated the level of technological capability that the Soviets had achieved, and allowed for successful development of detection systems and appropriate countermeasures to be developed and shared with American, and potentially NATO Alliance members. Seeking to develop an understanding of Soviet missile guidance systems, senior British intelligence leadership approached their counterparts in the Norwegian Defence Intelligence Staff. Sensing the potential political hazards of allowing penetration flights from Norwegian airspace to the Soviet Union, the Norwegians allowed the RAF to conduct airborne ELINT missions from within Norwegian airspace.[22] Successful missions accumulated a wealth of information that required national level policies to control, manage and share its findings. It was during the 1950s that Government Communications Headquarters (GCHQ), with the RAF as a provider of crucial gathered SIGINT, had become the governing authority for all ELINT matters and responsible for the managing of relations and intelligence sharing with various American organisations in this specialist field.[23]

Another key intelligence gap, for both the British and American governments, concerned the matter that now the Soviets had a functioning and proven nuclear weapon capability; how would it be delivered to targets in the west? Both governments assessed that long-range bomber aircraft would be the primary means of delivery, however, very little was known about the location of airfields that would operate such a capability, their numbers and the locations of the facilities responsible for producing them. American analysts assessed that long-range Soviet bombers would likely circumnavigate a route over the north pole and through Canada, whereas British counterparts feared that the British Isles would be the most likely target following a route that passed either through mainland Europe or via the Baltic. The need to develop answers for this concern was critical, as government policy makers and military planners had to develop means by which to deter Soviet long-range bomber activity, ideally via a pre-emptive strike against the aircraft at their bases as British analysts at the time feared that a strike by Soviet long-range bomber aircraft would leave little to respond and counter-attack with.[24]

Soviet defence capabilities initially suffered against western aerial reconnaissance missions, especially those which penetrated their sovereign airspace. The Soviet military system, built upon subscription of its military manpower, led by a procedure bound, centralised command and control mentality entwined with limited avionics, posed a reduced and manageable threat for those early reconnaissance missions. As mentioned previously, during initial aerial reconnaissance missions over the western Soviet Union, early warning radar systems were able to observe, track and follow western aircraft that conducted penetration flights. The height and speed of the reconnoitring aircraft, utilising the cover of night, severely

hampered the ground controlled Soviet Air Force interception fighters. Not willing to let such activities become a regular occurrence, Soviet efforts were concentrated on producing air interception fighter aircraft that would have the ability to operate in all weathers, utilising onboard radar systems. As previously mentioned, specially fitted RAF Washington aircraft from 192 Squadron, successfully conducted an airborne collection of the first ever airborne radar fitted to a dedicated Soviet intercept aircraft, the MiG-15.[25]

In October 1957, confidence in British and American technical superiority took a step back when the Soviets successfully launched their Sputnik 1 satellite, the first earth orbiting vehicle.[26] The Soviets had already conducted a series of successful long-range, ICBM tests in the summer leading up to the launch, but this now indicated a capability that had a range and reach far in excess of previously estimated forecasts.[27] Even with this insight, British and American intelligence communities were still unable to gauge, and accurately assess, the speed at which technological developments were going in order to assess future threats.[28]

Missile development had now taken centre stage on the strategic intelligence agenda in America following the demise of the 'bomber gap'. The primary sources available to Britain and America prior to Sputnik were the U2, which at that time included flying by RAF pilots.[29] In the wake of the Sputnik launch came the missile gap. The US Science Advisory Committee informed Allen Dulles – the Director of Central Intelligence (DCI) – that they believed 'the United States to be in a period of national emergency'.[30] A capable Soviet ICBM programme, combined with a tested and proven nuclear weapons capability, now posed the biggest threat. Whereas as previously assessed, long-range bombers were likely a key threat to Britain based on their range, now ICBMs extended the threat to the US, thus heightening the problem faced by both nations.

Though the size of the RAF, compared to its USAF counterpart, was quite diminutive, it quickly proved a significant worth, not only in its field of SIGINT, the proceeds of which fed into GCHQ which thus cemented relations with the US NSA, but the allowance of RAF personnel to fly US aircraft to conduct aerial reconnaissance missions indicates the importance of British involvement. From Imagery Intelligence (IMINT), SIGINT and air sampling missions, the RAF was able to collect crucial information that informed the assessments of both nations, that had previously been incorrect, and considered the Soviet capability development machine to be slower than it actually was. Prior to the cessation of the War, the intelligence picture of Soviet military capabilities was a blank canvas. Towards the end of the 1950s, a detailed and alarming picture was painted thanks to the efforts of the British involvement and the RAF that flew the aerial reconnaissance missions over and along the closed nation of the Soviet Union.

It is easy to look back, from a historical and analytical perspective, at the problems facing the West. Though several declassified documents are available to identify aerial reconnaissance activities, it is important to remember that these are likely to represent a small percentage. The information subsequently made available to the public and discussed by authors

Goodman, Aldrich, Lashmar and Dylan, draw upon the limited amount of released archived material available from both sides of the Atlantic. Though during the 1950s, the intelligence and military communities of America and Britain were predominantly relying upon assessments based on little (and dated) information. Closed borders forced the West to venture into the uncharted areas of the Soviet Union, at great risk, to see what was going on and what stage the development was at. Multi-disciplinary aerial reconnaissance missions collecting IMINT (radar and imagery), ELINT, COMINT and air sampling was conducted by both nations, but it could be assessed that the UK's efforts, via the RAF, produced the greater insight considering the aircraft platforms available to them compared to the USAF. Whilst a number of British government archived files have been released to the National Archives for public viewing, within them are a number of official notes stating that certain files have been held back from release. We can, therefore, never have a full insight into all the types of missions, operations and intelligence gaps faced by respective governments, but what we can infer is that both were quickly able to develop an understanding of how swiftly the Soviet Union was progressing within their air defence systems, air interdiction jet fighters, ICBMs, nuclear weapon development and space programme.

People & Platforms

Declassified files show that as the end of the Second World War approached, Sir Henry Tizard was appointed to lead a team of scientists to produce a report entitled *Future Development in Weapons of War*, which forecast significant, anticipated military developments for the next 20 years.[31] Amongst the recipients of the classified report was Air Marshal (AM) Sir John Slessor who would go on to become a key figure and driving force in early Anglo-American overflights of the Soviet Union. It was Slessor who noted that Russia's vast landmass and rigidly controlled Iron Curtain Borders required a long-range, stratospheric reconnaissance aircraft capability, something that was currently lacking in the British military's inventory.[32] Slessor also noted that an urgent requirement for intelligence to support the targeting of Russia's key strategic sites existed if the UK was to develop an effective deterrence policy. Later, during his time as Chief of the Air Staff, he played an active role in expanding aerial reconnaissance operations to include airborne derived electronic intelligence, communications intelligence and high-altitude sampling of radioactive fallout debris from Soviet atomic weapon testing.[33]

However, prior to the 1950s and unbeknownst to the American military and civilian intelligence agencies, the RAF had been conducting aerial reconnaissance missions into and around the southern part of the Soviet Union. Specially modified photo reconnaissance Mosquito aircraft, the same which had seen success in the War, were alleged to have operated from RAF Station Habbaniya, Iraq, during the latter months of 1948.[34] It is likely that aerial reconnaissance missions were conducted into the Soviet Union in order to assess military capabilities and potential weapons development. During the same period, aerial reconnaissance missions were conducted along the shoreline of the Caspian Sea. Once American counterparts became aware of these missions, an official request was made

to gain copies of the film and an overtrace *(sic)* of the routes flown.[35] These pre-1950 missions likely highlighted to the United States policy and military planners, the ability and intent of the UK to conduct aerial reconnaissance missions against the Soviet Union. The RAF's derring-do attitude to conduct such missions and potential willingness to share its findings, set the scene for the period of the 1950's where the UK would prove its value in conducting such activities in order to understand and answer key intelligence gaps against the Soviet Union.

Incumbent US President Harry Truman acknowledged the critical intelligence gaps relating to the Soviet Union, however, he was reluctant to commit either American airmen, or aircraft, to any overflights of the western side of the Soviet Union, in what he considered to be a highly provocative act with serious political repercussions. In order to side-step these restrictions, the USAF Chief of Staff, General Hoyt Vandenberg, approached Air Chief Marshal (ACM) Sir William Elliot, head of the British Joint Service Mission in Washington, D.C. to discuss the desire of the senior commanders of the USAF to use RAF personnel and one of its bases to conduct an aerial reconnaissance mission using USAF aircraft, with the range and inflight refuelling capability, to conduct such a mission deep into the western Soviet Union.[36] Declassified Air Ministry files contain a five page memorandum from the Secretary of State for Air entitled *The Counter-Offensive Against the Soviet Long Range Bomber Force* written for Churchill. The memorandum articulated the need to conduct radar reconnaissance missions during peace time. The collection of 'photographs' mentioned in the memorandum refers to photographs taken of the radar screens at key locations. Perhaps now considered rudimentary, these crudely created solutions would be used to support a counter-offensive strike against Soviet long-range bomber bases during the early stages of the outbreak of war. At the time, this was deemed the best military strategy to limit the Soviet military might that was believed to be focused on Britain. The memorandum also confirmed the offer of three RB-45C Tornado reconnaissance aircraft, as well as confirmation of an aversion to not conduct such sensitive missions with American personnel. In the same month, Churchill wrote back to the Secretary of State for Air stating that 'Operation Jiu-Jitsu will be done by us if the Americans cannot be pursuaded (*sic*) to do it'.[37] However, prior to the concept being delivered to Churchill and his approval passed, ACM Cochrane, the RAFs Vice Chief of Air Staff had begun the process of selecting and authorising the detachment of RAF aircrew to undertake training on the aforementioned RB-45C Tornado reconnaissance aircraft. On the 21st March 1952, Squadron Leader John Crompton, Flight Lieutenant Rex Sanders and Flight Sergeant Joe Acklam conducted their first special mission which was to repeatedly fly along the Berlin Corridor to gauge the Soviets' response in this particularity sensitive airspace. The success of the Berlin Corridor mission was enough for senior members of the USAF and RAF to propose further missions, this time penetrating deeper into the Soviet Union. In April 1952, the first radar reconnaissance penetration mission was undertaken. Three RB-45C aircraft departed RAF Sculthorpe in Norfolk. Each had a specific route, simultaneously taking in key targets over the Baltics, the areas surrounding Moscow and the central Soviet Union, collecting key details on the Soviet Air Force's airfields which housed the long-range bombers that were the greatest threat to Britain.[38] Buoyed by two successful missions, the final Jiu-Jitsu mission was flown,

again using three RB-45C aircraft, this time reaching even further into the Soviet Union. The success of the three Jiu-Jitsu missions not only improved the intelligence collection and sharing between the two nations, but proved to Churchill that ACM Slessor was key in Britain's position during the early stages of the Cold War.

The provision of B-29 aircraft to the RAF, named the Washington B.1, was a stop gap measure until the completion of the RAF's new jet-propulsion bomber, the Canberra. The arrival of the Canberra in the early 1950s now allowed the RAF to match, and subsequently exceed the capabilities of equivalent USAF aircraft. As with the Washington B.1 aircraft, whose primary design purpose was as a bomber, which was subsequently converted to undertake aerial reconnaissance missions, the Canberra too was able to successfully convert to a similar role. A prominent example of the RAF's and UK's role in aerial reconnaissance development, and subsequent success, was observed in the co-operative Project Robin. Scientists at the Boston University Optical Research Laboratory had designed and built a 240-inch focal length framing camera specifically designed for long-range oblique photography.[39] The Canberra, being the most suitable aircraft platform for this new capability, was selected to undertake initial testing. The Canberra's operating altitude, range and speed, along with its accommodating bomb bay, allowed this new type of oblique imagery collection to operate in friendly airspace, yet see into denied territory, therefore mitigating political and physical risk. Declassified government minutes and correspondence between the Secretary of State and the RAF's Vice Chief of the Air Staff, denote the success of Project Robin in its collection missions.[40] The success of this joint collaborative endeavour in capability development and likely sharing of intelligence further, indicates how the UK was able to play a significant role in aerial reconnaissance missions during the 1950s.

The Canberra, despite being designed and built as a medium range, jet bomber, quickly became a key platform in the UK's intelligence gathering arsenal. As mentioned previously, the operating altitude, range and speed, as well as the space offered by the bomb bay, saw specifically modified imagery collection aircraft become operational in the form of the Photo Reconnaissance variants 3 and 7 (PR3 and PR7) which were prominent during the 1950s. With each variant came modifications in engines, wing design and avionics that extended operating capabilities to almost U-2 performance levels, although this wasn't known at the time as the U-2 was still deeply shrouded in secrecy.

The USAF saw the success and even greater potential of the Canberra platform and opted to operate their own via licensing through a third party. The American modified version of the British Canberra, the RB-57D, which, with its expanded wingspan and improved engines, could reach nearly 60,000 feet compared to the U-2's 70,000 feet.[41] Other key capabilities that the RB-57 had over the U-2 was the extended range on account of the fuel tanks placed internal to the wings. Thirteen of the twenty RB-57 aircraft also had the ability to conduct inflight refuelling.[42] This would allow the aircraft to transit for a period, refuel prior to embarking on the mission and thus maximise the time on a reconnaissance mission. Another advantage of

the British derived aircraft was the fact that it was originally a bomber and therefore had a bomb bay. This large space was able to hold a variety of different collection capabilities, IMINT, SIGINT or a combination of the two. Whereas the U-2, which was effectively a jet powered glider, was limited by weight restrictions of the equipment it could carry, this was not an issue for the RB-57.

Despite the Washington B.1 being supplied as an interim measure until the Canberra became fully mission capable, both aircraft platforms did actually operate together in what was referred to as Radio Proving Flights, or unofficially known as Ferret Flights. These were specific missions to collect SIGINT which would be later analysed by the RAF and GCHQ. Declassified correspondence to the Prime Minister, Harold Macmillan, details the mission requirements and intelligence value of conducting such Radio Proving Flights.[43] These Radio Proving Flight missions comprised of one Washington and one or two Canberras. Their operational areas for collection included the Barents Sea, Iran's border with the Soviet Union, the Baltic Sea, the Black Sea and the Turkish / Soviet Border.[44] [45] Declassified material stated that the designated Canberra would fly high and fast, along or near the Soviet border, in order to stimulate air defence radars and associated communication. The Washington, which would be positioned at a safer distance, was tasked to collect Soviet Air Force VHF and HF communications, Soviet radio countermeasure methods, early warning ground and air intercept radar.[46] Such missions supported the identification of new VHF Air Defence ground stations, which were previously believed to be High Frequency (HF) based, and valuable intelligence on the Soviet Union's new Air Force Yak-25 interceptor aircraft.[47] The new Yak-25 was a product of the Soviets need for an air interdiction, radar mounted long-range interceptor capability.[48] This capability would allow the engagement and pursuit of western military reconnaissance aircraft which were using the cover of night and dark moon periods to conduct their missions. The intelligence developed from the Yak-25 discovery fed back into the British RAF's 190 and 192 Squadrons, who alongside GCHQ counterparts, would develop capabilities in which to detect new Soviet radar capabilities and design countermeasures that would go into the electronic warfare protection systems of the new V-Bomber aircraft, whose role would be to fly deep into Soviet territory to deploy their nuclear weapons.[49]

Aerial reconnaissance missions were not solely focused within the realm of IMINT and SIGINT. Through air sampling, an indication as to the stage and effectiveness of another nation's nuclear weapons testing programme could be assessed. In 1955, the Soviet Union was conducting nuclear weapon testing at Novaya Zemlya. Prior to testing beginning, RAF Canberra aircraft deployed to Goose Bay airfield, in north eastern Canada, to conduct air sampling missions in what was referred to as Operation Cold Nip.[50] Such surveillance efforts were deemed an unquestionable success as British aerial reconnaissance capabilities were able to complement American monitoring efforts.[51]

During the latter stages of the 1950s, aerial reconnaissance missions were complemented by the new US U-2A; a single engine aircraft designed specifically for intelligence collection,

whereas the previously discussed aircraft such as the Tornado, Washington and Canberra were conversions from their primary role as a bomber. Financed and operated by the CIA, the U-2A benefitted from an operating altitude that placed it safely above the ranges of Soviet anti-aircraft fire, surface-to-air missiles and interceptor aircraft. This new capability was independent of the USAF and was therefore afforded different operating constraints. However, like previous US aircraft, a continued desire to base such aircraft in the UK would allow it greater intelligence collection opportunities. Using the auspicious cover title of the 1st Weather Reconnaissance Squadron, the first batch of U-2s was assembled and test flown from RAF Lakenheath in Suffolk.[52] Political risk courted sensitive aerial reconnaissance missions, especially those which over flew Soviet territory without permission. The CIA, therefore, sought to get around these concerns by changing the owner of the risk. Via the British SIS, the CIA sought to train British RAF pilots to fly the new U-2 aircraft and place mission approval with the incumbent Prime Minister as opposed to Truman, who was particularity cautious about such endeavours.

British journalist, Guy Walters, reported that declassified CIA documents referred to British pilots, by name, and the accomplishments they achieved. The documents stated that four British RAF pilots were trained at Laughlin Air Force Base in Texas, prior to being deployed to Incirlik Air Force Base in Turkey. On the 6th of December 1959, Squadron Leader (Sqn Ldr) Robert Robinson flew over the Kapustin Yar missile test range and a long-range bomber facility in the Ukraine in an American U-2 aircraft. The head of the CIA, Allen W. Dulles, referred to Robinson's subsequent mission findings as 'a million-dollar photo'.[53] Later missions flown by Flight Lieutenant (Flt Lt) John MacArthur uncovered the Soviet Air Force's first supersonic bomber, the Tupolev Tu-22, at the Tupolev production facility in Kazan.[54] Kazan was located deep within the Soviet Union, nearly 1,000km east of Moscow. Such an endeavour not only represented a daring feat to get there and back, but also an intelligence success in positively identifying a new Soviet military capability that would assist in the concern around the Bomber Gap myth that was a key intelligence issue for British government and military intelligence staff.

Sqn Ldr Robert Robinson was part of the small number of RAF personnel selected to fly sensitive aerial reconnaissance missions in the new U-2 aircraft, on behalf of the US CIA. When interviewed in 1993, Robinson highlighted a difference of priorities that existed between America and Britain. American intelligence and military planners were predominantly focused on missile sites and missile production, whereas the British were more concerned with the development of long-range strategic bombers, the facilities that built them and the airbases with which they would operate from. Robinson would go on to comment that the RAF was, as part of its overall mission set, looking for information and insight into strategic bomber capabilities and production facilities, whilst American counterparts were concentrating on missile sites and missile production, 'that was a fundamental difference between our targeting'.[55] Robinson recalled that 'It's possible that we found a city or two, by accident'. As mentioned previously, the Soviet Union was almost a blank canvas for western intelligence staff. Robinson's accidental city finds included key locations and facilities such as the Baikonur

Cosmodrome and the Tyuratam Launch Complex which was believed to be part of the Soviet manned space programme, a finding which later turned out to be correct.

The British, and the RAF, had a proven intent and history of conducting aerial reconnaissance missions into the Soviet Union as noted by dedicated imagery reconnaissance aircraft, the Mosquito from RAF Habbaniya in northern Iraq. The US quickly realised that, despite its small scale compared to the USAF, the British were able, and willing, to undertake such dangerous endeavours. From the Mosquito to the Washington and latterly the Canberra, the platforms and the people during the 1950s were paramount in successfully building an intelligence insight into the problems faced by intelligence staff from both the US and Britain. Whether it was IMINT collection over Kapustin Yar to gauge missile developments; the Tupolev strategic bomber production facility in Kazan; SIGINT collection or air defence radars along the Soviet borders; air sampling of nuclear weapons development, or the sharing of aircraft capabilities such as the Washington or RB-57, both nations benefitted from the abilities of the people and aircraft platforms of Britain and its RAF.

Conclusion

The Soviet Union presented political and military leaders with a significant gap in information, intelligence, technological capabilities and perhaps more importantly, their intent. Almost no information or intelligence was available to the West. Tightly controlled borders and limited internal and external travel opportunities made gathering intelligence against the Soviet Union a near impossible task. The only realistic option available at the time was the intent and means to utilise aerial reconnaissance to develop an understanding of Soviet capabilities, military and scientific.

The RAF played a key role during this period. At the highest levels, key individuals foresaw the need for aerial reconnaissance missions into the Soviet Union, noting that Russia's vast landmass and rigidly controlled Iron Curtain borders required a long-range, stratospheric reconnaissance aircraft capability, firstly to answer the key intelligence gaps, and secondly, to enable the means by which to strike at key targets – both civilian and military.

Operation Jiu-Jitsu saw three US RB-45C Tornado reconnaissance aircraft undertake the first radar reconnaissance penetration mission into the Soviet Union manned and operated by RAF aircrews and flown from bases in Norfolk. The success of the first mission saw further British crewed, US RB-45C Tornado reconnaissance missions undertaken, this time reaching even further into the Soviet Union. The success of the three Jiu-Jitsu missions not only consolidated the relationship of the two nations but ensured an enduring bond in intelligence collection and sharing.

Success in aerial reconnaissance was not solely limited to the field of imagery intelligence. The RAF's specialist fleet of SIGINT collection platforms, 199 and 192 Squadrons, saw considerable success in collecting crucial information of Soviet air defence capabilities,

both ground operated and those latterly installed on Air Interdiction jet fighter aircraft. Collected information and data on Soviet radar capabilities enabled British and American scientists to develop jamming capabilities and countermeasures to Soviet air-to-air missile interdiction threats that were previously not able to be effectively countered or even identified. Specially converted Washington aircraft from the RAF's 192 Squadron, successfully monitored and recorded Soviet advances in fighter aircraft air interdiction radar.

A notable success in co-operation between the two nations was observed in what was referred to as Project Robin, a prominent example of the UK's role in aerial reconnaissance capability development. American scientists had designed and constructed a 240-inch focal length camera specifically designed for long-range oblique photography, a key requirement for conducting aerial reconnaissance, especially for stand-off type missions. The British government, and the RAF, offered their Canberra aircraft as a platform for testing and developing this new capability. The RAF's Canberra operating altitude, range and speed, along with its accommodating bomb bay, allowed this new type of oblique imagery collection to operate in friendly airspace, yet peer over the borders of denied territory. This therefore mitigated political risk should a mission become compromised and reduced physical risk for the pilots and aircrew flying such missions.

At the other end of the spectrum, Sqn Ldr Robert Robinson, who was part of an RAF team undertaking aerial reconnaissance missions over the Soviet Union in what was the perhaps the cutting edge of US aerial reconnaissance platforms, the highly secretive U-2. To be invited into such a small, sensitive, and highly classified circle is a direct indication of how important the US considered the British to be in such activities. It wasn't just the people of the RAF who made a significant impact during the 1950s. The Canberra bomber, like its predecessor the Mosquito, would be converted to perform a dedicated reconnaissance role which went on to undertake a variety of crucial intelligence gathering missions along, and into, the Soviet Union either conducting IMINT, SIGINT or air sampling missions.

In conclusion, the UK's participation in aerial reconnaissance missions, through senior political agreement, the provision of basing, personnel, capability development and intelligence sharing with its American partners, made a significant impact on assisting the development of understanding the capabilities of the Soviet Union during the early stages of the Cold War. The evidence shows that through British participation, much intelligence and information was sought, gained and achieved, by so few.

Note: This article is an abridged version of a dissertation undertaken as part fulfilment of the Master's Degree in International Security Studies at the University of Salford, submitted in 2019.

Notes

[1] Paul Maddrell, *Spying on Science* (Oxford: Oxford University Press, 2006), 205.
[2] Richard J Aldrich, "GCHQ and Sigint in the Early Cold War 1945-70", *Intelligence and National Security*, 16:1 (2001): 67-96.
[3] Luke Benjamin Wells, "The 'bomber gap': British intelligence and an American delusion", *Journal of Strategic Studies*, 40:7 (2017): 963-989.
[4] Taylor Downing, *Spies in the Sky: The Secret Battle for Aerial Intelligence During World War II*, (London: Abacus, 2012) 80-81.
[5] J. Ranelagh, *The Agency: The Rise and Decline of the CIA*, (London: Cambridge Publishing, 1986) 318.
[6] Paul Lashmar, *Spy Flights of the Cold War* (Stroud: Sutton Publishing, 1998) 5.
[7] Michael S Goodman, *Spying on the Nuclear Bear: Anglo-American Intelligence and the Soviet Bomb*, (Redwood: Stanford University Press, 2007) 2.
[8] Ibid 36-56.
[9] Richard J Aldrich, *GCHQ: The Uncensored Story of Britain's Most Secret Intelligence Agency* (London: HarperCollins, 2011) 126.
[10] Paul Lashmar, *Spy Flights of the Cold War* (Stroud: Sutton Publishing, 1998) 64.
[11] Ibid 70-74.
[12] Ibid 74.
[13] "Understanding and Intelligence Support to Joint Operations" DCDC, accessed March 24, 2018, https://www.gov.uk/developmentconcepts-and-doctrine-centre.
[14] Richard J Aldrich, *GCHQ: The Uncensored Story of Britain's Most Secret Intelligence Agency* (London: HarperCollins, 2011) 110.
[15] Ibid 126.
[16] A Price, *The History of US Electronic Warfare. Vol II: The Renaissance Years* (Virginia: The Association of Old Crows, 1989) 312.
[17] C Pocock, "Operation 'Robin' and the British Overflight of Kapustin Yar: A Histographical Note", *Intelligence and National Security*, 17:4, (2002): 188.
[18] Michael S Goodman, *Spying on the Nuclear Bear: Anglo-American Intelligence and the Soviet Bomb* (Redwood: Stanford University Press, 2007) 195.
[19] Ibid 110.
[20] Richard J Aldrich, *GCHQ: The Uncensored Story of Britain's Most Secret Intelligence Agency* (London: HarperCollins, 2011) 113.
[21] C. Clark, *From Hitler's U-Boats to Kruschev's Spyflights* (Barnsley: Pen & Sword Military, 2013) 222.
[22] R Tamnes, *The United States and the Cold War in the High North* (London: Dartmouth Publishing Co Ltd, 1991) 122-123.
[23] Richard J Aldrich, *GCHQ: The Uncensored Story of Britain's Most Secret Intelligence Agency* (London: HarperCollins, 2011) 111.
[24] AIR 19/1126, 'The Counter-Offensive Against the Soviet Long Range Bomber Force', February 1952. The National Archives at Kew.
[25] D Paton & D Oliver, "Airborne Electronic Reconnaissance - 1948 to 1989" RAF Historical Society,

20 (2001): 64.
[26] R C Nesbit, *Eyes of the RAF: A History of Photo-Reconnaissance* (Godalming: Bramley Books, 1996) 258.
[27] Michael S Goodman, *Spying on the Nuclear Bear: Anglo-American Intelligence and the Soviet Bomb* (Redwood: Stanford University Press, 2007) 197.
[28] Luke Benjamin Wells "The 'bomber gap': British intelligence and an American delusion", *Journal of Strategic Studies*, 40:7 (2017) 782.
[29] H Dylan, "Britain and the Missile Gap: British Estimates on the Soviet Ballistic Missile Threat, 1957–61", *Intelligence and National Security*, 23:6 (2008) 777.
[30] Ibid 784.
[31] AIR 2/21027, "Tizard Committee to COS", Ministry of Defence, (45) 402(0), 16 June 1945. The National Archives at Kew.
[32] AIR 2/12027, "Slessor to VCAS, AMSO, AMT", Ministry of Defence, Para 5, 15 July 1945. The National Archives at Kew.
[33] AIR 75/92, "Sir Frederick Morgan (Controller of Atomic energy) to Slessor", Ministry of Defence, Para 5, 9 October 1951. The National Archives at Kew.
[34] Paul Lashmar, *Spy Flights of the Cold War* (Stroud: Sutton Publishing, 1998) 65.
[35] Ibid 65.
[36] Paul Lashmar, *Spy Flights of the Cold War* (Stroud: Sutton Publishing, 1998) 65-66.
[37] AIR 19/1126, 'Operation 'Jiu-Jitsu", 1951-1954, Secretary of State for Air. The National Archives at Kew.
[38] Pyke, B., "Air Marshal Sir John Slessor: The Unsung British Cold War Strategist", *Air Power Review*, Vol.20 No.1 (2017): 81.
[39] C Pocock, "Recce Canberras – Some Untold Stories", *RAF Historical Society*, Vol.43A (2009): 60.
[40] AIR 19/1106, "Robin Photography minute to S of S from VCAS", 17 March 1955. The National Archives at Kew.
[41] Richard J Aldrich, "GCHQ and Sigint in the Early Cold War 1945-70", *Intelligence and National Security*, 16:1 (2001): 85.
[42] "Martin RB-57D/F", *Spy Flights*, accessed March 2, 2018, www.spyflight.co.uk/rb57.htm.
[43] AIR 19/1105, "Radio Proving Flights to PM's Office and S of S from VCAS", 4 November 1957. The National Archives at Kew.
[44] AIR 19/1105, "Provisional Radio Proving Flight Programme – October 1957 – March 1958", Ref: G.10781(b)/EF/6/57/40. The National Archives at Kew.
[45] AIR 19/1105, "Memo to Prime Minister - Radio Proving Flight Programme June 1955 – December 1955", 6 June 1955. The National Archives at Kew.
[46] C Pocock, "Recce Canberras – Some Untold Stories", RAF Historical Society, Vol.43A (2009), p. 62.
[47] Ibid 64.
[48] D Forster & C Gibson, *Listening In: Electronic Intelligence Gathering Since 1945* (Manchester: Crecy Publishing, 2014) 80-81.
[49] C Pocock, "Recce Canberras – Some Untold Stories", RAF Historical Society, Vol.43A (2009): 64.
[50] Ibid 69.

[51] Michael S Goodman, *Spying on the Nuclear Bear: Anglo-American Intelligence and the Soviet Bomb* (Redwood: Stanford University Press, 2007) 93.
[52] R C Nesbit, *Eyes of the RAF: A History of Photo-Reconnaissance* (Godalming: Bramley Books, 1996) 258.
[53] "The RAF's Secret Spies: Declassified CIA Documents reveal British pilots flew U-2 missions over Soviet Union dur the Cold War", accessed February 27, 2018 http://www.dailymail.co.uk/news/article-2396001/The-RAFs-secret-spies-Declassified-CIA-documents-reveal-British-pilots-flew-U2-missions-Soviet-Union-Cold-War.html.
[54] "The RAF's Secret Spies: Declassified CIA Documents reveal British pilots flew U-2 missions over Soviet Union dur the Cold War", accessed February 27, 2018 http://www.dailymail.co.uk/news/article-2396001/The-RAFs-secret-spies-Declassified-CIA-documents-reveal-British-pilots-flew-U2-missions-Soviet-Union-Cold-War.html.
[55] Robinson, Robert. T. Interview with Paul Lashmar. *U2 RAF pilot W/C Robbie Robinson. Interview with Paul Lashmar 16 May 1993*. Published 19 May 2013. Accessed February 21, 2018.