



*Watching the Russkies*, by Don Connolly.

## CANADA'S ARCTIC SKY SPIES: THE DIRECTOR'S CUT

by Sean M. Maloney

### Introduction

In 2007, Russia used two mini-submarines to place a Russian flag on the seabed at the North Pole. This operation was accompanied by a major aerial exercise involving cruise-missile-firing Tupolev Tu-95 *Bear* and Tu-160 *Blackjack* strategic bombers. Prior to this event, the Canadian government had announced that global warming would reduce the extent of ice in the Arctic and open the region for exploitation in the energy sector, and the historical Canadian angst over American access to the Northwest Passage was reactivated. Not to be outdone, Denmark initiated a territorial challenge to Canada with respect to ownership of tiny Hans Island. Therefore, it is 'back to the future' for the Canadian Forces (CF) and Arctic operations.

Some Canadian cultural observers look to the Arctic as a metaphor for the Canadian experience: pure as the driven snow, uninhabited, and unsullied. The reality is that the Arctic was a Cold War battleground and Canada was deeply involved in using it as a theatre of operations. This use was embodied in the DEW Line, the Mobile Striking Force, the Canadian Rangers, the intercepts of Soviet *Bear* bomber flights, and signals intelligence collection. What remains as yet unexamined are the exploits of Canada's Arctic 'spies in the sky.' Specifically, the Royal Canadian Air Force (RCAF) conducted covert aerial collection programs throughout the 1950s, which were leveraged with the tripartite American, British, and Canadian (ABC) intelligence architecture to Canada's benefit, and they contributed to the Cold War deterrence of the Soviet Union. These contributions have been ignored by Anglo-American scholarship with respect to Cold War intelligence operations.

### Early Exploits: Preparing the Ground

Early Cold War RCAF activity in the Arctic became intertwined with several joint Canada-US northern programs that emerged between 1945 and 1950. In the immediate post-war period, Soviet coercive belligerence on the world stage, coupled with revelations that Moscow was covertly interfering with western governments, led the ABC powers to plan for a Third World War. Throughout the late 1940s, all three countries moved toward joint global war planning, culminating in 1948 with a plan called respectively *Doublestar* (US), *Speedway* (UK), and *Bullmoose* by the Canadians. These were not merely military contingency plans – they had the full backing of the foreign affairs departments from each nation and it was understood that they constituted the basis for action if necessary. In essence, the plans envisioned a conventional war fought with a small number of kiloton-yield nuclear weapons, used as part of a strategic air campaign against the USSR. All plans or their variants predicted that the Soviets would mount a conventional campaign against the northwest and northeast approaches to North America with airborne forces to support strategic air raids against the populated south, using nuclear, biological, and/or chemical weapons dropped from bombers, or fired from missile sites. The idea was to disrupt North America while Western Europe and the Middle East were being overrun.<sup>1</sup>

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In terms of implementation, the Americans were 'ahead of the curve' in 1945-1946. American forces were deployed simultaneously to develop detailed information about the Arctic. They also refurbished Second World War air bases, built new air bases, and determined what equipment could be used in extreme climates. The new Strategic Air Command (SAC) needed information about meteorological conditions in the Arctic, as their projected intercontinental bomber force eventually would operate over the North Pole. And both naval and air forces needed accurate, continuous weather information.<sup>2</sup>



Graphic enhanced by Christopher Johnson

The Canadian dilemma revolved around sovereignty, as it does today. The United States needed the far north as part of its military apparatus. Canada would benefit strategically from the collected information, as well as from the deterrent function, but at what point did Canada lose control of the north? At the same time, Canada received pressure from the Soviet Union, which wanted military observers to participate in Canadian northern operations. The Soviets also pressured the Danish government with respect to Greenland. Indeed, the Soviets had been the first to seriously mount large expeditions into the Arctic using ships and long-range aircraft back in the late 1930s, and it appeared as though they were about to ramp up operations yet again.<sup>3</sup>

Canada, of course, was not neutral, and any ideas about Canada becoming 'the new Switzerland' were rapidly discarded, particularly after the Gouzenko affair of 1945. Canada also had no desire to become the new Belgium. As early as October 1945, the Canadian government understood that the first step to projecting a presence in the Arctic resided in being able to navigate in the environment. In January 1946, Cabinet approved an extensive mapping program and placed the RCAF in charge of it.<sup>4</sup> By March 1946, the RCAF and the United States Army Air Force (USAAF, the forerunner of the United States Air Force [USAF]) commenced joint operations using B-29 *Superfortresses* partially crewed by Canadians to photograph the northernmost Arctic islands. This program extended until 1948, while the RCAF conducted more modest mapping operations with Avro *Lancasters* and *Noorduyn* Norsemans. Another joint effort, using B-29s based in Edmonton and manned with mixed USAAF-RCAF-United States Navy (USN) crews, explored critical navigation techniques necessary for trans-polar flight. By the summer of 1946, USAAF B-29s based in Alaska were conducting regular weather flights to the North Pole and back.<sup>5</sup> It was understood that these activities constituted contributions to the Canada-US Basic Security Plan and that they were not an infringement upon Canadian

sovereignty.<sup>6</sup> Indeed, the Cabinet Defence Committee received a detailed intelligence briefing during its deliberations in 1946 on future defence policy. The briefing concluded:

...[that] the present state of the world and the increased range and destructiveness of air power made it necessary to reorient our ideas of continental defence and place the emphasis on defensive measures against an attack from the north.<sup>7</sup>

This activity was concurrent with the establishment of joint Canada-US weather stations in the Arctic. Cabinet agreed to this initiative in March 1947, and stations at Resolute Bay, Eureka Sound, Mould Bay, Isachen, and Alert were established subsequently.<sup>8</sup> The public announcement in Canada noted that, "...the USSR... maintains a large number of weather stations in the Arctic region on the other side of the North Pole," and that establishment of the Canadian-US stations would be of benefit to "...improving our common knowledge of the North."<sup>9</sup> The weather station at Resolute Bay, and later, Alert, would indeed do so, but in their manifestations as signals intelligence (SIGINT) collection stations.<sup>10</sup>

US Navy operations in the Baffin Bay region in 1948 were of some concern to the Canadian Government. Indeed, the United States landed and established what eventually would become Thule Air Force Base in western Greenland, while Denmark was still in a state of some post-war disarray. These US Navy operations had RCAF and Royal Canadian Navy (RCN) observers accompanying them, but in one specific case, Canada deployed the aircraft carrier HMCS *Magnificent* and two destroyers for northern operations to demonstrate she could also operate independently. Subsequently, the RCAF and RCN undertook a joint training program. A *Lancaster* and a Consolidated *Canso* from 103 Search and Rescue (SAR) Squadron conducted exercises with the task group, first to search for a naval force at sea, but also to shadow the force undetected upon acquisition. As it materialized, the *Lancaster* proved to be better at this job than the *Canso*. To put this exercise in context, at that time the USSR did not possess a true 'blue water navy,' and thus, the only possible target, if the RCAF was actually required to mount such an operation, would have been the US Navy.<sup>11</sup>

**"American forces were deployed simultaneously to develop detailed information about the Arctic."**

By 1949, the RCAF had three squadrons engaged in photo-mapping the north – 408 and 414 Squadrons, both based out of RCAF Station Rockcliffe in

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Ottawa and equipped with modified *Lancaster* bombers (the Mark 10P), and 413 Squadron, which possessed a polyglot of support aircraft. 414 Squadron’s *Lancasters* had a vertical photographic capability, while the 408 Squadron aircraft used a tri-camera system that was linked to a short range navigation (SHORAN) system. SHORAN, a lattice of

electronic beams transmitted from ground stations established by 413 Squadron, allowed for accurate photo-mapping navigation.<sup>12</sup> These operations provided a Canadian military presence, helped gather valuable information, and developed RCAF expertise in Arctic photographic operations under arduous conditions.

Some lower-ranking RCAF officers asked the RCAF leadership, “...what value was being gained by the Northern Reconnaissance flights,” given the financial burden they presented. The Vice Chief of the Air Staff, Air Vice-Marshal Frank Miller, reminded them, “...[that] these flights were for evaluation and training purposes. In wartime, these Recce flights would be used to locate enemy lodgments and assist the US in bombing them.”<sup>13</sup> The RCAF’s Arctic expertise was subsequently reorganized in 1950. 413 Squadron was disbanded, and 408 Area Reconnaissance (AR) Squadron became the primary Arctic patrol unit. Three of its *Lancasters* were modified from the Mark 10P standard to become the Mark 10 AR, or Area Reconnaissance variant. The Mark 10 AR was fitted with extra fuel tanks, ten camera systems, a new search radar, and a passive ECM collection system. There was also space available on board for SIGINT and electronic intelligence (ELINT) personnel, if they were required.<sup>14</sup>

### Of Ferrets and Filters

While 408 Squadron was getting its new *Lancasters*, 407 Maritime Reconnaissance (MR) Squadron had its *Lancaster* Mark 10s slightly altered by the engineers from the Defence Research Board. The DRB, led by Dr. Omond Solandt and blessed by the Chief of the General Staff, General Charles Foulkes, was established after the war to centralize defence scientific research, and the DRB became

the focal point for ABC scientific intelligence sharing. As Minister of National Defence Brooke Claxton explained:

Canada took an active part in this. The Chiefs and Dr. Solandt persuaded me that this was the big leagues and that in order to obtain the advantages of membership, including particularly the exchange of information, it was necessary that Canada should make a proper contribution. In other words we should have some secrets to trade ...for these and other reasons we were a respected member of the club.<sup>15</sup>

From July 1952 onwards, 407 (MR) Squadron operated from Comox, British Columbia, making it the Pacific northwest counterpart to 408 Squadron. The secrets that 407 Squadron collected, however, went right to the heart of the atomic weapons programs. Atmospheric explosions involving nuclear weapons produce various deposits, generally the cancer-causing radionuclides Iodine-131, Cesium-137, and Strontium-90, although there are others, depending upon how a bomb is ‘jacketed.’ The prevailing winds distribute the particles in an elongated goose egg-shaped pattern after the weapon is detonated. These particles are also carried aloft into the air in clouds, which then drift with the winds. The distribution, patterns, and amounts of the material, when collected, provide insight into how the bomb was constructed, what its yield was, and at what altitude it was detonated.

There was little or no information at all available at the time concerning Soviet nuclear weapons



Avro *Lancaster* Mark 10 of the period.

CF photo RT 112

development. Indeed, their first test, known as *Joe-1*, came as a surprise to many on 29 August 1949. It is impossible to underestimate how important it was for Canada and her allies to understand how far the Soviets had progressed. A confirmed nuclear capability in enemy hands could make plans, force structures, strategies, and international policies obsolete overnight. It could also disrupt the balance of power, such as it existed at the time. Consequently, the ABC countries placed substantial resources into prying back the Iron Curtain to have a look at these initiatives. These operations were and remain highly classified, not only because they provide insight into nuclear weapons production techniques, but because some of them involved the extremely dangerous game of aerial penetration into Soviet territory. For example, the CIA's U-2 reconnaissance aircraft carried filter systems on their overflights to collect data. In one specific case, a U-2 flew over a Soviet nuclear test site just before a nuclear test shot occurred.<sup>16</sup>

Other aircraft were shot down. During the course of the 1940s and 1950s, 22 American, one British, two Italian, two Turkish, one Greek, and two Swedish aircraft were shot down conducting reconnaissance missions against Communist-bloc states. There were also numerous attacks on reconnaissance aircraft that did not result in aircraft loss: at least 30 in the case of the United States and four in the case of the United Kingdom. Some of these attacks occurred over international waters, but others were responses to aerial penetration of sovereign airspace, such as the U-2 piloted by Francis Gary Powers that was shot down over Sverdlovsk in the Soviet Union on 1 May 1960.<sup>17</sup>

The US Air Force established a secret organization called AFOAT-1 (Air Force Office of Atomic Energy-1). Its purpose was to detect nuclear weapons tests and to track the production of fissile material in conjunction with the Central Intelligence Agency and allied agencies. AFOAT-1 used several methods to do so, but the one that involved 407 (MR) Squadron was air sampling. Such methods were first used during the Second World War when the USAAF flew a specially-equipped A-26 *Havoc* light bomber over Nazi Germany looking for Xenon-133 traces, which, they thought, would provide evidence of a German nuclear weapons program. Indeed, clouds of radioactive material were permitted to leak from American nuclear production facilities at Hanford, Washington and Oak Ridge, Tennessee, so that sampling methods could be tested in the 1940s.<sup>18</sup>

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*Lancasters* from 407 Squadron and 408 Squadron, similar to the USAF WB-29s operating out of Alaska, were modified to carry sampling scoops and filters.<sup>19</sup> Classified sampling missions were referred to as ‘weather reconnaissance’ flights, and the American squadrons were even called weather reconnaissance squadrons as cover. This joint DRB-RCAF operation was inspired by Dr. Omond Solandt.

Canada was able to mount a very competent program extremely quickly. The chemical warfare laboratory in Ottawa [Defence Chemical Warfare Laboratory] had the equipment and the skills to design suitable filters for continuous airborne sampling, and the RCAF was ready and willing to fly the appropriate taskings on a moment's notice.<sup>20</sup>

Canadian scientist Harry Thode had developed advanced mass spectrometer techniques at McGill University that were superior to equivalent American technology, and as it materialized “[Canadian] results were better than theirs. They subsequently came to rely heavily on our filters.”<sup>21</sup>

As it evolved an American WB-29 unit took credit for the first sampling ‘catch,’ but from 1949 to 1962, the USSR conducted over 220 nuclear tests, thus keeping the RCAF very gainfully employed in this area of activity. Bomb debris tended to move in a latitudinal direction. The main Soviet test sites were Semipalatinsk, on the 49<sup>th</sup>-50<sup>th</sup> parallel, and Novaya Zemla in the Arctic, at the 70- to- 75<sup>th</sup> parallel, ensuring that bomb debris clouds would regularly pass over Canadian territory<sup>22</sup> when they were the densest and when they contained the most debris.<sup>23</sup> The 407 Squadron *Lancasters* covered a patrol area from Aklavik to Adak, and they worked with Alaskan-based American aircraft to track the clouds as they drifted. A typical patrol was conducted at 30,000 feet, with the filters being changed every 20 minutes by a very cold crewmember.<sup>24</sup>



Avro CF-100 *Canuck*.

DND photo TL 1784

In time, a special version of the Avro CF-100 *Canuck*, the high altitude variant of the interceptor, was deployed to supplement the *Lancasters*. Able to climb to 50,000 feet and equipped with the DRB filters in wing-tip pods, CF-100s from 428 Squadron based at Uplands in Ottawa flew what they called 'bug flights' throughout the 1950s, capturing Soviet bomb debris floating through Canadian airspace.<sup>25</sup>

RCAF air sampling aircraft were also deployed from Resolute Bay to Barbados when alert of a test was received from intelligence sources.<sup>26</sup> Half the data taken from the filters was processed by Canada, and half by American laboratories. With superior filters, DRB held back some information to see if the Americans would ask for more and thus tip their hand that their analysis was inferior. They always asked for more. As Dr. Solandt recalled: "Canada didn't barter this information for any specific concessions from the US but there is no question that we received an ample return of information from them."<sup>27</sup> That return included American estimates of the size and capability of the Soviet nuclear stockpile. Canada had access to the raw data going into those calculations, and the derived intelligence had a direct impact upon Canadian air defence planning, weapons acquisition, and other programs.<sup>28</sup> When the Soviets eventually tested boosted fission weapons, and then thermonuclear weapons, Canada's scientific intelligence establishment was aware of it essentially every step of the way.

In May 1953, a 407 Squadron *Lancaster* crashed into Iron Mountain, Oregon. It is unclear why 407 Squadron was operating over northern Oregon at the time, but Iron Mountain is southwest of the Hanford nuclear production facility in Washington state. It is possible that the aircraft was engaged in sampling training during a controlled release of Hanford radioactive material, but since such activities were cloaked in extreme secrecy at the time, the reasons for the flight and crash must remain speculative.

By the mid-1950s, AFOAT-1 had evolved into the US Air Force Technical Applications Center (AFTAC). This facility became responsible for the Atomic Energy Detection System (AEDS), the clearing house for multiple scientific and intelligence efforts working on detecting Soviet nuclear events. Canada contributed to the AEDS by establishing a seismic detection site at Flin Flon, Manitoba, an RCAF station that was "...designed for the immediate detection of nuclear tests." Flin Flon "...forms part of a covert detection system and thus should be distinguished from unclassified systems [co-located at Flin Flon]..."<sup>29</sup> In addition to the underground seismic detectors, the Flin Flon site also possessed an electro-magnetic wave detector direction finder that was "designed to react to the short

burst of radio noise created by nuclear explosions. The operational output of CFS Flin Flon was sent directly by landline to the nuclear detection headquarters in Washington DC."<sup>30</sup> Other AEDS detection stations like Flin Flon, deployed around the globe, would cue the 'sniffers' on their 'bug flights.'

### **Severnny Polyus: A Red North Pole, Comrade...**

Soviet interest in the high Arctic dates from 1934, when the former Newfoundland icebreaker *Lintrose*, salvaged after the First World War by the USSR and equipped with a lab and floatplanes, ventured to the Greenland Sea and then beyond the islands of Severnaya Zemla.<sup>31</sup> The loss of a Soviet passenger ship that year to ice, and the subsequent aerial rescue of the victims by air from an ice island, sparked the interest of the Stalin regime. In 1937, the first Soviet drift ice station, *Severnny Polyus-1*, or North Pole-1 (NP-1), was established by the Ivan Papanin expedition using four four-engine bombers. Their purpose was not just scientific – the expedition leader referred to the mission as a "...scout action behind enemy lines," and that the real mission was, "...[to] study the future theatre of military operations."<sup>32</sup>

Drift ice stations were established on flat ice floes and ice islands by both sides during the early days of the Cold War. Drift ice moves slowly but continuously through Arctic waters carrying the station and its airfield with it, permitting close, continuous study of the Arctic environment. In 1950, the USSR deployed drift ice station NP-2 with some secrecy after sending 30 flights over the previous four years into the Arctic basin in search of a suitable floe. NP-2 "...was a highly-classified project." The station commander was told by Soviet authorities that if NP-2 drifted toward the United States, it was to be destroyed. Mikhail Somov, the leader of the expedition, was apparently instructed to kill the staff rather than let them be apprehended.<sup>33</sup> Though it is not clear for what NP-2 was intended, the station drifted from the northernmost part of the Chukchi Sea along the Canadian archipelago, and then curved towards the North Pole before breaking up in 1951.<sup>34</sup>

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NP-2 most likely had an intelligence collection or early warning function. At this point, the US Air Force was conducting signals intelligence and electronic intelligence-gathering flights using specially-equipped B-29s flying out of Ladd Air Force Base in Alaska, in addition to the weather flights involved in the AFOAT-1 sampling missions. These 'ferret flights' were run against the Soviet base complexes in western Siberia and down the Kamchatka Peninsula.<sup>35</sup> NP-2 was in a position to provide early warning and could monitor activity in the three large USAF bases in Alaska where the flights originated.



Map by Christopher Johnson

The United States eventually occupied a number of large ice islands by the early 1950s. In 1946, one of the joint RCAF-USAF photographic operations stumbled across what was subsequently designated T-1, located north of Alaska in the Beaufort Sea. T-1's existence was classified secret upon discovery. In 1947, another ice island, T-3, was also discovered in Canadian Arctic waters. T-2 followed in 1950. It was situated between T-1 and the northern USSR. These ice islands were each approximately 10 miles wide by 50 miles long, and they were also flat, which made them potential bases to be either secured by the US or denied to the USSR. T-3's existence was not reported to Canada by the United States until 1952, when a US meteorological station was established there.<sup>36</sup>

It is not clear from available documentation when the Canadian government moved from the early photo-mapping operations to more dedicated intelligence-gathering operations in the high Arctic. The modification of the three *Lancasters* to Mark 10 (AR) configuration had occurred by early 1952.<sup>37</sup> This policy

Station name	Head of the first shift	Drift dates		Drift coordinates		Distance (km)
		Began	Ended	Start	Finish	
North Pole-1	I.D. Papanin	May 21, 1937	February 19, 1938	89°25'N, 78°40'W	70°40'N, 19°16'W	2,850
North Pole-2	M.M. Somov	April 2, 1950	April 11, 1951	76°03'N, 166°36'W	81°44'N, 163°48'W	2,600
North Pole-3	A.F. Trioshnikov	April 4, 1954	April 20, 1955	85°58'N, 175°00'W	86°00'N, 24°00'W	1,865
North Pole-4	E.I. Tolstikov	April 8, 1954	April 19, 1957	75°48'N, 178°25'W	85°52'N, 00°00'W	6,970
North Pole-5	N.A. Volkov	April 21, 1955	October 8, 1956	82°10'N, 156°51'E	84°18'N, 63°20'E	3,630
North Pole-6	K.A. Sychev	April 19, 1956	September 14, 1959	74°24'N, 177°04'W	82°06'N, 03°56'E	8,650
North Pole-7	V.A. Vedernikov	April 23, 1957	April 11, 1959	82°06'N, 164°11'W	85°14'N, 33°03'W	3,520
North Pole-8	V.M. Rogachyov	April 27, 1959	March 19, 1962	76°11'N, 164°24'W	83°15'N, 132°30'W	6,090
North Pole-9	V.A. Shamontyev	April 26, 1960	March 28, 1961	77°23'N, 163°00'E	86°36'N, 76°00'W	2,660
North Pole-10	N.A. Kornilov	October 17, 1961	April 29, 1964	75°27'N, 177°10'E	88°32'N, 90°30'E	3,960
North Pole-11	N.N. Bryazgin	April 16, 1962	April 20, 1963	77°10'N, 165°58'W	81°10'N, 139°34'W	2,400



A Tupolev Tu-16 *Badger* on exercise.

shift coincides with a conversation between the Director Central Intelligence General Bedell Smith, and General Charles Foulkes. Smith told Foulkes that Canada was not contributing as much as others on collecting intelligence on the Soviets, and that this was jeopardizing information sharing arrangements. Smith "...[then] disclosed that the greatest weakness in their intelligence picture is that of Soviet aircraft production and of course atomic weapon production" and that the United States was "...a bit alarmed."<sup>38</sup> Could Canada help?

Canada's SIGINT capability had already been expanded dramatically in 1949 and 1950 with the refurbishment of wartime SIGINT and High Frequency Direction Finding (HF/DF) stations at Fort Chimo, Quebec, Aklavik, North West Territories, Whitehorse, Yukon Territory, Ladner, British Columbia, and Masset, British Columbia.<sup>39</sup> The existence of Soviet drift station NP-2 was known to Canada, as was its demise in 1951. There were no other drift stations at the time, and that would hold true until 1954.<sup>40</sup> The most likely impetus therefore was the start of the Korean War and the possibility of a global conflict emerging from that regional conflict.

The trigger event for an expanded aerial intelligence program was most likely the deployment in 1954 of not one but two Soviet North Pole-series drift stations, NP-3 and NP-4. Subsequently, the RCAF initiated two separate but overlapping operations. The first was called *Air Romp*. These operations used ice reconnaissance missions as cover, but had to be careful when conducting intelligence activities because a Department of Transport officer flew on those missions to observe ice conditions. *Air Romp* operations involved, "...the routine surveillance of the Canadian Archipelago and the Canadian sector of the Polar Basin for possible violations of Canadian sovereignty by unauthorized forces." The data collected by *Air Romp* sorties, of which there was an average of 17 each year, was used

for, "...economic, scientific, and logistic purposes." Embedded in the *Air Romp* series was a special intelligence collection program that was designed "...[to] obtain high grade vertical and oblique photos of Soviet aircraft visiting Canadian airfields."<sup>41</sup> Russian-speaking personnel from 408 Squadron served as the escorting officer when a Soviet diplomatic flight came to Canada.<sup>42</sup> In many cases, these civilian aircraft had military counterparts: the Antonov An-12 *Cub*, the Ilyushin Il-14 *Crate*, and the Ilyushin Il-18 *Coot* were all airliners and military transports. The Tupolev Tu-104 *Camel* was a commercial airliner based upon the Tu-16 *Badger* bomber, and it was first seen in 1956. The Tupolev Tu-114 *Cleat* was an airliner based upon the Tupolev Tu-20 *Bear* bomber. Much technical insight into Soviet strategic air developments was gleaned from this program.

The specific information collected by this program included the "...overall dimensions of the aircraft which have been used by the US, the UK and Canadian technical intelligence agencies as the basis for performance calculations."<sup>43</sup> This information was of obvious import in the design and efficiency of the North American air defence system, which in turn was used to protect the main Western deterrent force, Strategic Air Command that at the time was based primarily in North America.

The second initiative was named *Apex Rocket*. This program was mandated "...to obtain coverage of specific intelligence targets, primarily targets in the Arctic," though on at least two occasions, Soviet ships were shadowed and covertly photographed. *Apex Rocket* was mostly directed at the Soviet drift ice stations. The Arctic missions "...provided photography of great benefit to the intelligence agencies in Canada, the US and the UK." These flights made it "...possible to ascertain the military significance of the drift stations, the scientific and economic aspects of the installations..." *Apex Rocket* sorties determined

“...the locations of the drift stations and changes to the installations which were indicative of changes in activities conducted.”<sup>44</sup>

The first *Apex Rocket* sortie was conducted in September 1954. Two stations from the Canadian SIGINT network intercepted Soviet transmissions emitting from near the North Pole over a protracted period. A 408 Squadron *Lancaster* deployed to Thule AFB, and then staged from Alert. According to Moe Gates, one of the crewmembers, “...we were to maintain radio silence once we were airborne...we were to file a somewhat deceptive flight plan that would conceal our real intentions.” This flight also carried a Russian-speaking Air Intelligence Branch officer tasked to intercept any transmissions received once over the target. After a harrowing nine-hour flight (one of the navigation systems failed), the *Lancaster* broke through the clouds to within 200 feet of the target, which sported a large hammer and sickle flag. It was a mere 24 miles from the North Pole. Using an experimental Polaroid camera and other systems, run after run was made over the drift station, which had ski-equipped aircraft operating from it. There was “...considerable secrecy attached to the flight and we were forbidden to discuss it with others.”<sup>45</sup> Indeed, “...the very nature of the missions did little to enhance flight safety – routes were usually classified and flight plans were locked away in a safe, to be opened only if the aircraft went missing.”<sup>46</sup> The target for the first *Apex Rocket* sortie was, in all likelihood, NP-3.

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The next *Apex Rocket* mission was not flown until 1957, although in 1955 an operation named *Far Cry* was mounted by Maritime Air Command. *Far Cry* appears to have been an extensive series of ice reconnaissance missions.<sup>47</sup> Two more Soviet stations were discovered: NP-6 in 1956, and NP-7 in 1957. The year 1958, however, was a peak one for the *Apex Rocket* flights, and these two drift stations garnered a lot of attention. Ten missions were flown, compared to only one during the previous year. And NP-6 was about to become famous in the ABC intelligence world.

The NP-6 and NP-7 stations straddled the pole – NP-7 was closer to Canada, while NP-6 was nearer to the USSR, and NP-6 was getting closer and closer to the tip of Greenland at that time. In May 1958, a 408 Squadron *Lancaster* buzzed the station and photographed a Tu-16 *Badger* nuclear bomber sitting on an ice runway. And that was not all. The Soviets, caught unawares, were in the process of assembling an early warning radar at NP-6. The *Lancaster* completed its task and was photographed in turn by the Soviets from the ground.<sup>48</sup>

When the pictures were processed at RCAF Station Rockcliffe, the staff at No. 1 Photographic Unit determined that the *Badger* was unserviceable, and that it was under repair. More sorties were run “...in an effort to complete our assessment of its overall dimensions, and the angle of sweepback of the main planes (wings).”<sup>49</sup> Follow-on missions were to:

- confirm the continued presence of the *Badger*,
- obtain the factory number on the fuselage,
- obtain vertical photography of the aircraft to permit accurate interpretation of overall dimensions and angle of sweepback,
- ascertain what stage had been reached repairing the aircraft,
- ascertain the serviceability of the runway, and
- obtain coverage of the whole camp.

Operating from Alert, all collection objectives were met by the 408 Squadron *Lancaster* crews, except for vertical photography. A second sortie was mounted, but the weather was poor, and Alert ran out of fuel to support the operation. The ‘take’ on this mission included the presence of an Il-12 *Coach* transport and a team that was dismantling the *Badger*. The starboard main plane was now observed to be missing. An engine could also be seen, and it was damaged. And the early warning radar was now dismantled.<sup>50</sup>

The importance of this find was two-fold. Fundamentally, the cloak of secrecy was wrapped tightly in the totalitarian USSR. First, no observers in the West had seen a Tupolev Tu-16 *Badger* at this close range before. Western intelligence sources knew that about a thousand copies of the propeller-driven B-29 (Tupolev Tu-4, NATO code name *Bull*) had been mass-produced by the USSR, and they postulated that the Soviets would build an aircraft comparable to the Boeing B-47 *Stratojet*, which had been designed in 1947 and became operational in 1951. The Tu-16 flew for the first time in 1952, and it entered service in 1954, but Western observers saw nine Tu-16s perform a fly-past during the annual May Day celebrations in Moscow, and they were shocked at the sight of this first Soviet swept-wing jet bomber.<sup>51</sup> Until the *Apex Rocket* missions were flown in 1958, there existed no detailed, close-up pictures of this aircraft. High-level vertical photography from U-2 missions only revealed so much. This data permitted intelligence staffs to provide extrapolations of the aircraft’s capabilities,



Tupolev Tu-20 *Bear*.

which, in turn, helped Canadian, American, and NATO air defence forces develop the means to combat these formidable adversaries.

Second, the presence of the nuclear bomber on an ice station this close to North America posed many questions. It was possible that the bomber was on a mission, developed a fault, and merely crash-landed at the nearest Soviet facility. The *Badger*, unlike the intercontinental Tu-20 *Bear*, had a much shorter range, and it was not capable of two-way missions against targets in North America from bases in the USSR. It would have been operating at the limits of its range when it landed at NP-6. Another scenario was that the Soviets were covertly testing the use of the drift ice stations to see if Tu-16s could be refueled from temporary Arctic sites, so that they could achieve the range necessary to attack North American targets. This capability would have dramatically increased the number of bombers that could reach North America and return to the Soviet homeland. In addition to the estimated 200 Tu-20 *Bears* and Tu-22 *Blinders* that would be available by the late 1950s, there undoubtedly was also available some portion of the estimated 1000 *Badgers* eventually produced.<sup>52</sup>

Another advantage the Soviets could accrue from this form of forward basing was the reduction of early warning time available to North American air

defence forces. The Distant Early Warning (DEW) Line stations had just been built. There were gaps in the coverage, particularly against low-flying aircraft, and the operators would be looking for a higher-altitude attack emanating from the USSR, and not from stations in relative proximity. Two or three *Badgers* could have been used to eliminate enough DEW Line stations to create a gap in coverage, which the Tu-20s and Tu-22s could then exploit.

Was the crashed *Badger* an ELINT aircraft? The use of *Badgers* to conduct 'ferret' flight intelligence-gathering operations against the North American air defence system started tentatively in 1958 when Alaskan-based radar stations started picking up intruding aircraft tracks from Kamchatka peninsula bases. USAF fighters operating from Alaska started regularly intercepting *Badgers* in 1961. On one occasion, a USAF Convair F-102 *Delta Dagger* interceptor was 20 seconds away from launching a nuclear-tipped air-to-air missile at two intruding *Badgers*.<sup>53</sup> It is possible that NP-6's *Badger* was an early ELINT collector.

For Canada, this was a major intelligence coup that was leveraged within the ABC intelligence-sharing apparatus. For years afterwards, a particular Canadian defence attaché would pull out a picture of the NP-6 *Badger* whenever allied intelligence staff became reticent about releasing information to Canada.<sup>54</sup>

The next *Apex Rocket* series of missions was conducted against drift ice station NP-8 in 1959, but it is unclear what information was gleaned from those flights. NP-8 came closer to the Canadian Archipelago than even NP-7, but for some reason, *Apex Rocket* was temporarily shut down in late 1959. The Chief of the Air Staff, Air Marshal Hugh Campbell, leaned towards using *Apex Rocket* as propaganda and to letting the Canadian people know what was going on in the Arctic. As he explained to an RCAF GOC meeting in 1959, "...A great deal of effort was made to get this story into the press. There was so much of it classified that when it was wheeled out it wasn't even legible."<sup>55</sup> The real problem, however, came from the Department of External Affairs. At the time, the Secretary of State for External Affairs was Howard Green, who believed that Canada should become neutral in the Cold War and should play a conciliatory role between the United States and the USSR. He was supported in these endeavours by the Under Secretary of State Norman Robertson, and also by Ambassador George Ignatieff.<sup>56</sup>

The key player here was Norman Robertson, a senior civil servant. Robertson was terrified of nuclear war and was highly sensitized to anything that he believed might trigger such a conflict. Robertson worked behind the scenes to stall Canada's acquisition of nuclear air defence weapons, to limit SAC training flights in Canada, and to limit NORAD air defence exercises, much to the chagrin of the RCAF leadership.<sup>57</sup> In a 1959 meeting between General Charles Foulkes, Minister of National Defence George Pearkes, and Air Vice-Marshal Max Hendrick from Air Defence Command, it was noted that the latest SAC exercise had provoked no Soviet reaction "...and therefore Robertson's view that we are being provocative is absolutely unproven." Hendrick noted that Robertson held "...the usual External view: don't irritate your enemy."<sup>58</sup> External Affairs was fully aware about what was going on with the *Apex Rocket* missions. That said, its files on the operation remain closed.

**"By 1960, the  
*Apex Rocket*  
flights had been  
shut down."**

By 1960, the *Apex Rocket* flights had been shut down. Some RCAF leaders thought it was due to costs incurred. "There has been general acceptance at the Chiefs of Staff level and in other Governmental organizations of the requirement to [conduct Arctic intelligence gathering operations] but when we give them the bill to do it people tend very much to shy away from it ...on the straight business of cost." They were told that "there is a political complication, ...there is some political apprehension in External Affairs that this might get the Russians mad at us. This is a very real objection that we faced in this programme."<sup>59</sup>

Certainly, there was fear that ferreting operations could result in shootdowns, but *Apex Rocket* did not resemble SAC operations, such as *Project Homerun*, whereby nine B-47 bombers overflew the Kola Peninsula to photograph it and to measure the Soviet air defence system response.<sup>60</sup> The Soviet propaganda apparatus accused Canada of hosting these and other operations. Charles Foulkes explained to the Canadian Government: "We are aware through our special interceptor methods that the United States has carried out 'Ferret' flights in the Arctic from both Alaska and Thule towards the Soviet Union for reconnaissance purposes and these may be the flights which the Soviets have observed on their radars. These are usually only single flights and usually at very high altitudes to avoid Soviet interceptor aircraft."<sup>61</sup>

By 1960, the Soviets objected to Canada photographing the NP-7 station, even though it was in Canadian-controlled waters. They claimed NP-7 was buzzed at low level every two weeks. Pictures taken of a 408 Squadron *Lancaster* were employed as 'proof' of Canadian spying upon NP-7. When the Minister of National Defence queried the RCAF, it was explained that the pictures actually dated from the first *Apex Rocket* mission in 1954. Air Marshal Hugh Campbell assured the Minister, "...[that] reconnaissance of Canadian Arctic islands and the adjacent Polar seas is carried out as a matter of routine. In no cases have any penetrations of Soviet Territory or Territorial waters taken place."<sup>62</sup>

With the chaotic Diefenbaker government now out of office and Norman Robertson having been replaced as Undersecretary of State, *Apex Rocket* flights were re-commenced in 1963. Prior to this, however, American aircraft had located and identified drift ice stations NP-8 and NP-9 in 1961. The US Navy had installed a covert underwater listening post on an ice island, probably T-3, and, since US nuclear submarines were operating under the polar ice starting in 1958, they were interested in the Soviets' ability to use ice stations for the same purpose.<sup>63</sup> Canada was also interested. There were concerns that Soviet missile-launching submarines would operate under the pole, move into Hudson Bay, and fire against targets located further south.<sup>64</sup>

The initial target was NP-9, but in 1962, a pressure ridge destroyed NP-8's runway, and that station was hastily abandoned. The plan was to parachute in a small team to assess the facility, and then evacuate them. Working with the RCAF, a US Navy Lockheed P2V *Neptune* and a Lockheed C-130 *Hercules* staged out of Resolute Bay, but the weather closed in and NP-8 could not be located. The team subsequently returned home.<sup>65</sup>

Then, an *Air Romp* ice reconnaissance mission located NP-8, which was situated in the Canadian sector. The mission changed from an overt US Navy team to a covert CIA operation known as *Operation Coldfeet*. A C-46 transport and a specially equipped B-17 'rented' from the CIA proprietary Intermountain Aviation dropped the team onto NP-8. The B-17 carried the *Fulton Skyhook* recovery system, and it lifted the team off the ice floe when they were finished. In all, 150 pounds of documents and equipment were recovered. And in the final analysis, *Operation Coldfeet* demonstrated that NP-8 was used for acoustical work that went beyond mere scientific exploration.<sup>66</sup>

The final *Apex Rocket* mission was flown in 1963 against NP-11, which was now in Canadian waters and which had been abandoned. By this time, Cabinet had to give permission to launch any *Apex Rocket* missions. The participating 408 Squadron crew had instructions to land, if it were feasible, and to exploit the station for intelligence purposes. Unfortunately, the runway was cracked and a landing was not possible. Valuable information was, however, collected by the camera systems.<sup>67</sup>

## Conclusion

The decline of the *Apex Rocket* program after 1963 was related to increased RCAF interest in using satellites to monitor the region after its leadership learned about the capabilities of the various American programs. RCAF *Lancasters* and *Canucks* later participated in tests to determine how well the Arctic could be photographed from space.<sup>68</sup>

This brief survey of the RCAF's involvement in Arctic intelligence-gathering operations during the Cold War provides some insight into a valuable role Canada played in monitoring Soviet developments – both in the testing of nuclear weapons and in gathering technical intelligence with respect to their delivery systems. It also demonstrates that Canada did not just cede away control of the Arctic, and that it dedicated significant resources to monitoring activity in the Canadian sector. These operations laid the groundwork for an increased Canadian military and civil presence in the Arctic during the 1970s and beyond.



Defenseimagery.mil photo DN-ST-85-06029

A Tupolev Tu-16 *Badger* over open water.

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DND photo RNC 168

Another post-war Lancaster Mark 10.