


*THE FIVE-HOUR WAR: THE RCAF,
EXERCISE
BOOKCHECK,
AND NUCLEAR WAR
1960-1963*



[AS] WINSTON CHURCHILL AND OTHERS HAVE NOTED, THE HYDROGEN BOMB IS A GREAT EQUALIZER OF NUMBERS, AND A GREATER EQUALIZER OF GEOGRAPHY, TO A FAR GREATER EXTENT THAN PREVIOUS WEAPONS. THESE WEAPONS OPERATE AGAINST AREAS RATHER THAN ARMIES, MAKE CONTINENTS VULNERABLE AS WELL AS COUNTRIES. EACH ONE CAN MAKE THOUSANDS OF SQUARE MILES AN UNINHABITABLE DESOLATION, HOWEVER HEAVILY OR SPARSELY POPULATED IT MAY HAVE BEEN. THEY GIVE A NEW TWIST TO GEOPOLITICS AND DEMAND A NEW APPROACH TO MILITARY AND DIPLOMATIC STRATEGY.'

-LESTER B. PEARSON, 1955

BY SEAN M. MALONEY, PhD

The late 1950s and early 1960s were arguably the most dangerous years of the cold war. The 1961 Berlin Crisis, with its nearly three-year lead up, coupled with the Cuban Crisis of 1962, literally took the world to the brink of destruction. Canada was in those years an integral part of the Western alliance determined to resist the Soviet Union and its other totalitarian allies globally. In effect, Canada contributed military forces to four theatres of war. First, there were the North Atlantic Treaty Organization (NATO) forces in Western Europe, which included a powerful Canadian nuclear striking force. Second, there was the Third World, which consisted of decolonizing countries in Africa, Asia, and the Middle East. These areas generated “brush-fire wars” that could have sparked up into superpower conflagration if United Nations (UN) peacekeeping forces were not deployed quickly. Third, there was the Atlantic Ocean where Soviet submarines lurked in preparation to either to cut off shipping to

Western Europe or to fling missiles at North America. Finally, there was North America itself, protected by the North American Air Defense Command (NORAD)² and a variety of maritime commands.

The Royal Canadian Air Force (RCAF) was responsible for deploying forces to all four geographical areas in times of “peace,” be they the CF104 nuclear strike force in West Germany, Yukon transports to the Congo, Argus antisubmarine patrol aircraft over the Atlantic, or CF101 Voodoo interceptors over North America. These forces were part of a massive deterrent effort to prevent a war from starting in the first place. These forces were also prepared to escalate and fight such a war if necessary. A critical part of that deterrent posture was preparation. No deterrent was credible if the forces were not capable of carrying out the stated intent. Merely having aircraft and pilots on an airbase somewhere was not enough. There had to be an analysis

of likely courses of action, readiness, an alert procedure; and, of course, those processes had to be practiced and improved on regularly. Indeed, keeping such preparations secret was not even desirable for national morale or deterrent purposes. Both domestic and international audiences existed. Canada had to be seen to be prepared.

Exercise BOOKCHECK, an RCAF command-post exercise, was part of these preparations.³ Issued “Under the Authority of the Chief of Air Staff” as the cover document made clear, Exercise BOOKCHECK was related to the national-level *War Book*. The *War Book* was an overarching document that outlined how Canada would react to a nuclear war at the highest levels. There was a derivative RCAF *War Book*. Both documents drew heavily on NATO and NORAD alerting systems, which were themselves reflections of NATO and NORAD strategy. Exercise BOOKCHECK was designed to test those procedures, specifically, “the dissemination of National Alerts, Attack Warnings, and Nuclear Detonation information” as well as the personnel and communications aspects of going to war while under attack.

As with all exercises, BOOKCHECK was artificial. It could not replicate the mass confusion and damage to the system that would probably occur while the country was under thermonuclear attack. The planning could only anticipate it. Indeed, with the availability of larger numbers of Soviet intercontinental and submarine-launched ballistic missiles (ICBMs and SLBMs, respectively) later in the 1960s, BOOKCHECK was obsolete and arguably irrelevant, at least by 1967. That said, however, Exercise BOOKCHECK does give us an idea of how the RCAF might have broadly reacted if North America had come under attack in a no-crisis situation, or one of less protraction than the 1962 Cuban Crisis. The exercise plan certainly gives us insight into what aspects of such a situation the RCAF leadership deemed important, and how much time they thought they had to react.

THE RCAF IN THE EARLY 1960s

For the purposes of BOOKCHECK, virtually all Canada-based RCAF formations, stations, and units were involved, most of which no longer exist today, so it is essential to provide an overview from the time. In those years, the RCAF consisted of Air Defence Command (ADC) based in St Hubert, Quebec (QC); Air Transport Command based in Trenton, Ontario (ON); Maritime Air Command (MAC) with its headquarters in Halifax, Nova Scotia (NS); Training Command headquartered in Winnipeg, Manitoba (MB); and Air Materiel Command based at Rockliffe, Ottawa. Over in Western Europe, there was No. 1 Air Division, the RCAF command dedicated to the NATO nuclear strike mission. Some commands had a separate emergency headquarters or EHQ, as some of the commands were located near large cities and might be affected by nuclear attacks on them: Air Force EHQ was in Trenton; Training Command EHQ at Combined-Joint Air Training Centre, Rivers, MB; and Air Materiel Command EHQ in Angus, ON. Northern NORAD Region was a special case: this underground facility with its semi-automatic ground-environment (SAGE) computer system was under construction at Station North Bay, ON, during this time, as were the two Bomarc missile sites that were to be connected to it.

There were the Pinetree Line and ground-controlled intercept radar stations stretching from Holberg, British Columbia (BC) to Sydney, NS. A specialized cross-country communications network consisting of 1, 2, and 3 Communications Units (CUs) were located in Vancouver, Winnipeg, and Edmonton. The 4 Communication Unit (CU) was in Rockliffe, and there were six altogether. Training Command bases at Lincoln Park, Alberta (AB); Gimli, MB; Portage, Saskatchewan (SK), and Winnipeg, MB, plus the Army-RCAF joint training centre at Rivers, MB, as well as radar and communications training facilities at Stations

Hamilton, Centralia, and Clinton, ON, show that the RCAF possessed significant dispersion beyond what we are familiar with today.

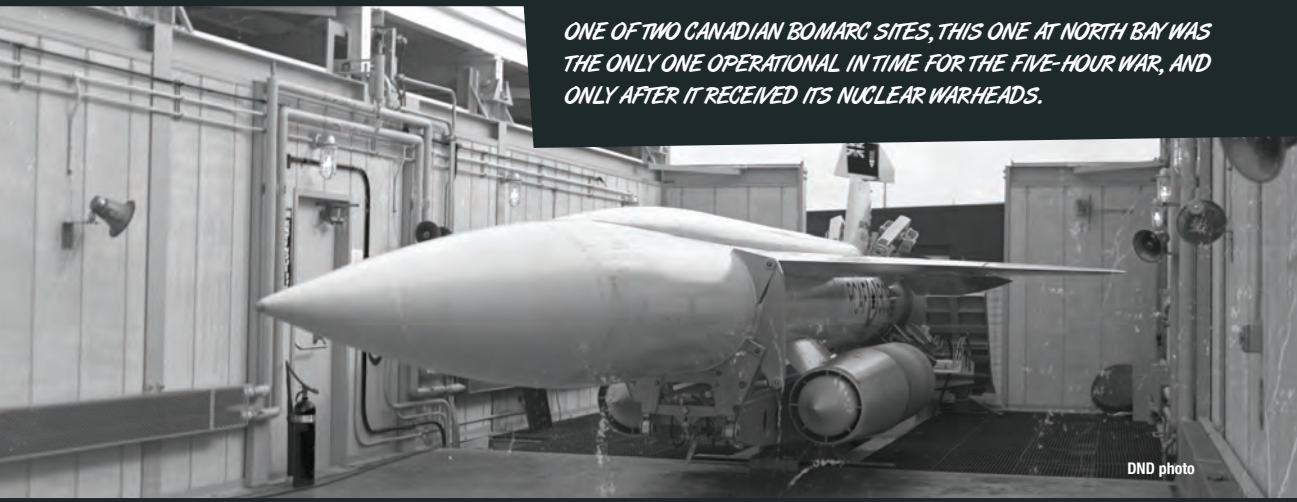
For the most part, MAC, with its Argus and Neptune patrol aircraft, was clustered on the East Coast, with a West Coast base in Comox, BC, that shared facilities with ADC fighter units. The ADC was in the process of replacing CF100 Canucks with the new nuclear-capable CF101 Voodoos across the country: these ADC squadrons were at Comox; Namao, AB; North Bay, ON; Bagotville, QC, with a dispersion site in Val D'Or, QC; Uplands, ON, and Chatham, New Brunswick (NB). Two Bomarc nuclear missile sites were under construction, one at North

Labrador (NL). There were also four secret aerial tanker bases in the Canadian North. None of these organizations figured in Exercise BOOKCHECK, however, and their forces were not really “gamed” per se.

PHASED ALERTING PROCEDURES AND EARLY WARNING: THE WAR BOOK

The RCAF operated under the umbrella of a number of national and allied alerting systems, and Exercise BOOKCHECK was composed around them. It was not really feasible to keep the entire Air Force on hourly standby for a nuclear attack. Fatigue, cost, and necessity demanded that there be some form of phased alerting system. The trick in the cold

ONE OF TWO CANADIAN BOMARC SITES, THIS ONE AT NORTH BAY WAS THE ONLY ONE OPERATIONAL IN TIME FOR THE FIVE-HOUR WAR, AND ONLY AFTER IT RECEIVED ITS NUCLEAR WARHEADS.



DND photo

Bay and to the other at La Macaza, QC. There were even reserve fighter squadrons equipped with F86 Sabres operating from Vancouver as part of ADC. Air Transport Command had units in Trenton, and Lachine, QC, near Montreal. A special unit consisting of North Star transports and helicopters was situated at Rockcliffe, east of Ottawa. Its purpose was to extract Canada's emergency government to dispersal sites west of Ottawa.

In addition, there were two squadrons of United States Air Force (USAF) F-106 interceptors located in Newfoundland and

war was ensuring that this phased alerting system was able to pre-empt and address any enemy action directed against Canada in a timely and effective fashion. The possibility of surprise attack was the driving motif of the cold war, and the idea that presenting an effective deterrent posture both in terms of offensive and defensive action was linked to it.

The RCAF had to reconcile Canadian, NATO, NORAD, and American alerting systems. In Canada, the Chiefs of Staff could ask the Minister of National Defence (or in an emergency the Chiefs of Staff Committee)

to implement the States of Military Vigilance System. This consisted of two phases: Discreet and Ready. In essence, these were a variety of “purely military measures that can be implemented without the formal declaration of an alert by the Canadian Government.”⁴ The Chief of the Air Staff (CAS) had delegated authority from the Chiefs of Staff Committee to implement these measures “if information of an impending attack is received by them.”⁵

If the situation deteriorated, the Minister of National Defence had to determine, with Cabinet, whether or not to implement the Formal Alert Stages. Based on the NATO stages, these included Simple, Reinforced, and General. Simple Alert was “to be initiated on receipt of credible information indicating definite preparation to attack NATO or on the existence of international tension on a scale anywhere in the world that might have serious consequences for Canada.” Reinforce Alert was “to be initiated when there is conclusive indication that the outbreak of hostilities is imminent.” A General Alert would be declared if there was an “overt act of aggression” in the NATO area. Note that none of these states or stages was sequential at all.⁶

There was, however, the NORAD Alert System which was tied to the American defence readiness condition (DEFCON) system, and these were sequential. For NORAD, there was DEFCON 1 through DEFCON 5. Attempts were made to provide equivalencies between the Canadian, NATO, and NORAD systems. The Canadian States of Military Vigilance were equivalent to DEFCONs 3 and 4: “Delicate or strained international relations.” Simple Alert for NORAD was DEFCON 2: “Reliable and credible information that the Enemy is preparing to attack.” Reinforced Alert was aligned with DEFCON 1: “Definite and conclusive indications that hostilities are imminent.” Finally, the NORAD “Air Defence Emergency stage—“Hostilities have commenced”—was the same as the Canadian and NATO General Alert.⁷

PATTERN OF NUCLEAR ATTACK AGAINST NORTH AMERICA, 1961–1963

Unfortunately, the Exercise BOOKCHECK documents are incomplete. The precise nature of the attack, specifically the nuclear detonation (NUDET) or NUDET time of arrival summary is no longer part of the available document files in the archives. What would such an attack have looked like? Fortunately, the pattern of Soviet attack versus North America was somewhat standardized in Canadian planning during the period and can be reconstructed from other material. The Privy Council Office (PCO) was the main Canadian agency responsible for coordinating continuity of government (COG) planning, and this included the maintenance of an agreed-to-attack scenario. The 1960 planning guide for COG in Canada presented the following assumptions:

- North America would be attacked by Soviet forces only in the event of, or as the initial step of, general war.
- Attacks on North America would only be worthwhile if nuclear weapons were used.
- No form of nuclear attack on North America was likely to leave Canada free of the direct effects of nuclear weapons.
- The basic problem would be survival and the first few days of nuclear warfare likely would be the worst.⁸

What would the Soviets employ against North American targets? From 1960 to 1961, manned bombers like the TU-16 Badger, TU-95 Bear, and possibly the M-4 Bison, “supplemented by such ballistic missiles and guided missile submarines as were available,” were the primary threat, with the average warhead yield for planning purposes set at 5 Megaton (MT - an explosion equivalent to five million tons of TNT, though the PCO recognized that there were 20-MT-yield weapons in the Soviet arsenal). The estimated blast damage radii for this warhead for planning purposes was 5.5 miles (8.9 kilometres [km]),

where the target was essentially obliterated, with decreasing amounts of damage out to 17.5 miles (28 km).¹⁰ After 1962, the planners believed that missiles would take over with manned bombers supplementing both ICBM and SLBM weapons. By 1964, the ICBM would be the primary delivery system, supplemented with missiles from submarines and then air-to-ground nuclear missiles launched from manned bomber aircraft.¹¹

Canadian planners during this time generally believed that “the main weight of the attack would be against targets in the United States,” specifically, “U.S. retaliatory forces,”¹² that is, the bombers, tankers, and missiles belonging to the Strategic Air Command (SAC). Once those aircraft dispersed to sites in Canada during some stage in the alert process, then those locations would most likely be targeted as well. That said, “deliberate attacks on Canadian targets would most likely be made against only the two or three largest metropolitan areas, the main centres of government, and the major ports, especially in the east.”¹³ And that was not all. The PCO planners noted: “An unpredictable number of random explosions of weapons of megaton size, carried by both aircraft and missiles, may be expected over Canadian territory.”¹⁴ This would involve “bombers shot down with armed bombs ... weapons dumped when bombers met the defences, accidental bursts resulting from [target identification] failure...”¹⁵

The icing on the so-called cake was possible damage from “fallout from bombs or missiles aimed at major Canadian cities or SAC bases, US cities, or air defence installations near the Canadian border.”¹⁶ A series of SAC bases across the American North were cause for concern. There was Fairchild Air Force Base (AFB) in Washington state; Malmstrom and Glasgow AFBs in Montana; Minot and Grand Forces AFBs in North Dakota; Warren AFB in Wyoming; Ellsworth AFB in South Dakota; K. I. Sawyer, Kinchloe, and Wurtsmith AFBs in Michigan; Plattsburgh in New York (NY); and Loring in Maine (ME). There were also

several SAGE air defence computer systems located in protected facilities co-located with some SAC bases. These bases, it was assumed, would be subjected to heavy bombardment from multiple thermonuclear weapons. The prevailing wind patterns would spread the fallout from these attacks over southern Saskatchewan and Manitoba, southern Ontario; and the Maritimes.¹⁷

By 1963, a more refined attack pattern was available for Canadian planners. The weapons yields per target varied from 1 to 2 MT, either a single 2-MT weapon or two 1-MT yield weapons, mostly assumed to be surface burst for maximum damage (and fallout) with a circular error probable (CEP) of two nautical miles. The exceptions, for some reason, were Cold Lake and Halifax, which were each going to be hit with a 300-metre airburst. The duration of the attack was estimated to last two hours, twelve minutes. The weight of the attack would occur within one hour, with 30 targets across northern North America hit. In the first half-hour period, thirty minutes after the national alert was sounded, 11 targets would be hit, followed by 11 more over the next ten minutes, then 8 targets ten minutes after that, then 3 more.¹⁸

The first series of strikes would be made against Station Comox; the SAC support bases at Frobisher Bay, Northwest Territories (NWT); Thule, Greenland; Goose Bay, NL; Churchill, MB; and the Distant Early Warning (DEW) Line sector control headquarters at Cambridge Bay and Fort Providence, NWT. The interceptor and tanker base at Harmon AFB, Stephenville, NL, and the anti-submarine base at Bangor, ME, would be next, probably attacked by submarine-launched cruise missiles. Station Namao and Station Cold Lake would also have been attacked at this time as both were possible SAC support facilities in addition to their RCAF functions. Destruction of the radar station located at Alsask, SK was necessary to open up access to the American Midwest.¹⁹

This combination of air defence roll-back and SAC tanker-base destruction would limit damage to both the next wave of attacking Soviet bombers from NORAD interceptors, open up the approach routes for attacks deeper inside North America, and limit damage to the Soviet Union itself. The B-47 and B-52 bombers in the American Midwest were dependent on their KC-97 and KC-135 tankers, and these would have been forward deployed to Canada if there was enough warning or if the crisis had a gradual build-up phase.²⁰

The next “pulse” of attacks was assumed by the planners to include Station North Bay with its NORAD Headquarters; all the SAC bases from Washington state to Maine; any base housing a SAGE air defence computer; and a cluster of maritime targets, including Montreal and Halifax. After the first hour, SAC bases would be hit again with a further wave of strikes.²¹

It is notable that Canadian planners focused mostly on the pattern of strikes on the first day, indeed, the first hours, of a nuclear attack. Cities, per se, were not primary targets in their view. It was assumed that the Soviet targeting plan would focus on anything associated with SAC, and that the air defence

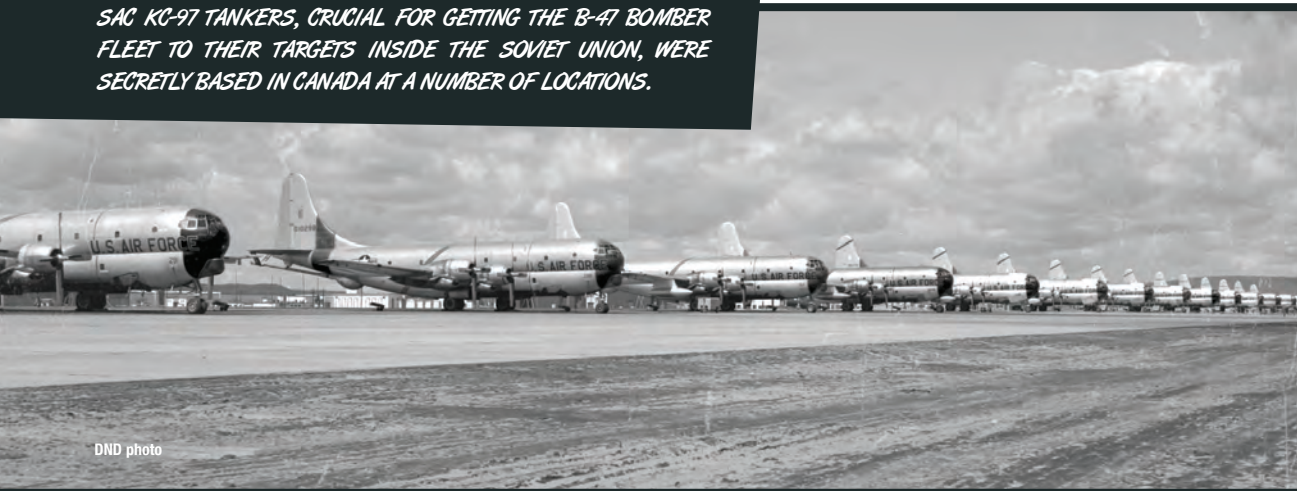
system’s destruction was merely a means to that end. The idea that there could be follow-up attacks was not really examined in any detail. It was probably a realistic assumption. The amount of disarray that this type of attack would cause would have been massive in any case, particularly the effects of the little-understood secondary-weapons effects like electro-magnetic pulse on various systems. The amount of smoke generated by firestorms in the target areas as well as the radioactive fallout would also have significantly impeded Soviet follow-up reconnaissance efforts, which would have been a sine qua non of follow-on attacks in the short term.

Follow-on attacks were not ruled out, however; therefore, the RCAF had to be able to reconstitute and prepare for later waves as well as contribute to the Army-led national survival operations. These operations involved the use of “re-entry columns,” mobile units tasked to enter bombed areas and recover trapped citizens.

INTO BATTLE...

Exercise BOOKCHECK was scheduled to run three days. In real-world terms, M-Day (for Mobilization Day) was supposed to be used in the event of a real crisis as the start

SAC KC-97 TANKERS, CRUCIAL FOR GETTING THE B-47 BOMBER FLEET TO THEIR TARGETS INSIDE THE SOVIET UNION, WERE SECRETLY BASED IN CANADA AT A NUMBER OF LOCATIONS.



DND photo

date. For narrative purposes, and based on the BOOKCHECK documents, we will use E-Day and the times will be Zulu.²²

The exercise started with the crew of a Yukon transport reporting, at 1500 hours E-day, the presence of a Soviet submarine sighted as the Canadian plane flew over the Atlantic. There was no detailed preamble or political scenario. The exercise launched right into Commander in Chief (CINC) NORAD's declaration of DEFCON 3 at 1635 hours, which was transmitted from his interim headquarters at Colorado Springs to Northern NORAD Region at North Bay and ADC HQ in St Hubert. Ten minutes later, the Chairman of the Chiefs of Staff Committee from the ramshackle "temporary" National Defence HQ building across from the Lord Elgin Hotel in Ottawa directed Canadian forces to achieve Military Vigilance-Ready once they learned that SAC was also at DEFCON 3 and that NATO's Supreme Allied Commander Europe was moving to Military Vigilance. This was approved by the Minister of National Defence. The CAS then directed the RCAF to Military Vigilance-Ready by 1700 hours. The Vice CAS ordered the Air Force HQ Operations Centre to disseminate the message to all commands.

At Station Trenton, 4 Operational Training Unit dispatched an H34 helicopter to Station Rockcliffe. This machine was then held at 30-minute readiness. The crew was given their instructions verbally: "When directed by AFHQ [Air Force Headquarters], [you] shall proceed from Rockcliffe to Parliament Hill and land on the east side of the grass area in front of the Peace Tower. The helicopter shall depart Parliament Hill for a relocation centre as directed by the senior government official present." There were ten spaces available on the H34.²³ At the same time, the commanding officer of 412 (Transport) Squadron at Rockcliffe opened his special instructions and then placed a North Star transport at a state of 30-minute readiness. This aircraft was designated for use by the members of the

emergency government who might arrive at Rockcliffe by helicopter or by bus or car.²⁴

At this point, the air staff and commands consulted the RCAF *War Book*. Part of the staff contacted their counterparts in the Army, Royal Canadian Navy (RCN), and the Department of Transportation to coordinate plans for the wartime movement of personnel. The Emergency RCAF HQ at Trenton was now authorized and preparations were made to action Simple Alert. Non-duty personnel were also ordered to report for duty, but to do so discreetly.²⁵ All "serviceable operational aircraft were to be made ready for combat operations or their wartime function"²⁶ and all aircraft under repair were to be prepared for action. Preparations were also to be readied to evacuate military hospitals in probable target areas. Importantly, "wartime plans for the provision of meteorological services" were to be implemented. This information was crucial not only for operations but also for fallout prediction.²⁷

NATO's Supreme Allied Commander Atlantic (SACLANT), as part of a conference call with the US Joint Chiefs of Staff in Washington and the Canadian Chiefs of Staff Committee in Ottawa, explained at 1745 hours that his SOSUS (Sound Surveillance System) underwater listening systems were picking up a noticeable build-up in Soviet submarine activity in the Atlantic coast off Georgia and Florida. Lacking the resources to cover the whole US eastern seaboard, SACLANT asked Canada for six Argus maritime patrol aircraft to be stationed at Naval Air Station (NAS) Norfolk, Virginia, for an indefinite period.

At 1815 hours, the Vice Chief of the General Staff (VCGS) phoned the air staff to coordinate the deployment of reinforcements for 4 Canadian Mechanized Brigade Group based in northern West Germany. Yukon and C130 transports at Station Trenton were brought to a higher state of readiness as the Army's Standby Battalion based on an airfield near Picton, ON, went to 30-minute notice to

move. The VCGS called back and requested airlift for 8000 pounds (3600 kilograms) of signals intelligence equipment from Kingston, ON, to Whitehorse, Yukon. The actual deployments were readied if Simple Alert was declared.

The MAC in Halifax provided what information they had jointly developed with the RCN on Soviet naval movements in the Atlantic to RCAF HQ around 1840 hours. It confirmed SACLANC's information. Then the Minister of National Defence conferred with the Air Staff about the feasibility of using Air Transport Command aircraft to evacuate civilian dependants from RCAF stations and Army bases in France and West Germany. The only space available, as it turned out, would be on the returning aircraft that just dropped off reinforcements to 4 Canadian Mechanized Brigade Group (CMBG).

As the situations in Western Europe and in the Atlantic generated further concern, the Minister of National Defence asked the Chairman of the Chiefs of Staff Committee "that a study be made to determine the implications of using nuclear weapons." The RCAF "was directed to limit their study to nuclear weapons for the BOMARC, CF101, and Argus aircraft."²⁸ At this point, the formal agreement between Canada and the US had not been signed. These three delivery systems were prepared for everything except that nuclear warheads had not been issued to them, pending agreement on suitable diplomatic language. Bomarc warheads, AIR-2A Genie air-to-air nuclear rockets, and nuclear depth bombs for the Argus were earmarked for Canadian units in American storage depots in Griffiss AFB near Rome, NY; Plattsburg AFB, NY; and NAS Bangor, ME.²⁹

At 2000 hours, the key interceptor bases were queried as to whether they had enough combat stocks. Stations Comox, North Bay, Uplands, Bagotville, Summerside, Prince Edward Island, and Greenwood, NS,

all replied affirmative. At the small, almost forgotten RCAF Station Mountain View south of Trenton, the maintenance staff received a message to inventory and prepare all mothballed transport aircraft for use. A squadron's worth of CC119 transports was slowly prepared through the night, the preservative material stripped off, and vital fluids replaced.

At 2300 hours, the Chairman of the Chiefs of Staff Committee declared 429 Squadron at Station Summerside active after consultation with the Chief of the Naval Staff. 429 Squadron joined MAC and was equipped with older Neptune aircraft that were being replaced with the new Argus maritime patrol aircraft.

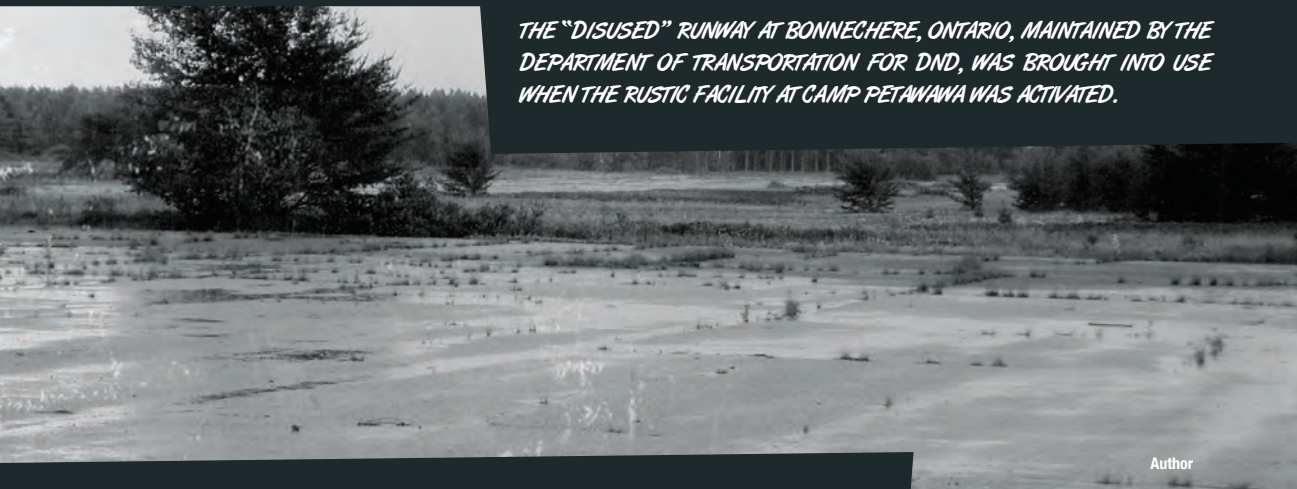
On E+2, CINCNORAD declared DEFCON 2—Weapons Status Bravo, which was passed to Northern NORAD Region and ADC at 1345 hours. Five minutes later, the Cabinet Defence Committee declared Simple Alert for Canadian forces and by 1400 the RCAF was at Simple Alert. Communications were minimized, leaves cancelled, and key personnel were directed to depart for emergency headquarters immediately. Emergency Security Force personnel were deployed and augmented at each station.³⁰ At Simple Alert, operational aircraft were to deploy according to each unit's emergency defence plan while Emergency Security Force personnel secured each station.³¹

The H34 helicopter at Rockliffe launched and landed on Parliament Hill to collect the Prime Minister and his immediate advisors. Designated members of the emergency government were already arriving at Station Rockliffe and boarded the North Star transport, which then took off, piloted by the commanding officer of 412 Squadron. The Prime Minister directed the H34 pilot to fly to a site code-named RUSTIC, while the North Star flew west heading for what to casual observers believed to be a disused airfield in the woods near Bonnechere, ON.

Weapons Status Bravo was part of a multi-step process readying air defence systems, including nuclear systems. At this time, Deputy CINCNORAD, Commander, ADC, called the Chairman of the Chiefs of Staff Committee, who then went to the minister and requested that immediate actions be taken to acquire nuclear weapons for the CF101 Voodoo force, the Bomarc missiles, and the Argus maritime patrol aircraft.³²

As Canada was in the middle of negotiations for nuclear weapons custody, the BOMARCs had no warheads; the CF101 and Argus aircraft had them yet on their bases. The USAF, which had a special nuclear

warhead movements wing on standby, loaded C124 Globemaster II aircraft with AIR-2A Genie rockets and W 40 Bomarc warheads from the Grifiss AFB Weapons Storage Area. The La Macaza Bomarc site was not ready, but North Bay was prepared to receive weapons. Temporary AIR-2A Genie storage areas guarded by USAF security troops were established at the CF101 bases. Over at NAS Brunswick, ME, US Navy (USN) transport aircraft moved Mk-101 nuclear depth bombs to Station Greenwood for the Argus aircraft, while the six Argus that had deployed to Norfolk underwent checks to prepare for the reception of Mk-101s.



THE "DISUSED" RUNWAY AT BONNECHERE, ONTARIO, MAINTAINED BY THE DEPARTMENT OF TRANSPORTATION FOR DND, WAS BROUGHT INTO USE WHEN THE RUSTIC FACILITY AT CAMP PETAWAWA WAS ACTIVATED.

Author

THE LACK OF A FORMAL SIGNED COUNTRY-TO-COUNTRY AGREEMENT MEANT THAT W-40 NUCLEAR WARHEADS FOR CANADIAN BOMARCS WERE STORED AT THIS SITE AT GRIFISS AFB AT ROME, NEW YORK.



Author

As for emergency defence plan deployments, some aircraft were launched to dispersal areas to lessen their chances of destruction. For example, three Argus and three Neptunes were ordered deployed to Torbay from their parent units at Station Greenwood. In earlier years, the CF100 interceptor squadrons had fifteen dispersal airfields available to them across the country, each associated with a nearby radar station.³³ With the advent of the nuclear-armed CF101 aircraft, however, tight control over these weapons meant that there was no dispersal plan in effect for them. In other cases, maritime patrol aircraft from Comox had two other fields available to them on Vancouver Island.

Murphy's Law went into effect from 1430 to 1600 hours on E+2. An armament accident at Station Comox destroyed 25 per cent of the weapons stored there, killing some 15 personnel and wounding 15 more. The subsequent fire destroyed the liquid oxygen facilities. Then the master computer at Air Material Command in Downsview went down: "There is some evidence that the damage to the computer was caused by a civil servant who recently had his application for re-categorization to a higher grouping turned down. This machine, of which there [was] only one and the logistics system is dependent upon it, [would] not be functional for 48 hours."³⁴

While the logisticians were sorting out the Air Material Command computer, CINCNORAD declared DEFCON 1—Weapons State Delta—at 1645 hours, E+2, at the same time SAC went to DEFCON 1. Hostilities were now imminent. The Cabinet Defence Committee directed that Reinforced Alert be implemented by Canadian forces. Thirty minutes later, at 1730 hours, the Chairman of the Chiefs of Staff Committee directed that the service chiefs move to the National Emergency Headquarters (NEHQ). The NEHQ bunker at Carp, west of Ottawa, was still under construction, so the helicopter that picked up the CAS flew him to the RUSTIC facility at Camp Petawawa.

This consisted of pre-designated reinforced basements in base buildings that were pre-stocked to serve as an NEHQ until Carp was completed. When the CAS and the other chiefs arrived they were met by the Prime Minister. The emergency government members were already at work, having been bussed in from Bonnechere.

As part of its confirmation process, AFHQ requested action reports from the radar stations at Holberg, BC, St Margaret's, NB, Edgar and Falconbridge, ON, and St-Sylvestre and Senneterre, QC. The CF101 bases were then queried as to the status of the CF101 force.

At 1800 hours, the Minister of National Defence then requested that the RCAF recover the 40 Canadian members of the International Control Commission in Indochina. While this was being actioned, Northern NORAD region and ADC declared "Air Defence Emergency Warning Red." The national survival attack warning system sirens went off across Canada, blaring the "Take Cover" tone. Pairs of CF101 Voodoos, each armed with two AIR-2A Genie nuclear rockets, scrambled from their quick reaction alert shelters. The SAGE computer at North Bay, with its links to the radar systems in the area, kept a close watch for incoming bombers that might get through the CF101 intercept line. The Bomarc missiles at 446 Surface-to-Air Missile (SAM) Squadron North Bay were readied. The RCAF duty officer and the USAF duty officer inserted their release keys and contacted the command centre at North Bay. Their counterparts also gave their consent and turned their keys. The clamshell shelter roofs opened up and the missile erector arms were raised. One launcher suffered an erection failure, which prompted a maintenance crew to deploy to fix it. All the missiles needed were intercept track data.

The MAC then reported that an Argus patrol aircraft from 405 Maritime Patrol (MP) Squadron spotted a Soviet *Echo*-class

AIR WARNING AND CONTROL STATIONS LIKE RCAF STATION FALCONBRIDGE WERE NORTH AMERICA'S FIRST LINE OF DEFENCE IN THE FIVE-HOUR WAR.



DND photo

submarine off the George's Bank erecting two cruise missiles in preparations for launch. Under existing rules of engagement, the Argus commander prepared to engage the missile launching submarine. Knowing that it was a choice between his aircraft and crew and possibly hundreds of thousands of lives, the Argus commander instructed the crew to arm one of the aircraft's Mk-101 nuclear

depth bombs for surface burst. The Mk-101 was usually detonated deep in the ocean so that the aircraft had time to escape the blast and water plume. In this scenario, there would be no escape. The Mk-101 detonated, destroying the submarine and its missiles. The blast tore the Argus to pieces as it valiantly tried to outrun the shock wave. (Some of the family members of the Argus crew survived

THE CP107 ARGUS, WORKING WITH OTHER RCAF AND RCN UNITS, TRACKED AND SANK SOVIET ECHO-CLASS GUIDED MISSILE SUBMARINES BEFORE THEY COULD LAUNCH. ONE SUCH ARGUS CREW RECEIVED POSTHUMOUS VICTORIA CROSSES.



DND photo

the war and were presented with posthumous Victoria Crosses at Camp Petawawa by the Prime Minister.)

At 1810 the first NUDET reports came in. The RCAF CU in Edmonton reported that Station Namao, north of the city, had been hit with a ground-burst nuclear weapon. The research station and planned SAC refueling site at Churchill, MB, reported a bright flash over Hudson's Bay. Communications with the partially manned 447 SAM Squadron at La Macaza were cut off. Soon after that, Station Goose Bay reported a nuclear detonation many miles west of the base, deep in the bush. Station Comox-based CF101 fighters successfully engaged several TU-95 Bear bombers with Genie rockets as they headed south along the western seaboard. SAGE data flowed in from the radar site at Foymont, ON, tracking the bomber that took out the nearly completed Bomarc base. This aircraft was engaged with a Bomarc missile from the North Bay site and destroyed north of Mattawa, ON.

The Cabinet Defence Committee directed a general alert at 1820 hours. In theory, this meant that aircraft belonging to enemy nations could be impounded by the RCAF and that a list of people deemed to be potential threats to Canada could be detained in camps as required. Given the situation, both actions were rather moot.

The first fallout reports came in at 1910 hours. The first strike, directed at the SAC refueling sites, had clearly been disrupted by the actions of the RCAF. However, lethal plumes of radiation were now falling on Edmonton and as far as Station Cold Lake to the east and Station Penhold to the south of the city. The northern suburbs of Edmonton were on fire. The 2 CU in Edmonton was having difficulties operating because of severe ionizing radiation, so the unit commander instructed that the remote site outside the city be activated. West of Goose Bay, there were a lot of scorched caribou as something had

distracted the aim of the Soviet bombardier targeting Churchill. Radiation was now falling on Ottawa from the La Macaza strike.

At 2000 hours, an RCN CS2F Tracker from 880 Squadron based out of a dispersal strip near Sydney, tracked another Soviet submarine of unknown type. Neptune and Argus maritime patrol aircraft were directed onto the target in an attempt to engage it. This cat-and-mouse game would last for hours.

Despite the valiant efforts of 409 Squadron and its CF101s and their USAF counterparts flying F-106s out of Alaska, a pair of TU-95 Bears made it through to targets in Washington state. At 2035 hours, a number of targets were struck around Seattle, including the Boeing factory and the USN nuclear missile submarine base at Bangor, with the submarine base taking multiple hits from megaton-yield weapons. Radioactive fallout made its way to Vancouver where 1 CU reported that they now had to redeploy to a remote site near Camp Chilliwack.

At 2100 hours, a Soviet Zulu-class missile submarine launched an R-11FM missile, thus revealing itself to its Canadian pursuers in an Argus who dispatched it with an Mk-101 nuclear depth bomb. The R-11FM, inaccurate at the best of times and even less so when fired from a sea-going platform, missed its intended target—Halifax, NS—and achieved a partial detonation (fizzle) near the recruit school at Cornwallis, NS. The joint RCAF-RCN maritime headquarters reported that there was some radioactivity near the site, but that operations were otherwise unaffected.

From 2100 to 2250 hours, the climax of the air battle took place. The Soviets, exploiting their experience with ice runways on Arctic ice floes, were able to bring more TU16 Badger medium-range bombers into the fight than NORAD anticipated.³⁵ The first wave focused their efforts on the three SAC bases in Michigan: K. I. Sawyer, Kinchloe, and Wurtsmith. Deliberately sacrificing aircraft, the Soviets pressed the attack over Hudson

Bay. The North Bay Bomarc site eventually ran out of missiles. The SAGE center at Duluth, Wisconsin (WI) suffered an inopportune computer failure, so the Bomarc site there attempted to contact the SAGE centre at North Bay and hand off its missiles. At this point a TU-16 made it through, missed Kinchloe but hit Wurtsmith. A second TU-16, through a navigation error, dropped a 1-MT bomb on Windsor, ON. Both areas were obliterated with megaton-yield ground-burst nuclear weapons. The fallout started hitting the rest of Ontario in minutes as Station Centralia reported high levels of radiation north of Toronto. In due course, Falconbridge, North Bay, and even Foymont would be “dosed” as well.

Then the second wave came in. A new Soviet weapon, AS-4 Kitchen nuclear air-to-surface missile fired from a TU-16 Badger, debuted for a microsecond over the Mount Apica radar station north of Quebec City. With no SAM missile coverage between Duluth AFB, WI, and Dow AFB, ME, it was left up to 425 Squadron and 414 Squadron Voodoos to try and cover the gap. Numerous bombers were shot down. One TU-95 crew, either in a panicked state or incapacitated, dumped their nuclear weapons in the vicinity of the radar station at Lac St Denis, 60 miles (97 km) north of Montreal. One weapon detonated in the air while another went off on the ground, which started a forest fire in an unpopulated area.

Given the number of priority targets in northern New York, however, the Soviets threw significant numbers of planes through the gap in radar coverage. There were ten Atlas ICBM sites located west of Plattsburgh, NY, plus a large SAC base with nuclear weapons storage. In addition, there was an interceptor base across the lake in Burlington, Vermont. Running low on Genies, the Canadian squadrons had to break off. The Vermont-based interceptors were obsolete and did not have the ceiling necessary to reach the bombers. Two bombs struck Plattsburgh AFB.

The Atlas silos were already empty, having been fired against Soviet targets earlier. At least two near-misses were recorded against the silos, which killed small numbers of local citizens and produced fallout plumes that reached into southern Quebec.

Around 2300 hours, a delegation of citizens approached the Emergency Security Force at Station Trenton. They demanded that authorities remove the remains of a crashed bomber, which turned out to be a TU-16 Badger with a live nuclear weapon still on board. A specially-trained explosive ordnance disposal (EOD) team was dispatched to carry out this delicate task, along with intelligence specialists to exploit the wreck.

Meanwhile, the short-ranged USAF F-106 fighters that were protecting the SAC bases in North Dakota and Montana were starting to run out of fuel. With the priority for tankers going to SAC, numbers of aircraft were diverting to Stations Gimli, Portage, Saskatoon, and Rivers. While they were refueling, the Soviets made their push against targets in Malmstrom, Wyoming, and Minot, North Dakota, at 2250 hours. With no Canadian fighter coverage in Saskatchewan or Manitoba, and with the CF101s based at Namao destroyed, Badgers and Bears got through almost unmolested. Within an hour, fallout was drifting northeastwards through southern Saskatchewan and Manitoba, prompting all RCAF stations in the provinces to report in.

The last series of NUDETs took place at 2330 hours. A pair of SSN-3C Shaddock cruise missiles launched from an unengaged *Echo*-class submarine detonated, each with a yield of 350 kilotons, one over Loring AFB, with its huge nuclear weapons storage facility, and another over Presque Iles AFB, ME, where Snark inter-continental cruise missiles were based. As with the Atlas ICBMs near Plattsburgh, these launch facilities were already empty. Fallout plumes blanketed the Maritimes.

The nuclear attack lasted for five hours, twenty minutes.

AFTERMATH

Exercise BOOKCHECK did not end with the air battle and the nuclear detonations. From 2250 hours E+2 to 1500 hours E+3, all stations were required to report on weather conditions and fallout conditions hourly. The Minister of National Defence also requested that the RCAF conduct post-strike aerial photography missions of Toronto and Windsor. A Lancaster Aerial Reconnaissance (AR) aircraft from 407 Squadron was launched to meet this request.

Station commanders and staffs were forced to reply in the exercise as to what their plans were to handle the effects of the attack. For example, the exercise controllers told the RCAF HQ players to ask questions like, “How long do you expect to be able to continue your operational mission before incurring significant loss of effectiveness through ionizing radiation?” Or, “Exposure of personnel under your command is not to exceed 25 roentgens per week or 200 roentgens in a six-week period. Give details of the measures you have taken to keep within these limitations

and maintain the functional capability of your Unit.” And then there was “areas where personnel will receive 100 roentgens in 48 hours will be considered as emergency risk areas ... what time to you estimate that personnel in your Unit will have to be moved from their present location if the total does ... is not to exceed 100 roentgens in 48 hours?”³⁶

And then there was the civilian population: “As a result of radioactive fallout warnings and an actual build-up in intensities at a nearby large Canadian city, many families have left their homes and are arriving at large numbers at your base. Residentially, these people will need fallout shelter accommodation, food, water, and clothing. It can be expected that many will need medical care.” Or, “Give details of the action you would have taken to provide protection for dependants at our Station....”³⁷ This went for every station from a small radar station to a large base. From available documentation, it appears as if the answers to these questions would be based on the policy in place at the time by each station commander and not based on any overall RCAF policy.

At 1000 hours on E+3, a decision was made to have Air Transport Command attempt

CF101 VOODOO INTERCEPTORS, ARMED WITH AIR-2A GENIE NUCLEAR ROCKETS, ENGAGED SOVIET BOMBERS ON ALL APPROACHES TO USAF SAC BASES AND OTHER TARGETS.



DND photo

A PRIMARY SOVIET TARGET WAS THE STRATEGIC AIR COMMAND BASE AT PLATTSBURGH AFB IN NORTHERN NEW YORK STATE. THESE ARE SOME OF THE THIRTY NUCLEAR WEAPONS STORAGE "IGLOOS" SITUATED IN A WEAPONS STORAGE AREA.



Author

to relocate personnel on stations affected by fallout. Cold Lake, Uplands, Rockcliffe, St Hubert, and Bagotville were able to attempt decontamination. By 1500 hours, however, the decision was made to evacuate Lincoln Park, Penhold, Cold Lake, and Winnipeg. And that is where Exercise BOOKCHECK ended.

BOOKCHECK: THE IMPLICATIONS

As far as can be determined, the RCAF did not run Exercise BOOKCHECK, although it is possible that they did. What BOOKCHECK does, however, is give us a pretty good idea on how the RCAF was prepared to approach the nuclear threat and deal with it as best it could intuitively. The exercise also gives us an idea of what sort of attack Canada was considering during the bomber age and particularly during the vital 1959–1962 crisis years. When missiles became much more plentiful, the scenario would have been greatly accelerated in time: Soviet submarine-launched ballistic missiles and land-based ICBMs would have been landing within twenty to thirty minutes of launch,

unlike this simulated bomber attack that took five hours after two hours of detection.

The reality of interpersonal interactions vis-à-vis the civil-military relationship, however, was not a part of Exercise BOOKCHECK. During the Cuban Crisis of 1962, the senior political leadership refused to permit the alert stages to be activated, thus snarling the finely-honed machinery. In the 1962 crisis, Canada was not prepared to mount the defence depicted in BOOKCHECK. The burden would have fallen on the American air defence system much closer to home, which in all likelihood would have produced a great number of “random bombs” over Canadian territory. In the end, BOOKCHECK gives us a window into a very dangerous age that the RCAF helped stickhandle Canada through. 🇨🇦

Dr. Sean Maloney serves as the Historical Advisor to the Chief of the Land Staff and is an Associate Professor of History at Royal Military College of Canada. He is the author of *Learning to Love the Bomb: Canada's Nuclear Weapons and the Cold War*.

ABBREVIATIONS

AB	Alberta
ADC	Air Defence Command
AFB	air force base
BC	British Columbia
BOMARC	Boeing and Michigan Aeronautical Research Center
CAS	Chief of the Air Staff
CINC	commander-in-chief
CINCNORAD	Commander-in-Chief NORAD
CMBG	Canadian Mechanized Brigade Group
COG	continuity of government
CU	communication unit
DEFCON	defence readiness condition
DND	Department of National Defence
EHQ	emergency headquarters
EMO	Emergency Measures Organization
ICBM	intercontinental ballistic missile
km	kilometre(s)
MB	Manitoba
ME	Maine
MT	megaton
NAS	naval air station
NATO	North Atlantic Treaty Organization
NB	New Brunswick
NEHQ	National Emergency Headquarters
NL	Newfoundland and Labrador
NORAD	North American Aerospace Defense Command
NS	Nova Scotia
NUDET	nuclear detonation

NWT	Northwest Territories
NY	New York
ON	Ontario
PCO	Privy Council Office
QC	Quebec
RCAF	Royal Canadian Air Force
RCN	Royal Canadian Navy
SAC	Strategic Air Command
SAGE	semi-automatic ground environment
SAM	surface-to-air missile
SK	Saskatchewan
SLBM	submarine-launched ballistic missile
US	United States
USAF	United States Air Force
USN	United States Navy
VCGS	Vice Chief of the General Staff
WI	Wisconsin

NOTES

1. Lester B. Pearson, *Democracy in World Politics* (Princeton, NJ: Princeton University Press, 1955).

2. NORAD—North American Air Defence Command—was announced on 1 August 1957, and was renamed the North American Aerospace Defence Command in 1981.

3. Canada, Department of National Defence (DND), “Exercise BOOKCHECK: Directing Staff Instructions” and “Exercise BOOKCHECK: Sequence of Events,” Directorate of History and Heritage (DHH) file 71/493 (hereafter cited as Exercise BOOKCHECK).

4. DND, “The Department of National Defence War Book, December 1962,” National Archives of Canada (NAC) Records Group (RG) 24, acc 83-84/049, vol. 123, file 096.116.

5. Ibid.
6. Ibid.
7. Ibid., "Army War Book Annex A: Relationship of Allied Alert Systems to Canadian Alert System," NAC RG 24 acc 83-84/215, vol. 26, file 1200, pt 2, vol. 19.
8. Canada, PCO Emergency Measures Organization (EMO), "Planning Guide on the Continuity of Government Programme and Related Emergency Preparations," NAC RG 24, vol. 11, 147, file 1400-1, vol. 1, 19 September 1960 (hereafter cited as Planning Guide).
9. Ibid.
10. Ibid., "Organization and Administration: Ex TOCSIN [emergency preparedness drill] 1961," NAC RG 24, file 2001/91/T18, vol. 4, 25 July 1963.
11. Planning Guide.
12. Ibid.
13. Ibid.
14. Ibid.
15. Ibid.
16. Ibid.
17. U.S. Congress, Senate Subcommittee on Arms Control, International Organizations and Security Agreements of the Committee on Foreign Relations, "Analysis of Effects of Limited Nuclear Warfare," 94th Cong., 1st sess., September 1975, 52.
18. Canada, Economic Planning Division, Canada EMO, "Resources in Canada 48 Hours After a Hypothetical Nuclear Attack, November 1963," DHH, file 81/246.
19. Ibid. See also DND, "Canadian Army Basic Assumptions for Survival Planning and Operations," 2nd revision, "NAC RG 24, acc 83-84/215, vol. 26, file 1200, pt 2, vol. 15, 27 February 1961.
20. Ibid.
21. Ibid.
22. Exercise BOOKCHECK. Note that I have based this section on the narrative and events list supplied in Ex BOOKCHECK. I have embellished the narrative with actual historical detail where appropriate.
23. Canada, "Operation Order No. 110/62," NAC RG 24, vol. 107, file 096.103.6.
24. Ibid., "ATCHQ [Air Transport Command Headquarters] Operation Order 94/59," NAC RG 24, vol. 107, file 096.103.6, 9 September 59.
25. Memorandum to Distribution List, "Emergency Defence Planning-CMAT," NAC RG 24, vol. 568096, v.8 s.v.2, 17 April 62 (hereafter cited as CMAT).
26. Canada, "Supporting Data for the Air Council: Standardization of Alert Systems," NAC RG 24, vol. 549, file 096 103, v.5, CplansI (hereafter cited CplansI).
27. Ibid.
28. Exercise BOOKCHECK, 3 and 33.
29. See Sean M. Maloney, *Learning to Love The Bomb: Canada's Cold War Strategy and Nuclear Weapons 1951-1970* (Washington: Potomac Books, 2007).
30. CMAT.
31. CplansI.
32. Canada, "Brief for Minister of National Defence and Chiefs of Staff Committee on TOCSIN 61," NAC RG 24, acc 83-84/251, file 2001-91/T19, vol. 2.
33. Don Nicks, et al., *A History of the Air Defence of Canada 1948-1997* (Ottawa: Commander Fighter Group, 1997), 182-84.
34. Exercise BOOKCHECK, 52.
35. See Sean M. Maloney, "Arctic Sky Spies: The Director's Cut," *Canadian Military Journal* 9, no. 11, <http://www.journal.dnd.ca/vo9/no1/11-maloney-eng.asp> (accessed October 12, 2011).
36. Exercise BOOKCHECK.
37. Ibid.