APPENDIX C

BACKGROUND ON THE

NORTH BAY NUCLEAR UNDERGROUND

COMPLEX

North Bay's Cold War Nerve Centre

Radar screens on the SAGE system are monitored in what was called the Blue Room.
PHOTO: CANADIAN FORCES MUSEUM OF AEROSPACE DEFENCE—PCN4720

The construction of the Underground Complex (UGC) took four years—one and half years just to excavate and two and a half to build and outfit. By virtue of Canada's front line position, the Canadian air defence command and control center was deemed the most important piece of the NORAD "pie", with respect to bombers. (North Bay was never involved in ballistic missile defence.) Its early warning of and reaction against a Soviet nuclear air attack were critical for the survival of the U.S.-Canadian portion of the North American continent. As one air force officer put it: "(regarding a bomber attack) We lose North Bay, we lose the continent." Ergo, the center was a prime target for a Soviet nuclear strike. To minimize the possibility of its destruction, planners decided to build the facility underground. It would be the only subterranean regional command and control center in NORAD.

Following a cross-Canada survey of candidate sites, North Bay was selected:

1. An air force base existed, eliminating the need to build one.
2. The City of North Bay was a rail, highway and telecommunications crossroads of the country.
3. The geology comprised a 2.6 billion year old rock formation altered 1.5 billion years ago by the Grenville Metamorphic Event into granite, one of the hardest rock types on the planet, excellent armor against a nuclear strike.

4. Trout Lake, on the eastern edge of the city, presented an abundant source of water needed to cool the complex.

Because its subterranean location complicated access by firefighting vehicles and personnel, the complex was fashioned from fire-retardant and fireproof materials, making it one of the most fire-safe structures in the country.

What a structure it is: 680 feet underground; three stories tall; can house over 400 people, can stop an atomic bomb; and has two very long entry halls. It is not Superman's cave, although he would be proud of it. It is the NORAD North Bay Underground Complex, Ontario Canada.

The Norad North Bay Underground Complex is the most extraordinary military installation ever built in Canada. During the Cold War, Canada was in an unenviable geographic position, lying directly between the Cold War's principal adversaries, the Soviet Union and United States. This meant if the war turned "hot", Canada would become a major nuclear battleground: to reach their American targets—cities, military bases and industrial installations—Soviet nuclear weapon-armed bombers would have to cross Canadian airspace. Meanwhile U.S. interceptors would swarm the airspace to shoot the attackers down.

The 19-tonne blast door into the main entrance is opened easily.
PHOTO: CANADIAN FORCES MUSEUM OF AEROSPACE DEFENCE—NBC72-1301

"You had everything you needed there. There was a barber shop, a gym, cafeteria, and doctors' offices. We assumed that if we had to stay there we could go three weeks or more without needing supplies," said Marshall Swartz of Bracebridge, Ont., who was stationed at the underground complex three times.

Traffic in the Tunnel

The complex also had all it needed for running a war—a command post, intelligence centre, briefing rooms and a telephone network. It used civilian hydro electricity but had two banks of batteries to provide electricity in case of a power failure. They were backed up by generators that could run on diesel or natural gas.

“We had a reservoir down there for cooling the equipment and the air. We called that our lake. We had a rowboat – and this was our navy.”

But the most impressive credential to the selection committee was its geology. Here was a 2.6 billion-year-old rock formation of granite, one of the hardest rocks on the planet. They built an underground complex 60 storeys beneath the surface, capable, it was believed, of withstanding a four-megaton nuclear blast which would be 260 times more powerful than the atomic bomb dropped on Hiroshima.

The SAGE (Semi-Automatic Ground Environment) system was complex and large. Most of all, it had to operate out of a secure facility. After a Canada-wide survey was conducted, North Bay was selected to house the facility in part because there already was an air force base, eliminating the need to build one. As well, North Bay was a rail, highway and telecommunications crossroads and nearby Trout Lake offered all the water needed to cool the complex.

The UGC cost was $51 million of which Canada paid one third and the U.S. paid the rest. It always had a Canadian in charge and a U.S. officer as second-in-command, mirroring Norad headquarters in Colorado which is overseen by an American general with a Canadian lieutenant-general as his deputy. Canadian and American military personnel started working in the complex Oct. 1, 1963, and continued 24 hours a day, seven days a week until October 2006. “

A small section of the SAGE computer.

The SAGE computer system consisted of two huge computers nicknamed Bonnie and Clyde taking up 11,900 square feet. Everything that flew in the northern Norad region had to be identified in two minutes. If not, fighter aircraft, kept fully fuelled and fully armed, were scrambled. The aircraft and the pilots were stationed in a Quick Reaction Alert hangar at the end of the runways. They were expected to be airborne in five minutes.

From the 1950s into the 1990s, the military base was the largest employer in North Bay which today has a population of about 53,000.

The SAGE computers were eventually replaced by the Regional Operation Control Centre (ROCC). It was a more versatile system that was substantially smaller than SAGE and took up floor space equal to about two houses.

Plans to replace the Underground Complex started in the 1990s. Its computer and communications systems were no longer state-of-the-art and the cost of running such a large facility underground was becoming uncontrollable.

A new above-ground building was built and on Oct. 26, 2006, Colonel Rick Pitre, the base commander, led a symbolic parade of complex staff out of the UGC for the last time. During its 43 years of operation, about 17,000 Canadian and U.S. military personnel had worked there.

Prime Minister Pierre Trudeau and his wife Margaret tour the underground complex, June 17, 1973.
PHOTO: LIBRARY AND ARCHIVES CANADA—E010858633

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The Hole is still there but all the equipment and furniture has been taken out. All that remains are the cooling and ventilating systems that only maintenance workers are allowed to visit.

Norad North Bay Under Ground Complex

The complex (which still exists) comprises two sections. The “Main Installation” is a three-story, figure-eight shaped building inside a 430 foot long (131 meter), 230 foot wide (70.1 meter), 5.4 story (54 feet, 16.5 meter) high cave. The “Power Cavern”, which provides life support and utility services to the

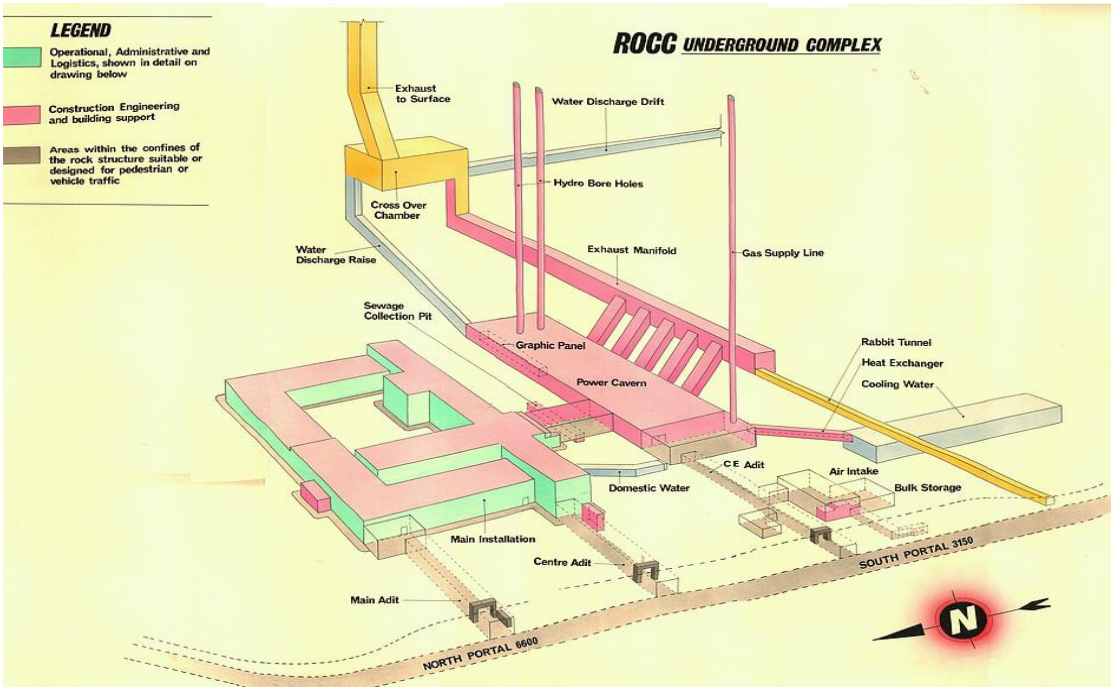
complex, is a 401 ft. long (122.23 meter), 50 ft. wide (15.24 meter), 2.7 story (27 ft, 8.23 meter) high chamber. Taken together the complex encompasses over 6 million cubic feet.

Access to the complex is via a 6,600 ft. long (2,012 meter) North Tunnel from the air base, and a 3,150 ft .long (960 meter) South Tunnel from the city. The tunnels meet; the idea was if a nuclear weapon struck the air base the blast would shoot down the North Tunnel and out the South Tunnel, minimizing blast damage to the complex and its structures. In fact, the three-story Main Installation is mounted off the ground on specially designed pillars (not springs) to reduce seismic shock—on 1 January 2000, North Bay was rattled like a jar of pennies by an earthquake registering 5.2 on the Richter scale, yet occupants in the Main Installation did not feel a thing.

As an added measure against damage from a nuclear blast, as well as for the security of the installation, the complex is situated behind three 19-ton steel bank vault-type doors. The doors are normally kept open, and shut in times of emergency. Despite weighing as much as a medium-size bulldozer, each door is so well balanced it can be moved effortlessly.

Features of the Norad North Bay Underground Complex

Air defence operations officially began in the UGC on 1 October 1963, and continued around-the-clock, unabated for 43 years until October 2006. There was nothing like it in NORAD (the Cheyenne Mountain Complex did not officially open until 1966) or in Canada, and it attracted world-wide interest. As well as air defence facilities, the Main Installation encompassed a barber shop, small medical center, gym, cafeteria, chaplain's office, and other amenities for the complex's personnel (important since the complex was designed to seal up in time of war), plus a command post, intelligence center, briefing rooms, a telephone switching network large enough to handle a town of 30,000 people, and a national civil defence warning center.



When sealed up, the Underground Complex could support 400 people for upwards of four weeks cut off from the outside world. Since Canada would be the front line for the air defence of North America if the Cold War turned “hot”, it was crucial to ensure that air defence operations would continue as long as possible. A critical factor was electrical power.

Normally, the complex gets its power from the outside civilian hydro-electric grid. In the event of a power failure, such as the August 2003 blackout that hobbled the northeast United States and Canada, two banks of 194 batteries automatically switch on and provide electricity to the complex while an electrical generator is readied to take the load. Once a generator is running, it can power the complex without stopping as long as it has fuel either diesel or natural gas.

CONVERSION ADVANTAGES of this site:

Federally owned facility mothballed for 12 years

Upkeep: $500,000 + annually

NDHQ interested in releasing ownership

Situated beneath 60 storeys of granite

Cooling system utilizes water from a neighbouring lake

Access by road, rail and air

No high-target neighbours or large population centres nearby

Built to world-class standards that may require only minimal upgrades

Space at least double estimated current requirement for media storage

Local construction industry capable of site remediation/customization

Existing data systems can support installation of server(s)

Bilingual college/university infrastructure to support ongoing staffing needs

‘Swords into ploughshares’ optics are timely.