

DOUBLE DECADE OF AIR DEFENCE

by Major George H. Lowes

On 1 June at 1237Z two CF-101 Voodoos of 416 (AW) Fighter Squadron from CFB Chatham, N.B., were winging their way northeastward to do a visual identification run on an "unknown" reported to be a few miles south of Anticosti Island. This run was being controlled by a Canadian forces air weapons director at the 22nd NORAD region's back up intercepter control (BUIC) centre at St. Margarets, N.B.

A Voodoo from 410 Operational Training Squadron was making his first pass at another from 425 (AW) Fighter Squadron flying as a target. Both these aircraft had taken off from their home base at CFB Bagotville a half hour earlier and were under the control of a USAF captain at the 22nd NORAD region's control centre at North Bay, Ont.

Nearly 3,000 miles to the west a pair of CF-101s from 409 (AW) Squadron of CFB Comox, B.C., had just picked up the USAF B-57 that was flying as a friendly enemy in a

25th NORAD region exercise. At the same time a CF-100 from 414 (EW) Squadron, Uplands, was being bounced by a pair of USAF F-106s taking part in the same exercise.

At the end of their midnight shift, a team of radar technicians had just finished a test on a height finder at CFB Beausejour, Man., while over 1,000 miles to the east at CFS Senneterre, one of the 22nd NORAD region's BUIC sites, the control centre was fully manned to take part in a routine training exercise.

These are the sort of activities that could be taking place in Air Defence Command (ADC), the Canadian component of the North American Air Defence Command on 1 June 1971.

A milestone in history has been reached.

Exactly two decades before, 1 June 1951, ADC had been formed at RCAF Station St. Hubert, Que.

FORERUNNER

It grew out of the Air Defence Group which had come into being 1 December 1948, under the command of Group Captain W. R. MacBrien. The air defence group was primarily responsible for writing and then implementing the air defence plans of Canada.

The first postwar fighter squadron, 410, was also formed at St. Hubert 1 December 1948 and was equipped with the de-Havilland *Vampire* jet.

By the year's end the minister of national defence had also announced that the F-86 *Sabre* was to be built by Canadair and the initial agreement had been reached with the United States to construct 33 radar sites across southern Canada and along the east coast, the Pinetree line.

The North Atlantic Treaty was signed on 4 April 1949 in Washington. North American and European defence was recognized as being a single concept. Canada, which had been one of the prime movers in the formation of NATO, became one of the 12 original members.

No. 421 (F) Squadron was formed on 15 September 1949 at Chatham and was equipped with *Vampires*.



Vampires were flown by regular and auxiliary squadrons

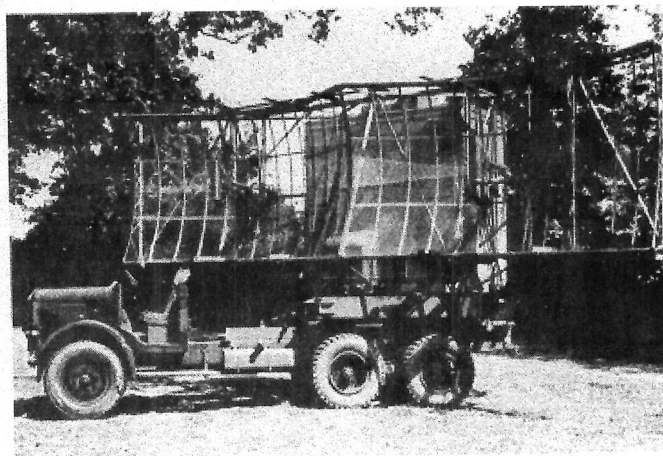


Chatham, N.B. squadron was first Vampire-equipped.

NUCLEAR

Eight days later the USSR exploded its first atomic bomb and a new dimension was added to the air defence requirements of Canada.

When the Air Defence Group moved to RCAF Station St. Hubert from Air Force Headquarters, Ottawa, on 1 November 1949, it controlled 410 (F) Squadron, 438 (Auxiliary) Squadron and 1 Air Control and Warning Unit, all at St. Hubert; 421 (F) Squadron, 1 Operational Training Unit and 2 Air Control and Warning Unit at Chatham; 3 Air Control and Warning Unit at Greenwood, N.S., and, in Montreal, 1 Radar and Communications Unit and 2401 (Auxiliary) Radar Squadron. St. Hubert's 410 and Chatham's 421 squadrons were flying *Vampires* and the AC&W units were using the mobile AMES 11 truck convoy radars.



AMES 11 mobile AC & W units pre-dated fixed sites.

CANUCK

In January 1950 another youngster that was to become an ADC veteran took flight. The Avro CF-100 began flight tests from Malton, Ont. This first Canadian designed and built jet fighter to enter squadron service was to become the mainstay of ADC during the '50s. At its peak use, there were nine CF-100 squadrons on the ADC inventory.

June 1950, brought defence to the front pages of every newspaper in Canada. On the first day of that eventful month the first Canada-US emergency defence plan was approved. On the 25th day, the cold war ended with the North Korean invasion of South Korea and a hot war, in which Canadian servicemen were to be embroiled, had been kindled.

For the balance of 1950, auxiliary squadrons and technical training units were formed and placed under the control of Air Defence Group.

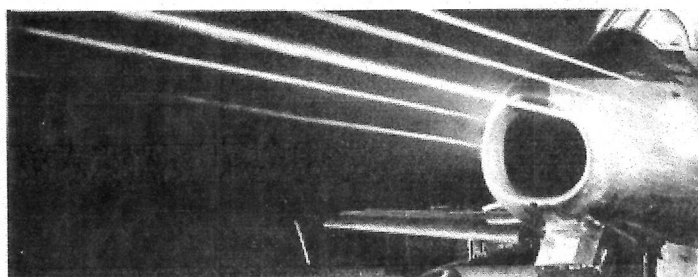
The new year continued the growth of air defence forces. On 8 January 416 (F) Squadron formed at Uplands and was equipped with the old workhorses, F-51 *Mustangs*. The next month, the Canadian-US permanent joint board of defence gave its approval to the Pinetree plan with the final agreement coming in August 1951. While the permanent sites were under construction a temporary network of five AMES 11 radars went into operation.



Canadian built CF-100 became mainstay of air defence.

SABRE

In January 421 Squadron moved from Chatham to RAF Station Odiham and became the first RCAF squadron to be sent overseas in peacetime. They returned in December for ultimate re-equipping with *Sabre* aircraft.

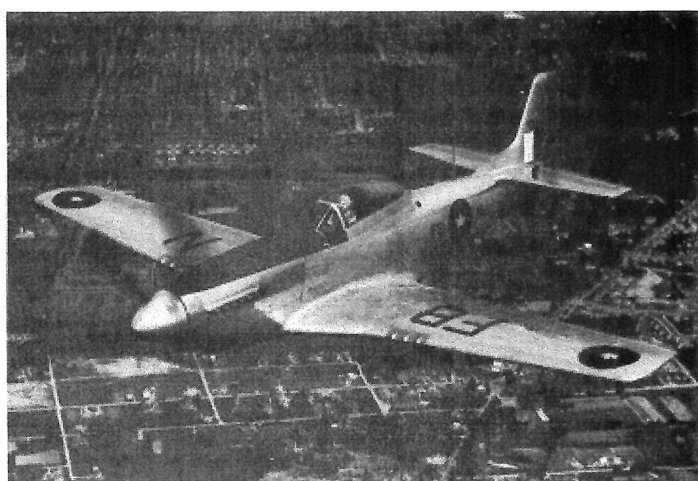


Sabre fire-power.

In March 441 (F) Squadron was added to the air defence inventory and in May, 410 Squadron began re-arming with F-86 *Sabres*, the first RCAF squadron so to do.

On 1 June 1951, Air Defence Group achieved command status and Air Vice-Marshal C. R. Dunlap became the first air officer commanding.

During this period A/V/M Dunlap commanded more auxiliary squadrons than regular air force units. On 1 July, 12 Group, headquartered in Vancouver, B. C., was redesignated 12 Air Defence Group and ADC became a truly national command.



Performance, sleek lines of Mustangs won hearts of pilots.

BULLDOZER

The next month, A/V/M A. L. James succeeded A/V/M Dunlap as AOC. In the words of a previous ADC staff officer "he inherited what could be described as the 'bulldozer' era of ADC. Everywhere shovels and cranes, hammers and graders were busy digging, erecting, paving and landscaping." Old second world war stations such as North Bay and Bagotville took on the look of a modern jet base. The sound of Orenda jet engines echoed off the rocks and lakes of the Canadian shield as the CF-100s and *Sabres* roared into the challenging sky.

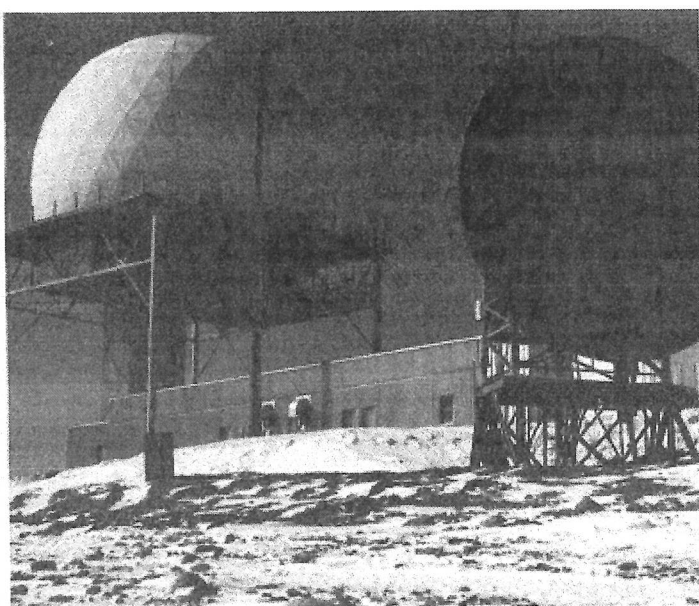
For the last months of 1951, ADC was proving itself to be a lusty, if somewhat noisy, baby. In November, 410 Squadron was transferred to North Luffenham in England as part 1 (Fighter) Wing, the first of the four wings of Canada's NATO 1 Air Division. The close relationship between "Air Div" and ADC started with that move. Both were charged with the air defence of Canada; the one indirectly in Europe, the other in North America.

The year 1952 saw the Pinetree radar stations in the final stages of construction. Lac St. Denis had the distinction of being the first one to open.

This was also the year of the CF-100. No. 3 Operational Training Unit (OTU) opened its doors at North Bay and ADC concentrated on providing an all weather, round the clock air defence for Canada.

The early months of all weather training were difficult — the air and ground crews had to fall back on their own wits and devices to perfect the air defence system. They followed and filled the footsteps of those earlier Canadian airmen who had challenged the darkness of the Scottish skies in their Bolton Paul *Defiants* in the early days of night fighting in WW 2. Though the CF-100 was never to fire a shot in anger, some of the tactics developed by 3 OTU have lasted over the 20 years of ADC.

The first CF-100 Squadron, No. 445, was formed at North Bay 1 April '52. All weather air defence became a reality for Canada. Over the next two years eight more CF-100 squadrons were formed. During August 1953, Leap Frog IV took place and the last of the 12 *Sabre* squadrons formed under the aegis of ADC took their place at 4 Wing, Baden Soellingen, Germany. Canada's air defence contribution to NATO was complete. During 1954 the complete Pinetree radar system became operational. In the summer of 1954 ADC moved to its new headquarters building (now Mobile Command headquarters) at St. Hubert.



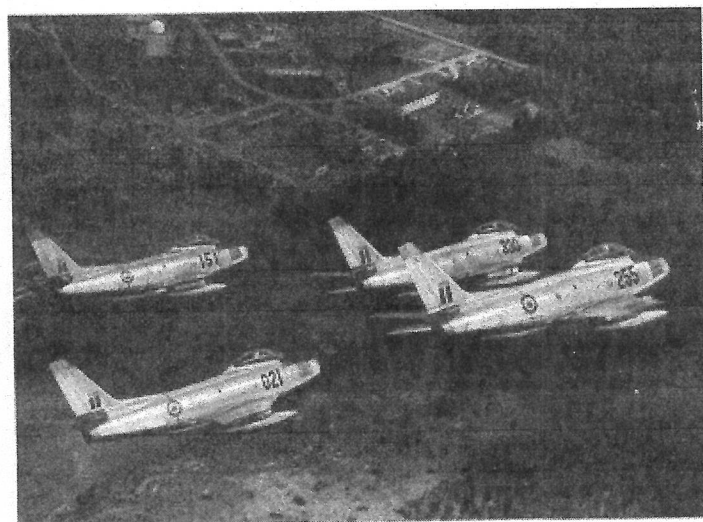
In mid-1957 the DEW line was operationally ready.

DEW LINE

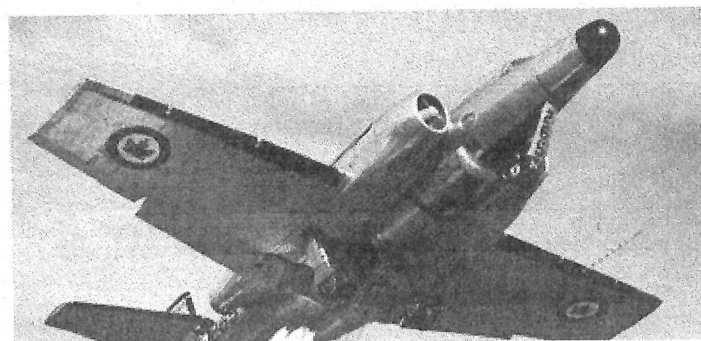
In 1954 construction began on both early warning lines — the distant early warning (DEW) line along the 69th parallel and the mid-Canada line along the 55th parallel. (The DEW Line was technically ready for operation in July 1957 and the MCL was declared operational on 1 January 1958.)

In the fall of the year, two more veterans joined the ADC family — 425 (AW) Squadron was formed on 1 October, while 409 (AW) Squadron came into being one month later.

During 1955 ADC continued its growth as new units and squadrons were formed and in some cases moved to new locations. In January, A/V/M L. E. Wray took command from



In late '50s Sabres were replaced by CF-100s in some ADC and air division squadrons.



the acting AOC, A/C C. L. Annis.

In 1956 ADC and airdiv were once more to become closely paired as the overseas division received the first of the four CF-100 squadrons that were assigned to NATO. Four *Sabre* squadrons were disbanded and then reformed as CF-100 squadrons in Canada. These Nimble Bat trans-Atlantic flights took place over the next year and one result was that 416 Squadron from 2 (F) Wing rejoined ADC. It was reformed at St. Hubert flying the CF-100 in February 1957.

On 1 August 1957 a joint announcement by the minister of national defence and the US secretary of defence stated the two countries had agreed to integrate the operational control of their air defence forces and set up an integrated command structure. The North American Air Defence Command (NORAD) was born and ADC became the Canadian component. USAF General Earl E. Partridge was named commander in chief and Air Marshal C. R. Slemon of the RCAF became his deputy. (The NORAD agreement was formally ratified in May 1958).

BEEP...BEEP...BEEP

On 4 October 1957, the USSR orbited Sputnik I and the space age, long a dream of science fiction writers, became a reality. Yet a further dimension was added to the defence concept for the North American continent.

The new year recognized another threat as a reality. The ICBM had become a practical weapon. In January, the ballistic missile early warning system (BMEWS) was authorized to add to NORAD's detection capability. By June 1958 the first semi-automatic ground environment (SAGE) sector in NORAD became operational. The days of the manual plotting boards and manual control of fighters were now numbered.

That August A/V/M W. R. MacBrien was named AOC of ADC and commander of the northern NORAD region and, under the NORAD agreement, he had full operational control of the USAF units within the region's boundaries.

The following month the government decision was made to scrap the Avro CF-105 *Arrow* and add the Bomarc surface to air missile to ADC weaponry. Two Bomarc bases were authorized, one at North Bay, Ont., the other at La Macaza, Que. It was also decided to build new long range and gap-filler radars for the Pinetree line and to construct an underground SAGE site at North Bay.

"Co-manning" became a stock word in ADC in 1959 as several hundred of the command's personnel were assigned to NORAD positions. The command, as in the past, changed its look as units were reassigned. The auxiliary squadrons were deleted from ADC control and added to Air Transport Command.

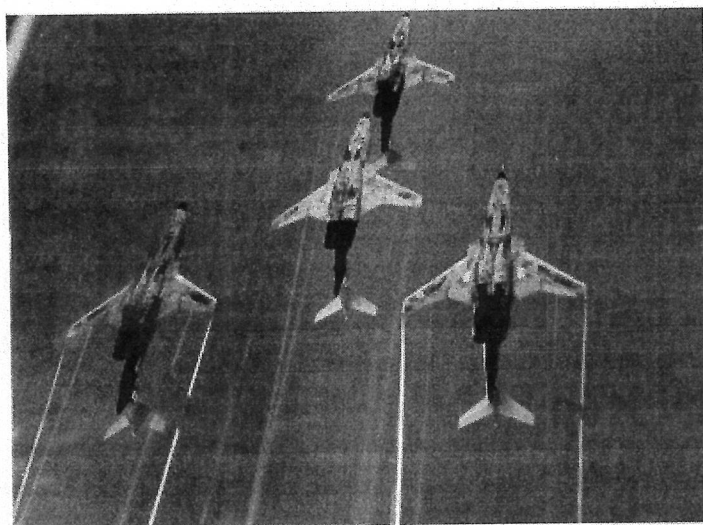
In the ninth year of ADC's existence, during the spring and summer months, more realignments took place. The ground observer corps, which had been formed in 1952, was disbanded in areas south of the 55th parallel. This volunteer corps had provided a valuable service both to air defence and to search and rescue operations during its existence. But it had become a victim of technological progress.

A DECADE

The year 1961 marked the 10th anniversary of ADC's formation. During the first decade the command had grown from a fledgling to a potent air defence force. But as ADC marked its birthday, it was again in a transitional period. The first of the CF-100 squadrons was disbanded in April and three more were to go during the year.

VOODOO

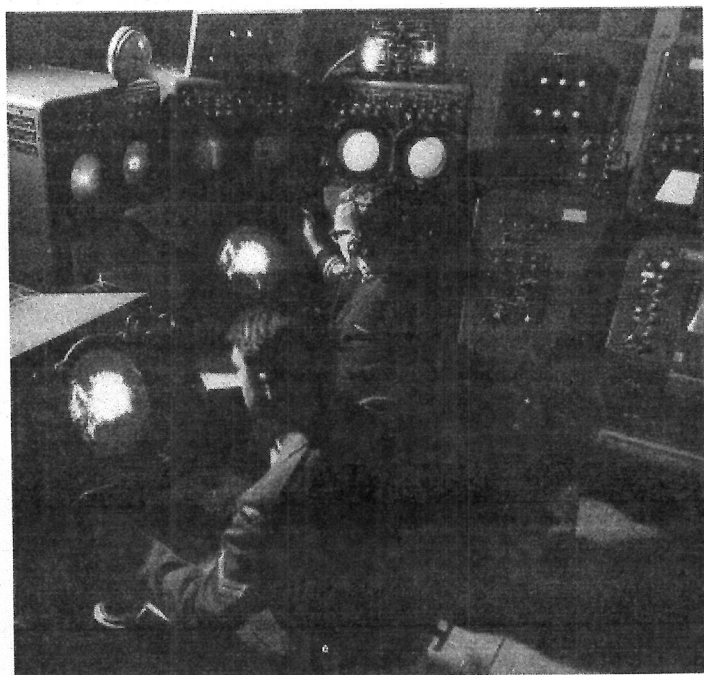
During its anniversary month, ADC was told that the CF-100 was to be replaced by the McDonnell F-101B *Voodoo*, a supersonic all weather fighter that the USAF used for air defence. Canada would receive 66 of the *Voodoos* in exchange for taking over the operation of 11 USAF-manned Pinetree radar sites in Canada. In September, 425 Squadron, which had been disbanded in April, was reformed and began training on the new birds at Hamilton AFB, California. The Alouettes of 425 were assigned the job of training the other four squadrons to be equipped with the CF-101B, as it became known in its RCAF colours, at RCAF Station Namao, Alta.



425 Squadron received first Voodoos, trained other squadrons.



On 1 October the first of the USAF manned radar sites at Beausejour, Man., was officially handed over to the RCAF. A month later, 410 Squadron commenced its conversion to the *Voodoo* and, on Christmas Day 1961, it took up its operational alert capability at Uplands.

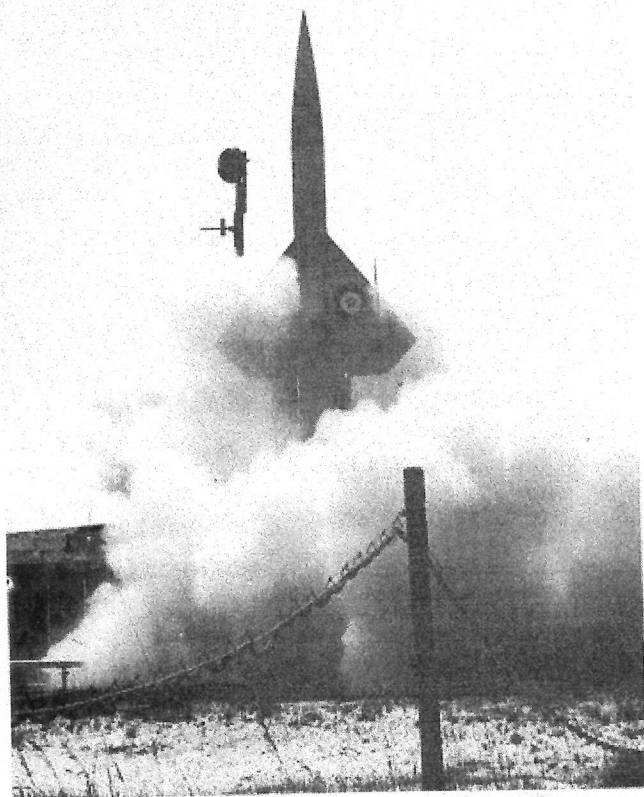


Manning the scopes at CFS Beausejour, Man.

The training on the CF-101 continued during the first months of 1962 and in June ADC again became involved in the revision of airdiv. The first CF-104 course commenced at Cold Lake. The MND earlier had announced that the air division was to take on the role of strike/attack/reconnaissance, equipped with the supersonic Lockheed F-104G *Super Starfighter* built under licence in Canada with the training carried out by ADC.

REGION

In August, northern NORAD region (NNR) was set up as separate command responsibility and later located in the new underground complex at North Bay. A/C J. A. Harvey, ADC chief of staff, was promoted to A/V/M and named commander of NNR. In September A/V/M M. M. Hendrick succeeded A/V/M MacBrien as AOC. During this month 414 squadron with its complement of *Voodoos* moved to its home base at North Bay.



Bomarc squadrons serve ADC.

In October, 447 (SAM) Squadron at La Macaza officially was assigned to ADC. The last weeks of that month found ADC in an increased alert posture as the Cuban missile crisis came to a boil and then slowly simmered down. In November 416 Squadron took up residence at its home base of Chatham. The same month the first CF-104 course graduated and prepared to move to 3 Wing in Germany. The ADC/airdiv pipeline for pilots was again flowing in full force.

By the summer of 1963 ADC had taken on a new look. All five *Voodoo* squadrons were in position at Comox, North Bay, Uplands, Bagotville and Chatham. NNR had physically moved to its new underground home at North Bay. The last of the 11 USAF-manned radar sites had been turned over in June. All the Pinetree sites with the exception of Gander had either gone or were going over to the SAGE system. In September "The Hole" at North Bay was formally turned over to ADC and assigned to the operational control of northern NORAD region.

CHANGE

ADC took a breather but only for the balance of the year — 1964 was bringing more changes within the command. On the last day of March, 410 Squadron at Uplands was disbanded, its people and aircraft being absorbed by 409, 416 and 425 squadrons. The next day, four Pinetree radar stations were disbanded — Beaverbank, N.S.; Edgar, Ont.; St. Sylvestre and Parent in Quebec. On 10 April four mid-Canada line western sites ceased operation. On 1 June Comox came under ADC command, while one month later Uplands left ADC to become part of Air Transport Command. The last day of July 414 Squadron disbanded at CFB North Bay. ADC had two less squadrons but the same number of *Voodoos*. In addition to the three squadrons there was a *Voodoo* operational training unit at Bagotville.

In August A/V/M M. D. Lister became AOC upon the retirement of A/V/M Hendrick.

The year 1965 found ADC still in the process of change as the remaining 1,000-mile long eastern section of the mid-Canada line was closed. New longer range search radars made the MCL redundant. The command pursued an active flying program and took part in the USAF William Tell weapons meet for the first time.

As the second half of the '60s began, ADC went through another modification. In the summer of 1966 the command of ADC passed to A/V/M M. E. Pollard who also became "dual hatted" as commander of the northern NORAD region. Not only was the commander two hatted but the headquarters was to be physically relocated with the NNR at North Bay. The advance party from ADCHQ moved to the Bay in August, but because of accommodation problems there the rear party was not in position until 31 March 1969.

That November, two of the 11 former USAF operated radar sites were closed, Puntzi Mountain, B.C., and Pagwa, Ont. At both sites the closing was achieved in record time, beating the deadline by 30 days.

During Canada's centennial year the command took part in many of the celebrations across the land. On many a radome the centennial symbol blossomed as one visible means of saying "Happy Birthday, Canada", while aircraft of ADC took part in many local aerial salutes to confederation.

BUIC

The year 1968 found air defence again moving forward. Back up interceptor control (BUIC) sites at Senneterre, Que., and St. Margarets, N.B., became operational. The BUIC system is designed to provide an alternate control system. Should the SAGE control centres become inoperable, the BUIC sites take over. In August the Canadian switching network (CSN) achieved initial operating status. The CSN provided improved voice communications for the air defence forces.

The CSN was completed in April 1970 and linked with SAGE 1 American automatic voice network (Autovon) to provide continent-wide coverage.

On 1 February 1968, the RCAF Air Defence Command became the Canadian Forces Air Defence Command as the unification of the forces took place. A/V/M Pollard became a major-general in the new Canadian rank structure.

COMPETITIONS

The 1968 Call Shot meet was held at CFB Bagotville to determine the operational effectiveness of ADC forces, both air and ground environments. This was the first command wide competition, held from one base, since ADC acquired supersonic *Voodoos*. The meet was successful. No. 409 Squadron from Comox was named the best interceptor squadron, and their control team from 25th NORAD region won the controllers' prize. An aircrew team from 425 Squadron won the award as top crew while their groundcrews captured first place in the support and weapons loading categories.

Another award-winning ADC organization that year was the satellite tracking unit at CFB Cold Lake. This unit, whose Baker Nunn camera can photograph objects the size of a basketball over 30,000 miles away in space, won the NORAD plaque for outstanding achievement.

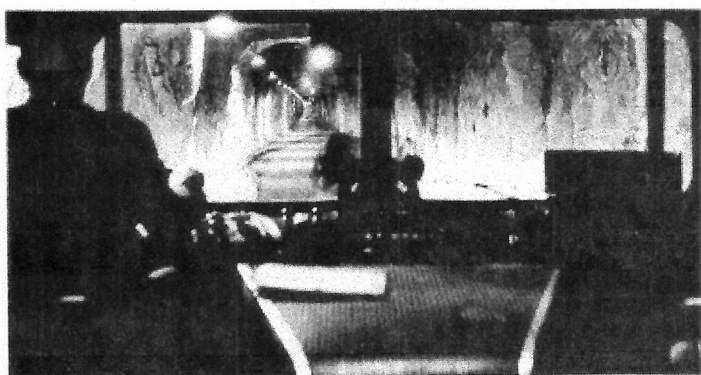
In recognition of the continued threat to North America, Canada and the US renewed the NORAD agreement for another five years in September, with the proviso that either partner could withdraw on a year's notice.

Later that month it was announced that Major-General Maurice Lipton would be the next commander of ADC and the northern NORAD region. He took command in January 1969.

REORGANIZE

During the year ADC continued to fulfil its primary role of providing combat-ready air defence forces to meet Canada's commitments, conducting operational training programs and developing, evaluating and recommending tactical doctrine for these forces.

In September NORAD announced a major reconfiguration of its regions and divisions. Two months later another NORAD reorganization took place. These moves were dictated by the governmental decisions to economize in the field of air defence. The end result was that the NORAD divisions disappeared, the eastern, western and northern central regions



By bus into 22nd NORAD underground complex, North Bay.

disappeared and the remaining reconfigured regions received a numerical designation. Northern region became the 22nd NORAD region, and the commander of ADC was now the commander of the 22nd. In the other cross-border regions Canadian brigadier-generals were named deputy commanders, while the 22nd retained its USAF deputy. In addition three cross-border BUIC sites, though physically located in the USA, received Canadian commanders.

VOODOO SWAP

In 1970 ADC began operation Peace Wings, a program whereby the fleet of CF-101Bs was to be replaced by the improved F-101F model. The first of these 66 F models arrived at CFB Bagotville in November. (Peace Wings should fold by the end of 1971.)

In May the second Call Shot air defence competition

was held at CFB Bagotville. An innovation for this year was the use of control teams from the BUIC sites at Othello, Wash.; Senneterre, Que., and St. Margarets, N.B. The teams worked from CFS Senneterre. The top squadron again was 409 and this time the top aircrew were 409 Night Hawks as well. No. 425 Squadron took top honours in servicing and weapons loading while the top control team was fielded by Senneterre.

The Canadian BUIC staffs achieved another first. Both Senneterre and St. Margarets were awarded the NORAD plaque for outstanding performance. They were the first BUIC staffs in NORAD so honoured.

In September CFS Goose Bay became a part of ADC as the Canadian forces took over a greater responsibility in the operation of the manual control centre there. The command of this air defence centre also became Canadian.

The USAF held the first William Tell meet since 1965 and CF ADC was invited to compete. No. 409 Squadron, as winners of Call Shot, represented the command and Canada, while their control team came from Othello, Wash. Competing against the best of the USAF, 409 aircrews placed second in the F-101 category and their weapons loading team took top honours.



409 Squadron represented ADC in 1970 William Tell meet.

The 416 Squadron at CFB Chatham was honoured by presentation of the NORAD plaque for outstanding performance. Another ADC squadron had the distinction of overflying nearly all of North America at some time during the year. No. 414 Electronic Warfare Squadron from Uplands had caused many a weapons controller anxious moments as its CF-100s flew in their role of friendly enemies. Not only did the 414 crews test CF ADC but USAF air defence teams faced the electronic challenge of these Canadian "invaders".

MORE RECORDS

In other areas of activity, and particularly that of ground transport, ADC units were setting records. CFS Foymount completed over four years of accident-free driving. CFS Lowther also joined the exclusive 1,000,000-hour accident-free club. In the electronic field, improved equipment was being placed in use.

As the year closed ADC was moving ahead on Peace Wings and looking forward to meeting the challenges of the new year.

On its 20th anniversary Air Defence Command stands ready to live up to its motto of "detect and destroy" and to give Canada the best possible air defence.