

## **Byrd Station, Antarctica, Operation Deep Freeze 1966 (October 1965-October 1966)**

by

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Dedicated to the memory of LT Robert B. Hunt, MC, USNR (1940-2004)

### **BACKGROUND**

During this twelve-month period there were 31 stations in Antarctica operated by 11 nations. The United States Navy Antarctic Support Activities (ASA) crew that operated Byrd station for the United States Antarctic Research Program (USARP) was a very small reflection of a Seabee battalion: a Civil Engineer Corps (CEC) officer, a Medical Corps (MC) officer, a group VIII (as the Seabees were classified in those days) chief, eight other group VIII personnel, and a support echelon of a corpsman, a cook, a radioman, an electronics technician, a storekeeper, and two machinist mates (to operate the power plant). Twelve scientific personnel (USARPs) also spent most of Operation Deep Freeze 1966 at the station. For short periods during the Austral Summer (October 1965-February 1966) the number of people at the station could be more than double the permanent contingent of 30.

There were times when weather kept planes grounded. Since there were no satellites atmospheric conditions could cut off other communication making Antarctic stations like Byrd totally isolated physically and electronically for days at a time.

The Operation Deep Freeze 1966 contingent was the fifth to winterover since the station under the snow was completed. The ASA crew was involved with four tasks that were accomplished for the first time in the history of Antarctica, and in two areas of very significant research. These were a crosswind skiway, a lead mine, a chapel under the snow, support of a satellite facility (both a first and an area of significant research), and a night landing.

### **BYRD STATION FINAL REPORT, SUMMER SEASON, OPERATION DEEP FREEZE 1966**

**Crosswind Skiway:** “**10 Nov. 1965 Crosswind skiway operational. This is the first such skiway at an inland station. LCDR Berger made the first landing.**” During the Austral summer the Seabees at Byrd constructed a crosswind skiway. It allowed Air Development Squadron SIX's (VX-6) ski equipped aircraft (C-130s that brought cargo and personnel from McMurdo and C-47s and C-117s that ferried scientific parties to outlying regions) to land and takeoff when wind conditions were unfavorable for the main skiway.

**The Lead Mine:** “**11 Jan. 1966 California Institute of Technology Traverse Party fielded.**” A researcher from the California Institute of Technology and four New Zealanders spent part of the Austral summer at Byrd coring deep into the ice (the cap at Byrd was over 5000 feet thick). The station crew supported the effort. The cores removed came from strata going back in time to the period prior to the Industrial Revolution. They were taken back to CalTech and subsequently Dr. Patterson used the data to help convince Congress to remove lead from gasoline. In the years since “the crew” (military and civilian) left Byrd many have stayed in touch and several reunions have been held. In a 2008 Christmas letter Ron Sefton the station's scientific leader wrote: “Chris, [one of the New Zealanders] and 3 others were on board to help do the infamous ‘lead mine’ north of the station ostensibly to determine contaminants in the snow layers subsequent to the industrial revolution. Seems that they were also looking for Nuke fallout from dirty Russian testing, but we didn't know that at the time.”

## BYRD STATION FINAL REPORT, WINTER SEASON, OPERATION DEEP FREEZE 1966

Isolation: **“25 Feb. RADM F. E. Bakutis, USN, COMNAVSUPFORANTARCTICA, closed Byrd Station for the winter.”** Manuscript by Robert B. Hunt, MD, *Winter 1966 At Byrd Station*, p. 1, “The closing created a sense of continuity. The 30 of us (18 sailors and 12 scientists) constitute the fifth party to winter beneath the snow at this station, and five earlier parties wintered at the old Byrd station six miles away.”

Chapel Under the Snow: **“15 May First service in station chapel. The ‘Chapel Under the Snow’ is the first chapel at an inland station.”** The Seabees at Byrd constructed a pulpit and related accessories allowing establishment of a small chapel in part of the building used for recreation. The buildings at Byrd Station had been constructed in a series of connected ice trenches that were covered with steel arches. Snow was blown over them to make a level surface. By Operation Deep Freeze 1966 snow accumulation was up to 30 feet over some arches and they were being crushed. The Chapel Under the Snow was the first chapel at an inland Antarctic station, and the first ever “under the snow.”

Winter support of a satellite facility: **“20-21 Aug. Completed last of winter night support trips to VLF Long Wire. Successful continuous oversnow support of outlying facility during austral winter a first in Antarctic history.”** During the Austral summer a satellite station was constructed eleven miles from Byrd by a detachment from NMCB 6, supported by men and equipment from the station. It was manned full time by two USARPs. The Byrd crew established the traverse from Byrd to the satellite using 2x4s spaced 100 yards apart and set into the ice. The system was necessary to allow supplies, equipment, and support personnel to reach the satellite, and to allow emergency evacuation if necessary during periods of whiteout, blizzards, or 24-hour-a-day winter blackness. After the sun reappeared in late August the satellite had been successfully supported thanks to this traverse. This success marked the first time in the history of the continent that an inland Antarctic Station had successfully supported a satellite facility through the Austral winter.

The Long Wire was two “wires” each several miles long placed a number of feet under the snow and perpendicular to each other. The satellite facility personnel were involved with very low frequency radio wave transmissions monitored by the long wire antenna under the snow. No one at the station knew that the purpose of this research was related to a new weapon—the nuclear submarine. The VLF data was used to develop means to communicate with submerged subs allowing them to remain under water for extended periods of time.

Night landing: **“12-13 Sep. Emergency air evacuation...Cdr D. Balish COMMANDING OFFICER, VX-6 in C-130/48319 accomplished first night landing at an inland station. The aircraft was on deck 34 minutes.”** One of the scientific personnel was diagnosed with acute appendicitis. An air evacuation was necessary. The Seabees at Byrd prepared the main skiway in the darkness and devised a method of lighting it. Empty 55-gallon fuel drums were cut in half and positioned along both sides of the skiway. When Navy 48319 communicated it was about 100 miles out the half drums were lighted by Seabees moving along the sides of the skiway in tracked vehicles using torches. The skiway preparation in total darkness, lighting, successful landing and take off at an inland station were all firsts in Antarctic history. The complete story of the whole operation appeared in *Our Navy* magazine, “Antarctic Rescue,” (July 1971), pp 43, 44, 67.

## PHOTOGRAPHS-OPERATION DEEP FREEZE 1966

1. The entrance to the equipment tunnel showing how the snow accumulation was crushing the steel arch. In the background are three structures that were built above the tunnels. From left to right Aurora Observation, Ionosphere, and the weather balloon inflation building. A fourth structure not above any tunnel is about a mile beyond these three. It was used to monitor Radio Noise from outer space. It's the tiny speck far in the distance just to the right of the weather balloon inflation building. Note the lack of horizon definition in these near whiteout conditions.



2. A section of crushed steel arch from the equipment tunnel is being hauled away so the ice can be hand chipped and tunnel height maintained.



3. The main tunnel: Arch deformation was not as bad as the equipment tunnel. A year's emergency supply of food is stored along the tunnel ice walls. These two photographs (October 1965 and September 1966) show the tunnel before and after the Seabees from the Deep Freeze 1966 crew worked on it. The building at the end of the tunnel contains the emergency generator.



4. Fully loaded C-47s required jet assisted takeoffs from the main skiway. The skis are clearly visible. On the snow they were often hard to see. The crosswind skiway is to the right of where this C-47 has lifted off.





5. The four Kiwis who labored in The Lead Mine found unusual ways to use the debris they removed. They used chain saws that ran on lead free fuel. Their humor was a welcome addition to the station.



6. Chapel Under the Snow: Dr. Robert Hunt, Assistant Officer-in-Charge and station medical officer conducting a lay service.





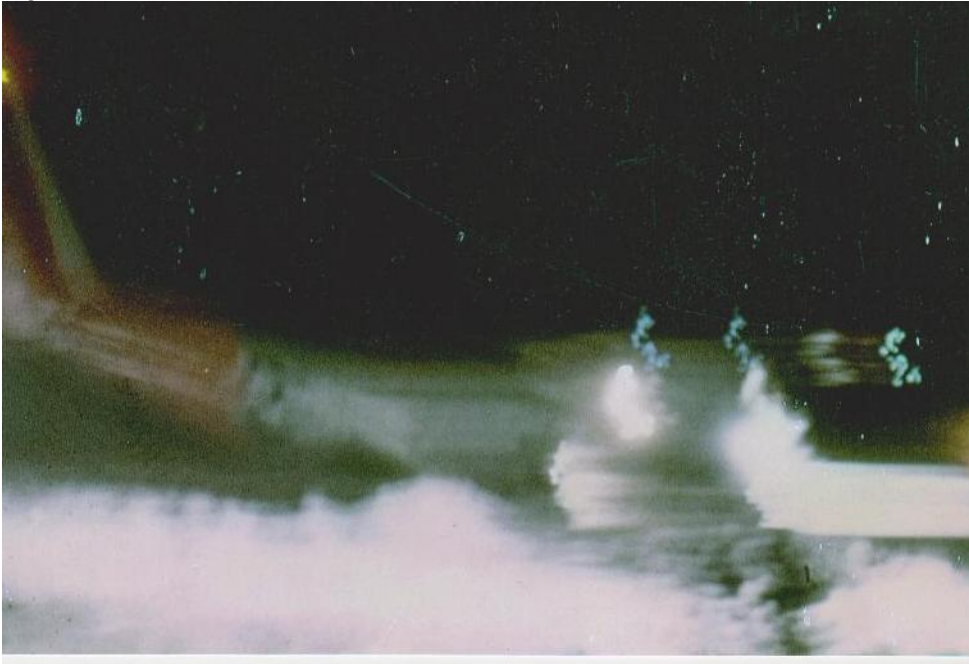
7. Six months after completion blowing snow has begun to cover the VLF Long Wire building. The average daily wind speed was 18 mph.



8. In good weather the traverse to the VLF Long Wire, affectionately known as “The Los Angeles Freeway,” was easy to use. But when the weather wasn’t good: [notes I made less than a week before leaving Byrd forever] “15 Oct My last ‘big thrill’ before departing-4 times not find trail-Ice, fog, whiteout-no surface definition, glare....Return trip lost twice, but by [getting out of the track master and leaving CDR Zircou in it and] walking perpendicular to vehicle both directions found tracks....Navigate by sun, wind, sastrugi. Gray, no ground, no horizon, no sky....4 miles from Byrd E on gas. No radio...1 mile to go [gas] ¼ past E. [Met] emergency vehicle coming to look [for us]. Return trip 1½ hours....Long wire 11 miles—total [driven] prob 30....Cdr Zircou said wouldn’t have missed exp. for the world, but surely didn’t want to do it again.”



9. Navy 48319 on the Byrd skiway just moments after landing in the darkness to evacuate a USARP. Note the blowing snow caused by the engines, and the star filled crystal clear Antarctic night.



10. This plaque hung in the galley and remained there. Top row: Station Scientific Leader (SSL), OIC, AOIC, Assistant SSL; second row: EOC Billy Partridge; rows three, four and five: Navy personnel; rows six and seven: USARPs.

