

## Magnetic search at Byrd Station

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A magnetic search was carried out between 9 and 19 January 1986 in the vicinity of Byrd surface camp (80°S 120°E). The goal

of the search was to locate two surveyed (i.e., scrapped) LGP-D8 caterpillar tractors buried beneath drifting snow. These venerable bulldozers had been used since the heyday of scientific operations at Byrd Station during the early 1960's. Because of the present replacement value of these D-8 tractors, it was considered economical to locate and repair them.

A detailed study of the surface camp archives revealed that the two D-8's, painted red and black and dubbed Betty and

Bertha, respectively, had been parked on a fuel berm across a taxiway from the surface camp at the conclusions of the DF-68 (i.e., Deep Freeze season September 1967 to February 1968) through DF-73 field seasons. The red D-8 was successfully excavated during austral summer 1977–1978 and, with makeshift repairs to one track, driven back to camp. At the end of this season several pieces of equipment were stored on top of the red D-8 “it being the highest point in camp.” No mention is made of either of the D-8’s in subsequent camp reports.

The present Byrd surface camp consists of movable modular quarters located on a roughly circular mound of snow centered approximately 850 meters true west of the now-buried north entrance to the M-1 tunnel of new Byrd Station (old Byrd Station, the International Geophysical Year surface camp, is located approximately 11 kilometers to the true northeast). The only structures of new Byrd Station still visible at the surface are the aurora tower, the balloon tower, a drilling tower, and several antenna towers located to the true southeast of the station. Directly true west of new Byrd Station is an elongated mound of snow approximately 300 meters true north-south by 150 meters true east-west and about 6 meters in height. This feature is labeled “Byrd Mountain” on the old station maps and is presumably the result of the original excavations at new Byrd Station.

Since no landmarks remained from the 1977–1978 austral summer and earlier surface camps, we surveyed from the balloon tower at new Byrd Station to the mapped position of the DF-73 navigation dome, positioning this surface camp at the windward slope of the present (austral summer 1985–1986) Byrd surface camp mound. It then became obvious that this snow mound was indeed the result of nearly 20 seasons of

drifting around a succession of surface camps. The magnetic search of this vicinity delineated an anomaly of over 2,000 gammas with sufficient breadth to be significant. Drilling on the anomaly with a SIPRE auger revealed a hard object at a depth of 5 meters. Unfortunately, no paint flecks, which might have given an indication of the color of the buried object, could be observed on the auger.

The magnetic search was then directed off the leeward side of the mound where it was thought that a line of nearly buried flags about 200 meters from the camp might have marked the old taxiway. However, the snow surface was physically flat in this area so that it was hard to believe that it could be covering a bulldozer that had been parked on a berm; and, in fact, nothing showed up magnetically until the leeward slope of the Byrd surface mound. This magnetic anomaly of nearly 4,000 gammas was sharper than the previous anomaly. The SIPRE auger hit something at just over 2 meters depth, and this time brought up flecks of black paint. Shortly after I left the Antarctic, a smaller bulldozer pushed away the snow cover and revealed the black D-8. Apparently, drifting snow around the fuel berm and supply lines along the former taxiway had helped form the leeward side of the Byrd surface camp mound. The confirmation of this anomaly makes it nearly certain that the other anomaly marks the position of the red D-8, because the magnetic signatures of the anomalies are similar, and the relative positions agree with the old camp diagrams.

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