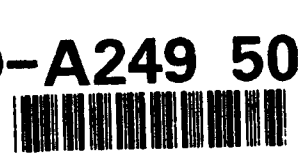
SPECIAL REPORT 91-24



CRREL

Potential Airfield Sites in Antarctica for Wheeled Aircraft

Charles Swithinbank

December 1991

For conversion of SI metric units to U.S./British customary units of measurement consult ASTM Standard E380, Metric Practice Guide, *published by the American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103.*

Special Report 91-24

U.S. Army Corps of Engineers
Cold Regions Research & Engineering Laboratory

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Prepared for
NATIONAL SCIENCE FOUNDATION

PREFACE

This report was prepared by Dr. Charles Swithinbank, CRREL consultant, under a continuing program of Antarctic Engineering Services for the Division of Polar Programs, National Science Foundation (DPP 87-001).

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Potential Airfield Sites in Antarctica for Wheeled Aircraft

CHARLES SWITHINBANK

INTRODUCTION

This is a report on a further search for possible or potential airfield sites in Antarctica, using aerial photographs and satellite images supplemented by other data. A few sites are on ice-free ground but the majority are on inland blue ice fields (Fig. 1).

Earlier studies of potential airfields on Antarctic glacier ice have been reported by Mellor and Swithinbank (1989). The attraction of a well-chosen blue-ice runway

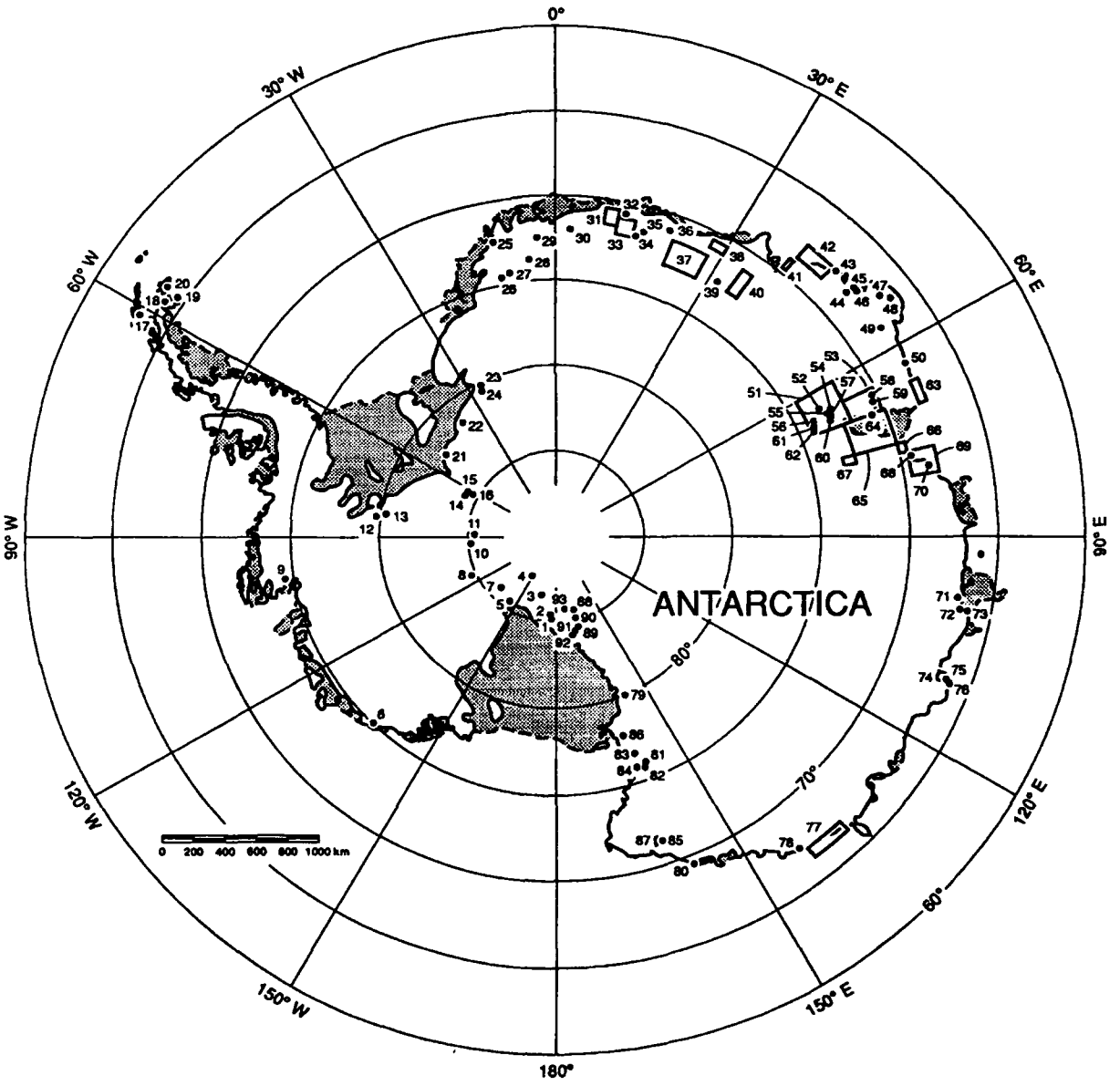


Figure 1. Location of possible sites. Rectangles describe areas containing extensive blue icefields that are only partially covered by aerial photography.

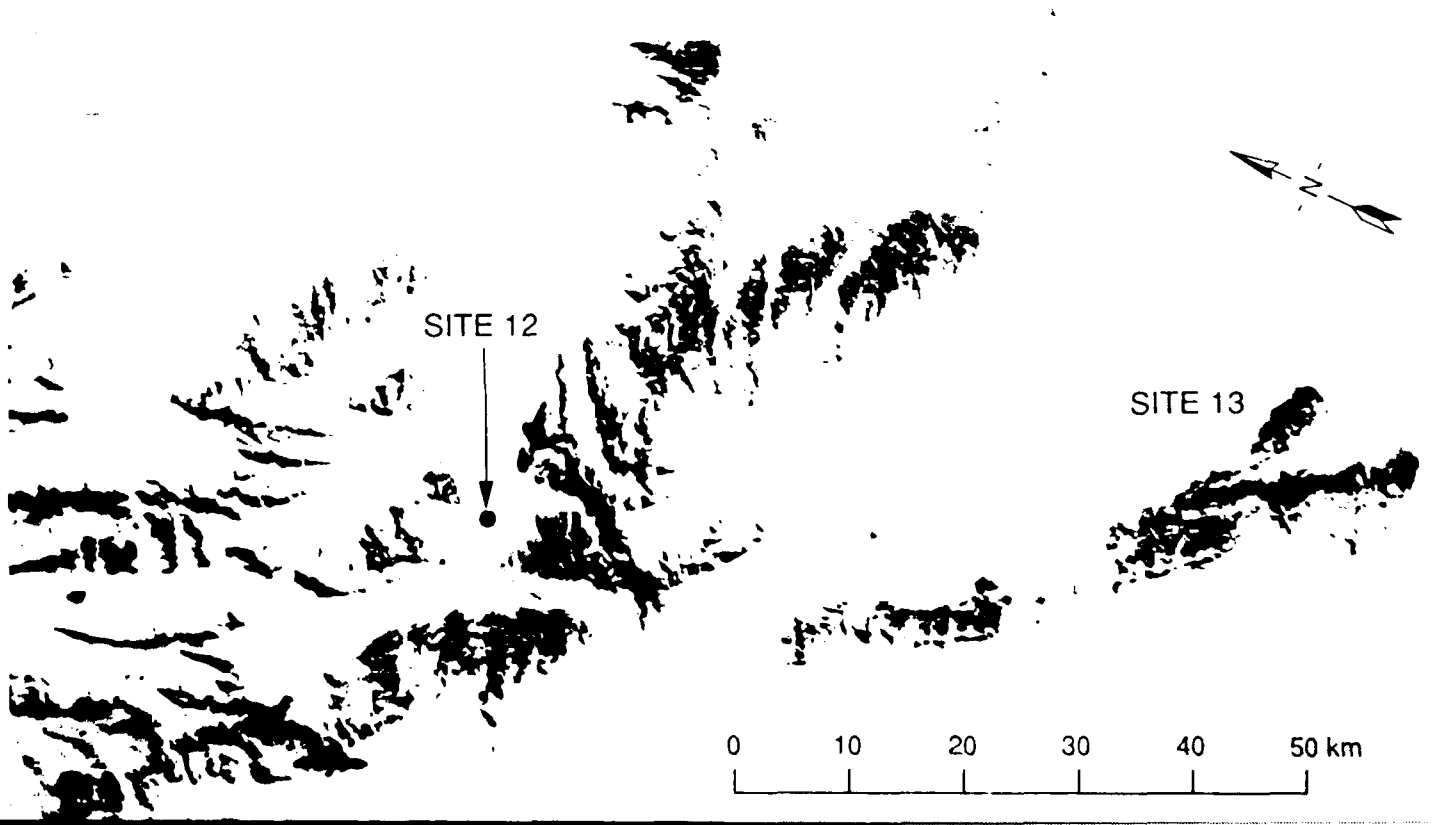
Figure 2. Wheel landing of LC-130 on Mill Glacier (Site 90), 26 January 1990. Photo: Malcolm Mellor.

is that construction and maintenance costs are almost nil (Mellor 1988). A number of sites have been found suitable for the operation of unmodified transport aircraft on wheels (Swithinbank 1989). An inland icefield site on Mill Glacier (85°09′S, 167°12′E) is in use for wheel landings by LC-130 aircraft (Fig. 2); another at Patriot Hills (80°19′S, 81°16′W) is in use for wheel landings by DC-6 aircraft.

In October, 1990 I examined approximately 20,000 aerial photographs at the SCAR Library of the U.S. Geological Survey in Reston, Virginia, and hundreds of maps and satellite images at the Scott Polar Research Institute, Cambridge. In December, 1990 I examined approximately 5000 aerial photographs at the Australian Surveying and Land Information Group in Canberra, and a further 2000 at the Australian Antarctic Division in Kingston, Tasmania.

The practical difficulty in identifying promising sites is shown by Figure 3: the only inland icefield in Antarctica that is routinely used for intercontinental

Figure 3. Heritage Range in the Ellsworth Mountains. Union Glacier (Site 12) and Patriot Hills (Site 13) are shown. Digitally enhanced false color composite image (NASA Landsat 1512-10425, 17 December 1973, Path 214, Row 119).



operations is represented by an inconspicuous blue patch on the image. Even an aerial photograph of the same icefield, reproduced as Figure 47 in Mellor and Swithinbank (1989), looks distinctly uninviting from a pilot's viewpoint.

The majority of useful aerial photographs are high obliques. A typical viewing distance for features on the ground is 15 km, of which 6 km represents the height of the aircraft. From this distance it is not possible to estimate, and sometimes even to perceive, slopes in the range 1–5%. Thus all judgments on the suitability of potential airfields must be speculative pending closer inspection. At this stage we have avoided rejecting doubtful sites if there is any chance that they could prove useful.

Problems of access to scattered data have precluded an exhaustive study of all possible airfield sites in Antarctica. Photography of some areas not covered by U.S. or Australian mapping photographs could be obtained from Southampton, Brussels, Oslo, Frankfurt, Moscow, Tokyo, and Wellington. However, selection of appropriate pictures would be very difficult without examining what is available. Thus for large areas of Antarctica, early Landsat images have represented the only accessible source. While these can be used to identify almost all blue icefields of sufficient size to be relevant in our context, it must be evident that viewing the landscape from the satellite's altitude of 900 km (600 miles) yields almost no information about the topography or surface conditions of an icefield. Coastal icefields in particular are liable to surface melting. Very few Landsat-4 and -5 images have been consulted because of the expense that would be incurred.

A large number of blue ice areas were found, but it can safely be predicted that most of them will prove unsuitable for transport aircraft on grounds of slope, grade change, length, crevasses, crosswinds, or obstructed approaches. Many, however, could be used by STOL aircraft. Some will prove suitable for wheel operations by aircraft of any size up to and including C-141, C-5 and Boeing 747. Which these are can only be determined by reconnaissance from low-flying STOL aircraft followed by trial landings and survey on the ground.

Most blue icefields are close to mountain areas, which may affect approach and climb-out paths. In order to indicate the degree of obstruction, or lack of it, we report in places the minimum glide slope/climb gradient necessary to clear terrain under VFR conditions. This means that in the extreme case of an up-glacier approach to a runway with a gradient of 1%, the minimum glide slope could be reported as 0°.

Owing to the connection between topography, winds, and the provenance of blue ice, more often than not the prevailing wind trends across the long dimension of an icefield. This means that potentially strong crosswind components have to be weighed against the alternative, which is to land into wind on a shorter runway that faces into the side of a mountain. Every aircraft approaching Patriot Hills icefield (Site 13) has had to make this choice.

There are icefields with clear approaches and potentially long runways facing into the prevailing wind. In the notes that follow, we have identified such sites by referring to intercontinental operations.

The smoothest ice, and, unfortunately, the most turbulent air, is commonly found within the first 500 m (1600 ft) away from a nunatak. With increasing distance from exposed rock we find scattered patches of snow that cover anything from 1% to 10% or more of the surface. While these can easily be cleared with standard snow-clearance machinery, some pilots prefer the improved wheel braking and nose-wheel tracking afforded by the snow.

For each site we make reference to the best available sheet maps, in many cases the Antarctica 1:250,000 Reconnaissance Series of the U.S. Geological Survey (USGS). Landsat numbers refer to satellite images, prints of which are obtainable from Earth Observation Satellite Company (EOSAT), EROS Data Center, Sioux Falls, South Dakota 57198. The TMA numbers refer to aerial mapping photographs, prints of which are obtainable from U.S. Geological Survey, EROS Data Center, Sioux Falls, South Dakota 57198. TMA numbers in the text refer to photographs not included in the report; those included are shown in captions. Other numbers refer to photographs obtainable through the Australian Surveying and Land Information Group, Cameron Offices, Chandler Street, Belconnen, ACT 2616. For convenience we discuss sites in the order of their longitude, moving clockwise round the continent from 180°. For completeness, we include sites that were inspected from the air but not rejected in the course of earlier reconnaissance (Swithinbank 1988).

Large areas of Antarctica have never been photographed from the air. For this reason, the photographs included in this report cover only small parts of the known blue ice areas. Aircraft searching for ice airfields should be alerted to the possibility of finding good sites outside the areas illustrated.

Figure 4. Baldwin Glacier (Site 1) seen from an altitude of 7600 m (25,000 ft). The camera faces 210° true. Mount Heekin (right foreground) Swithinbank Moraine (left). The blue ice is to the right of the medial moraine (center) and partly within the cloud shadow. Photo: U.S. Na for USGS (TMA 781 R 058, 27 November 1960).

1. Baldwin Glacier (Fig. 4)

Map: Liv Glacier 1:250,000 (USGS, 1968). 85°06′S, 177°00′W, elevation 1400 m (4600 ft). This is a gently sloping (probably less than 1%) blue icefield on a tributary of Shackleton Glacier. There could be a 7-km (4-mile) usable length of runway 07/25 true, though aircraft landing from the east would face into a 500-m- (1600-ft-) high rock wall.

Figure 5. Ellis Bluff (Site 2) seen from an altitude of 6100 m (20,000 ft). The camera faces 045° true. The approach to runway 17 would be up Shackleton Glacier (left background) and through the pass (at runway level) immediately left of Ellis Bluff (left center). The site was inspected from a low-flying aircraft in 1988. The northernmost 4 km (2.5 miles) of the icefield was the smoothest. Photo: U.S. Navy for USGS (TMA 1432 L 144, 14 November 1964)

2. Ellis Bluff (Fig. 5)

Map: Liv Glacier 1:250,000 (USGS, 1968). 85°22′S, 175°50′W, elevation 2000 m (6600 ft). This is a 7- × 1-km (4- × 0.6-mile) icefield on a distributary tongue from Zanefeld Glacier. The up-glacier approach to runway 17/35 true would be through a pass (at runway level) at the foot of the ice tongue.

Figure 6. Mount Prestrud (Site 3) seen from an altitude of 7600 m (25,000 ft). The camera faces south. The icefield is off the lateral morai (center). It was inspected from a low-flying aircraft in 1988. Runway 03/21 would parallel the moraine. Photo: U.S. Navy for USGS (TMA 11 L 137, 4 February 1963).

3. Mount Prestrud (Fig. 6)

Map: Mount Wisting 1:250,000 (USGS, 1967). 86°33′S, 165°20′W, elevation 2350 m (7700 ft). There is a 2400- × 1000-m (7900- × 3300-ft) blue icefield off a lateral moraine on the west side of Mount Prestrud (Norway Glacier). The ice surface was reconnoitered in 1988 from a low-flying DHC-6 aircraft, and appeared to be smooth and usable for a runway 03/21 true.

4. Mount Howe

Map: d'Angelo Bluff 1:250,000 (USGS, 1968). 87°20′S, 149°50′W, elevation 2400 m (7900 ft). TMA 1203 L 045. This has the best potential for an ice runway accessible overland from South Pole; it could be used by intercontinental aircraft. The area has been the subject of close inspection from the ground (Mellor and Swithinbank 1989, p. 11–27).

Figure 7. Mount Nichols (Site 5) seen from an altitude of 7300 m (24,000 ft). The camera faces north. Mount Nichols is the ridge (left center); the blue ice is to the right (east) of it. It was inspected from a low-flying aircraft in 1988. Photo: U.S. Navy for USGS (TMA 780 L 162, 25 November 1960).

5. Mount Nichols (Fig. 7)

Map: Leverett Glacier 1:250,000 (USGS, 1968). 85°26′S, 145°20′W, elevation 300 m (1000 ft). There is an apparently smooth blue icefield with dimensions of 5 × 1 km (3 × 0.6 mile) between Mount Nichols and Mount Manke. Depending on runway orientation, fairly unobstructed approaches might be possible.

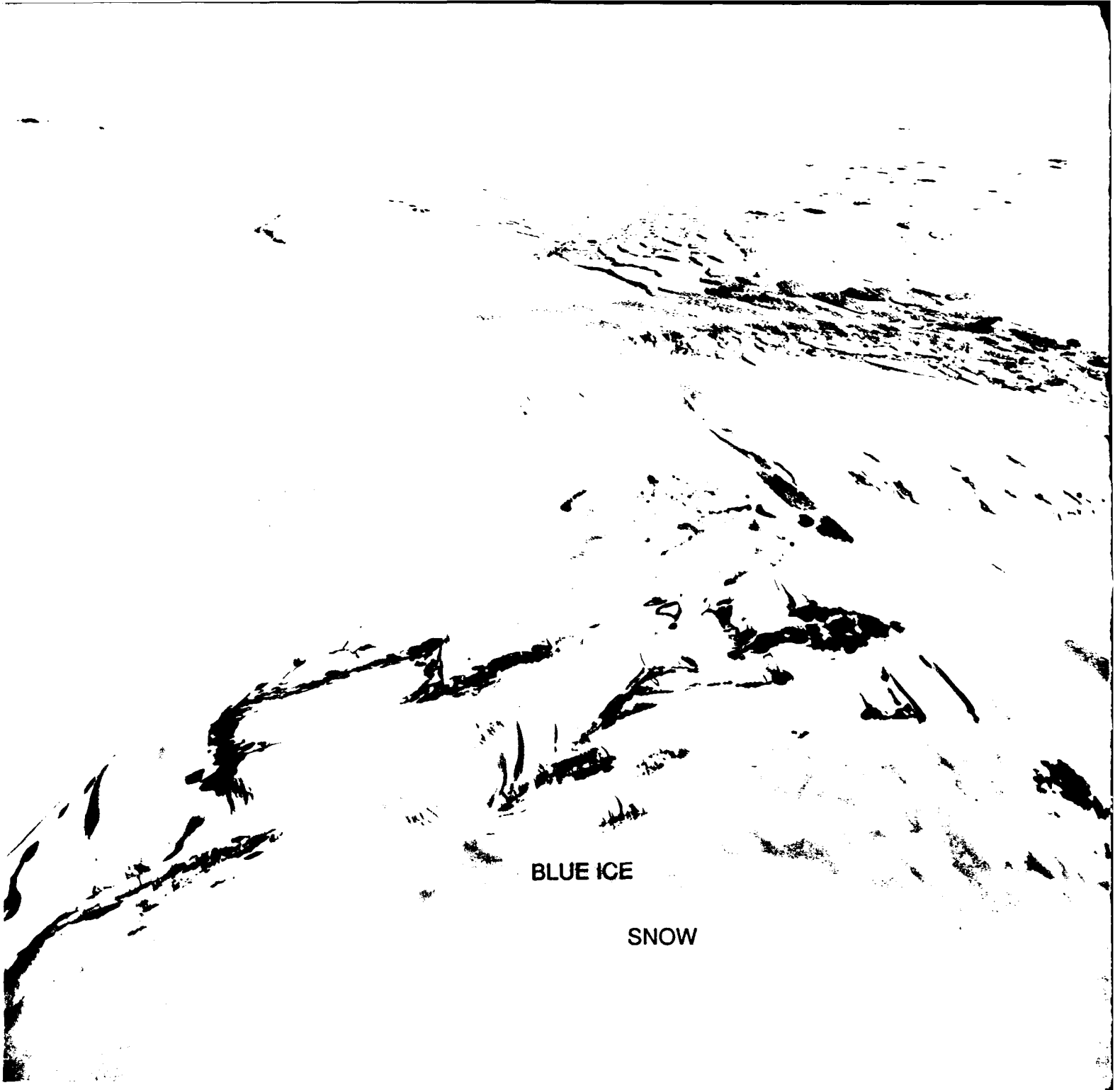


Figure 8. Erickson Bluffs (Site 6) with Hull Glacier behind. The camera faces 270° true. The blue ice patches are in the foreground. Mount Grey (center) with Lynch Point in the distance. Photo: U.S. Navy for USGS (TMA 1539 R 200, 31 December 1964).

6. Erickson Bluffs (Fig. 8)

Map: Hull Glacier, 1:250,000 (USGS, 1975). 75°03′S, 136°45′W, elevation 600 m (2000 ft). There are some patches of blue ice up to 1500 m (5000 ft) in length above Erickson Bluffs, but prevailing winds are across any runway and slopes may be significant. Not a good prospect but worth reconnoitering if an aircraft is in the vicinity, because it is only 35 km from the unoccupied Soviet station at Cape Burks.

Figure 9. Reedy Glacier (Site 7). The camera faces 160° true. Ebler Hills (right). The whole area shown consists of blue ice. Photo: U.S. Navy for USGS (TMA 1201 L 327, 31 October 1963).

7. Reedy Glacier (Fig. 9)

Map: Wisconsin Range 1:250,000 (USGS, 1968). 85°45′S, 133°00′W, elevation 1200 m (4000 ft). TMA 780 R, 199. The area was inspected from a DHC-6 aircraft in January, 1989 (Swithinbank 1989). There are vast areas of quite smooth ice along some flow bands between the 1000-m and 1400-m contours, perhaps best developed around the 1200-m contour. The average longitudinal gradient is less than 1%. Some of the flow bands could accommodate intercontinental aircraft. There is a 5% snow cover in some areas but this is generally in the form of sastrugi less than 10 cm (4 in.) high and thus not significant for wheeled aircraft. An advantage is that prevailing winds are down-glacier (from 155° true) and potential runways trend 335/155°. Approach and climb-out paths are unobstructed. The

Figure 10. Treves Butte in the Ohio Range (Site 8) seen from an altitude of 5800 m (19,000 ft). The camera faces 040° true. The blue ice trends along the flowlines to the left of the rock ridge. Photo: U.S. Navy for USGS (TMA 887 L 036).

ice terrain is good for surface vehicles, and crevasse-free routes could be found to permanent building sites on adjacent nunataks.

8. Ohio Range (Fig. 10)

Map: Ohio Range (USGS, 1963). 84°43′S, 114°30′W, elevation 1800 m (6000 ft). There is a 6- × 1-km (4- × 0.6-mile) blue icefield on the west side of Treves Butte but the approach from north to a runway 16/34 true would be into rising terrain. Depending on the location of the runway on the icefield, there may be room for a right turn climb-out for transport aircraft. The site is not a good prospect, but it would be worth reconnaissance by a passing STOL aircraft.

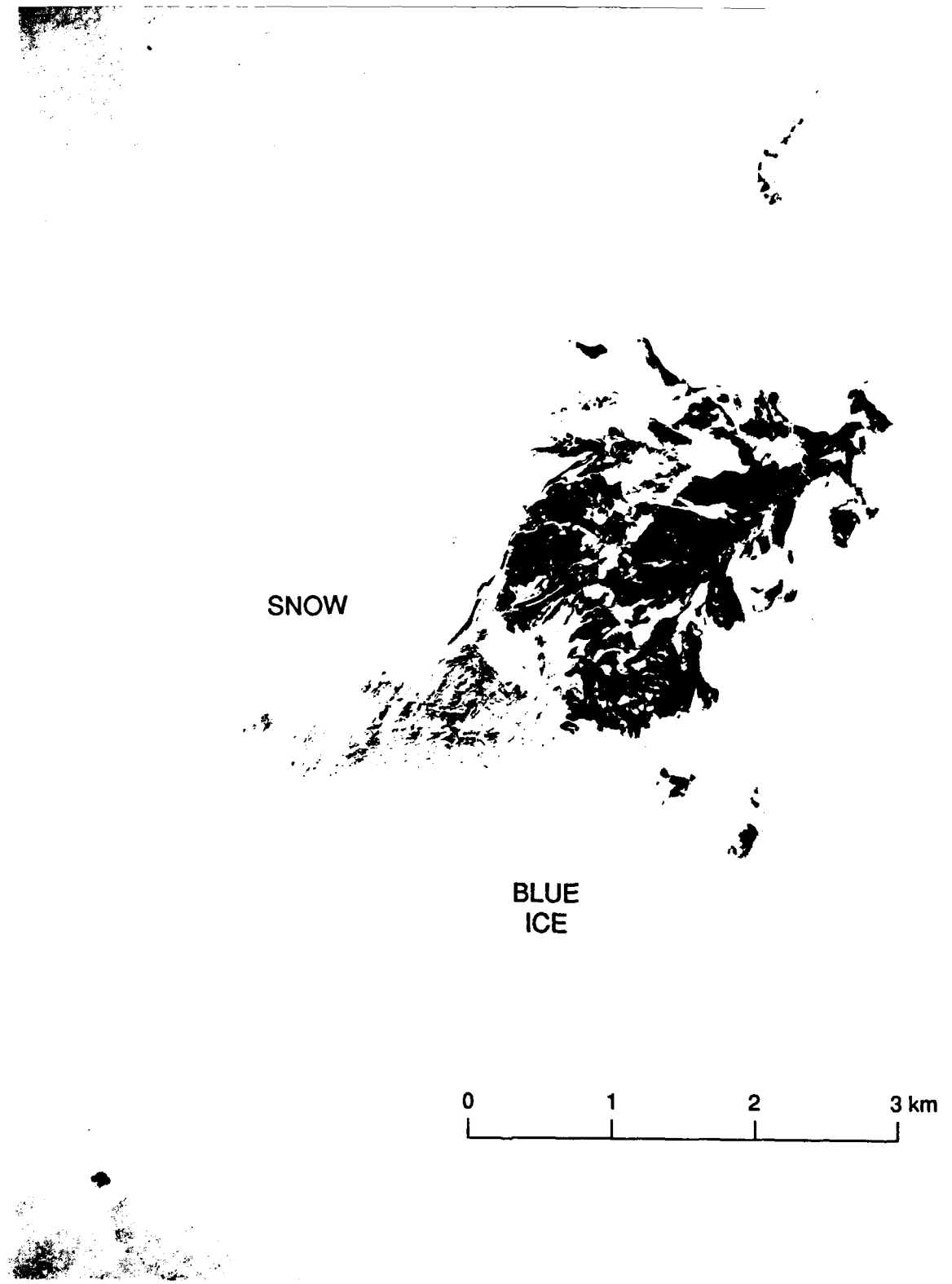


Figure 11. Vertical photograph of Mount Moses in the Hudson Mountains (Site 9) seen from an altitude of 7100 m (23,400 ft). The icefield shown is more than 5 km (3 miles) across. Photo: U.S. Navy for USGS (TMA 1909 V 201, 5 December 1966).

9. Hudson Mountains (Fig. 11)

Map: Antarctica Sketch Map 1:500,000, Thurston Island–Jones Mountains (USGS, 1968). 74°26′S, 99°10′W, elevation 500 m (1600 ft). There is an area of blue ice immediately to the west of Mount Moses, and further ice between Velie and Slusher Nunataks. The surface is probably sloping and mostly crevassed, but areas could perhaps be found usable for DHC-7 aircraft.

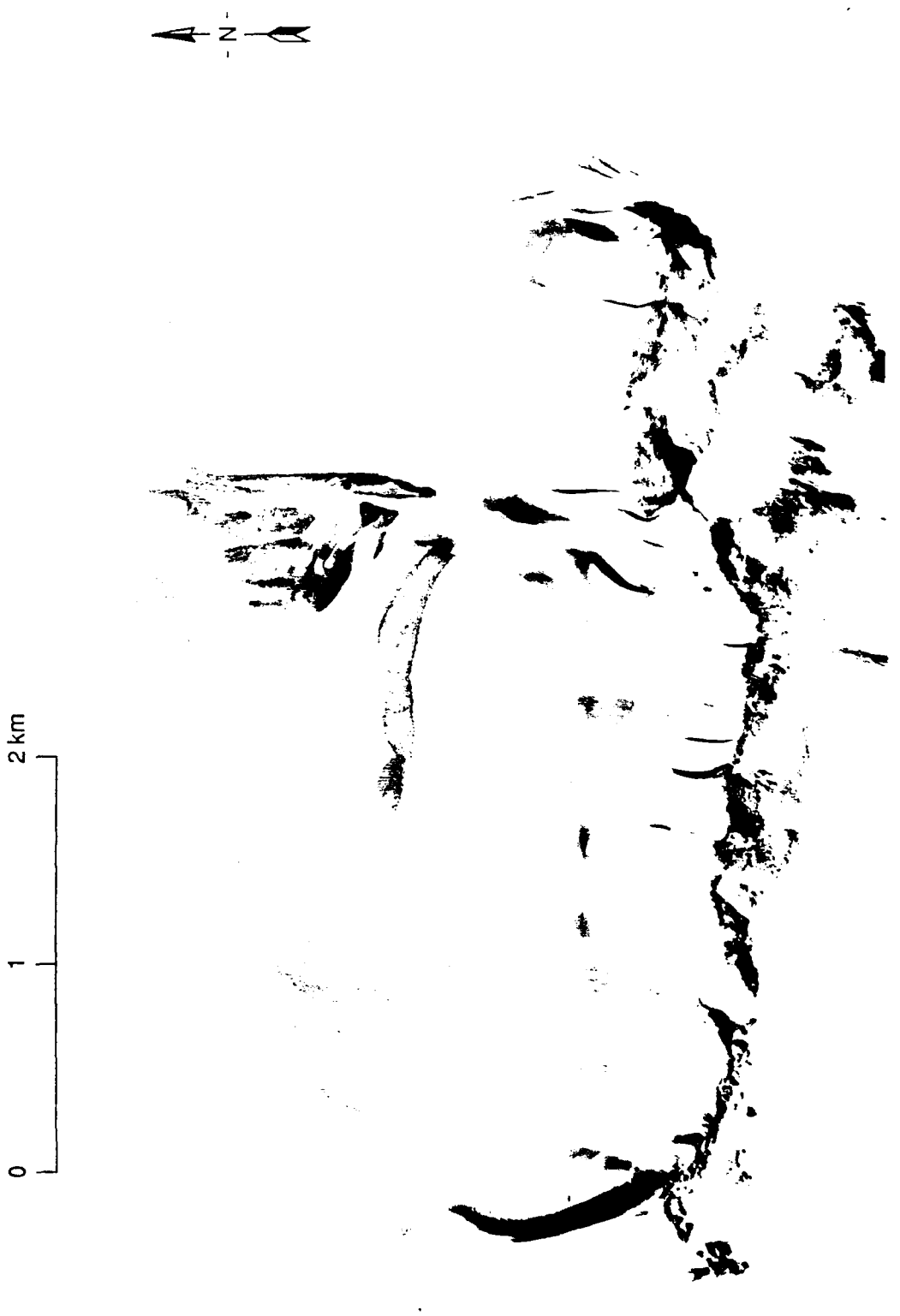


Figure 12. Vertical photograph of Moulton Escarpment (Site 10) in the Thiel Mountains seen from an altitude of 3100 m (9500 ft). Photo: U.S. Navy for USGS (TMA 2520 V 197, 31 December 1983).

10. Moulton Escarpment (Fig. 12)

Map: Thiel Mountains 1:250,000 (USGS, 1963). There is a 4-× 1-km (2.5- × 0.6-mile) icefield off Moulton Escarpment at 85°10′S, 94°50′W, elevation 2200 m (7000 ft). I have landed here in DHC-6 aircraft, but the surface slopes down towards the nunatak and the long dimension is across the prevailing wind. It would be usable by DHC-7 type aircraft and by larger aircraft in an emergency.

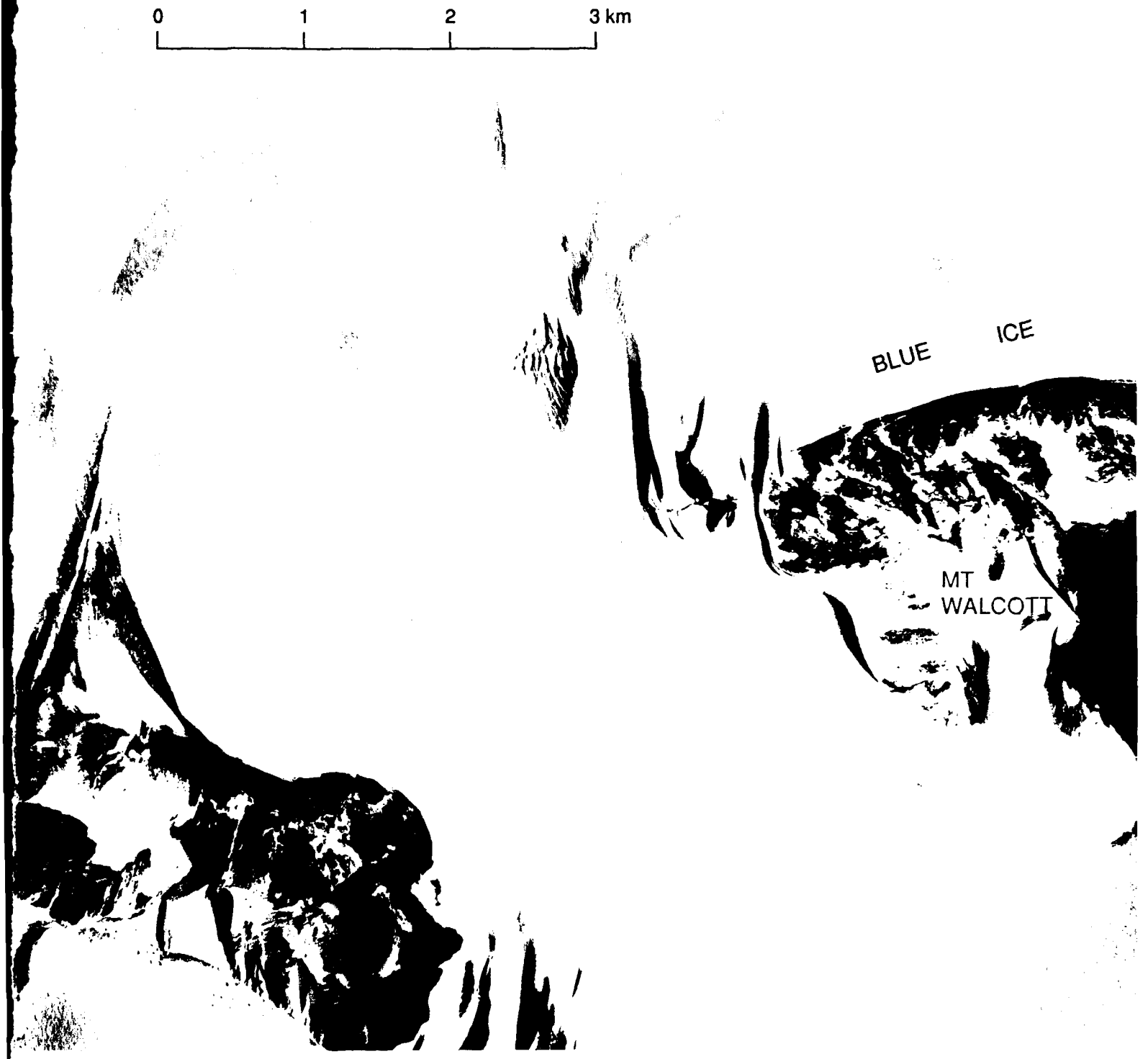


Figure 13. Vertical photograph of Mount Walcott (Site 11) in the Thiel Mountains. The smoothest ice is close to the lateral moraine beside Mount Walcott (upper right). Photo: U.S. Navy for USGS (TMA 2518 V 179, 1983).

11. Mount Walcott (Fig. 13)

Map: Thiel Mountains 1:250,000 (USGS, 1963). There is an icefield off Mount Walcott at 85°20′S, 87°40′W, elevation 1500 m (5000 ft). It is 2400 m (8000 ft) long but the prevailing wind blows across it and landing would be towards steeply rising terrain.

12. Union Glacier

Map: Union Glacier 1:250,000 (USGS, 1967). 79°46′S, 83°10′W, elevation 700 m (2300 ft). A runway 07/25 true facing into the prevailing wind (from 250°) has been proven by DHC-6 aircraft on wheels. A length of up to 3 km (2 miles) is available and the site is reported to be suitable for transport aircraft. The approach to runway 25 is clear (0° glide slope) but a climb gradient of 7% would be necessary to clear rising terrain if taking off in the same direction.

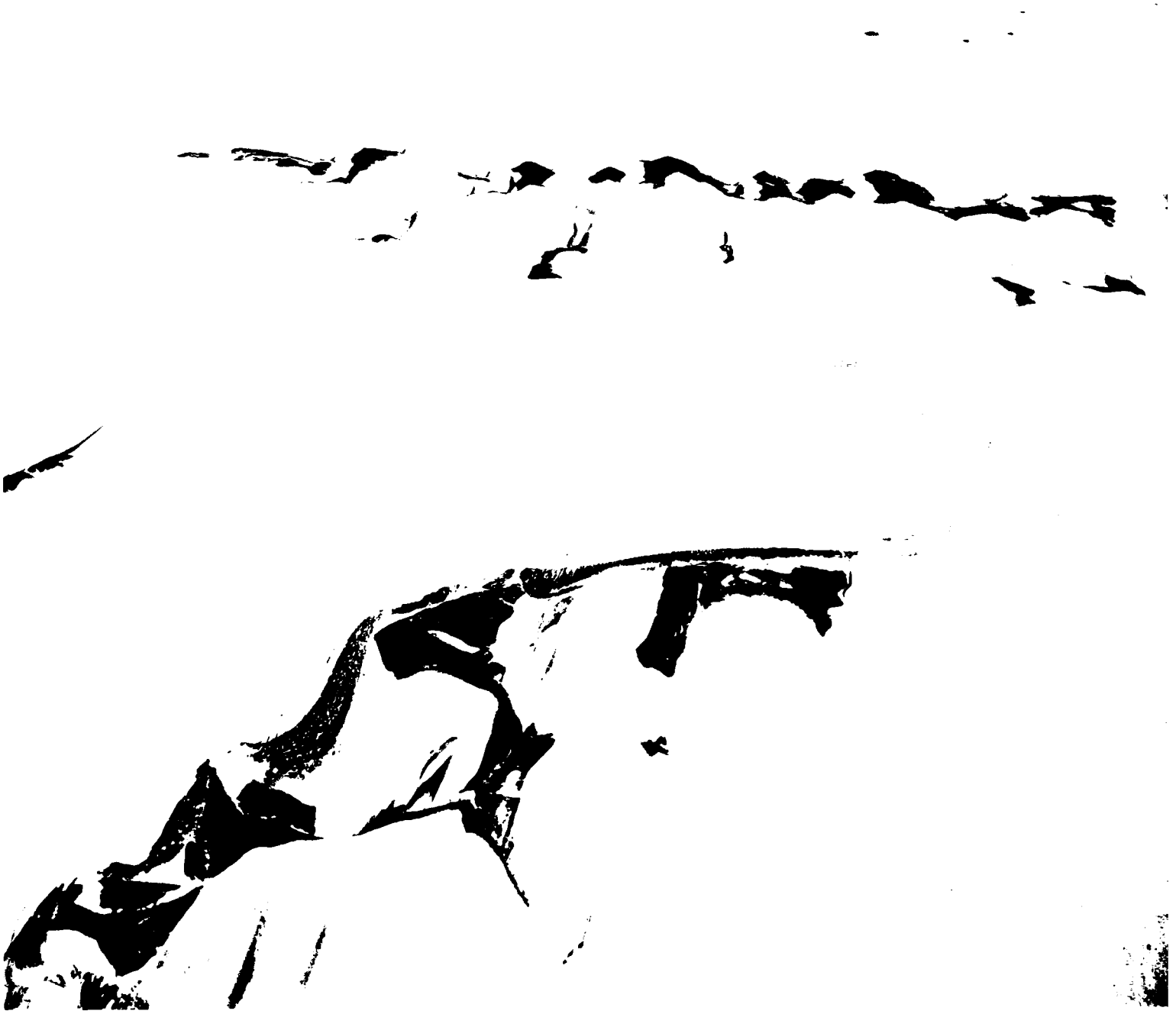


Figure 14. Mount Bruns and Macnamara Glacier (Site 14) seen from an altitude of 7200 m (23,500 ft). The camera faces Thomas Hills (310° true). Blue ice covers the whole area of conspicuous flowlines (center). Photo: U.S. Navy for USGS (TMA 1498 R 193, 17 December 1964).

13. Patriot Hills (Fig. 3)

Map: Liberty Hills 1:250,000 (USGS, 1967). 80°19′S, 81°16′W, elevation 1000 m (3300 ft). TMA 897 R 047. An 8- × 2-km (5- × 1-mile) blue icefield is in regular use for intercontinental flights by DC-6 aircraft. The area has been the subject of close inspection from the ground (Mellor and Swithinbank 1989, p. 37–42).

14. Mount Bruns (Fig. 14)

Map: Thomas Hills 1:250,000 (USGS, 1969). There is a 6- × 2-km (4- × 1-mile) blue icefield on the northwest side of Mount Bruns. 84°28′S, 64°30′W, elevation 600 m (2000 ft). It is an apparently good prospect for a runway 03/21 true, though the prevailing wind is across the long dimension of the icefield.

Figure 15. Weber Ridge and Macnamara Glacier (Site 15) seen from an altitude of 4100 m (13,500 ft). The camera faces 140° true. The smoothest blue ice appears to be between the medial moraine (center) and the lateral moraine beneath the ridge. Photo: U.S. Navy for USGS (TMA 1504 R 362, 18 December 1964).

15. Weber Ridge (Fig. 15)

Map: Thomas Hills 1:250,000 (USGS, 1969). There is a 6- × 2-km (4- × 1-mile) blue icefield on the northwest side of Weber Ridge. 84°20′S, 63°10′W, elevation 400 m (1300 ft). TMA 1498 R 188. This seems to offer a good prospect for a runway trending 035°–215° true, though the prevailing wind is across the long dimension of the icefield.

Figure 16. Patuxent Range (Site 16) seen from an altitude of 4800 m (15,600 ft). The camera faces 015° true. Mount Wanous is in the right foreground. Most of the area shown is blue ice. Photo: U.S. Navy for USGS (TMA 911 R 343, 10 December 1961).

16. Patuxent Range (Fig. 16 and 17)

Map: Thomas Hills 1:250,000 (USGS,, 1969). 84°20′–84°50′S, 61°00′–63°00′W, elevation 700–1000 m (2300–3300 ft). There is an area of about 50 × 30 km (30 × 19 miles) of gently undulating, mostly blue ice off the east side of Patuxent Range. Somewhere within this vast area there must be a fair chance of finding a good runway facing into wind and suitable for intercontinental operations.

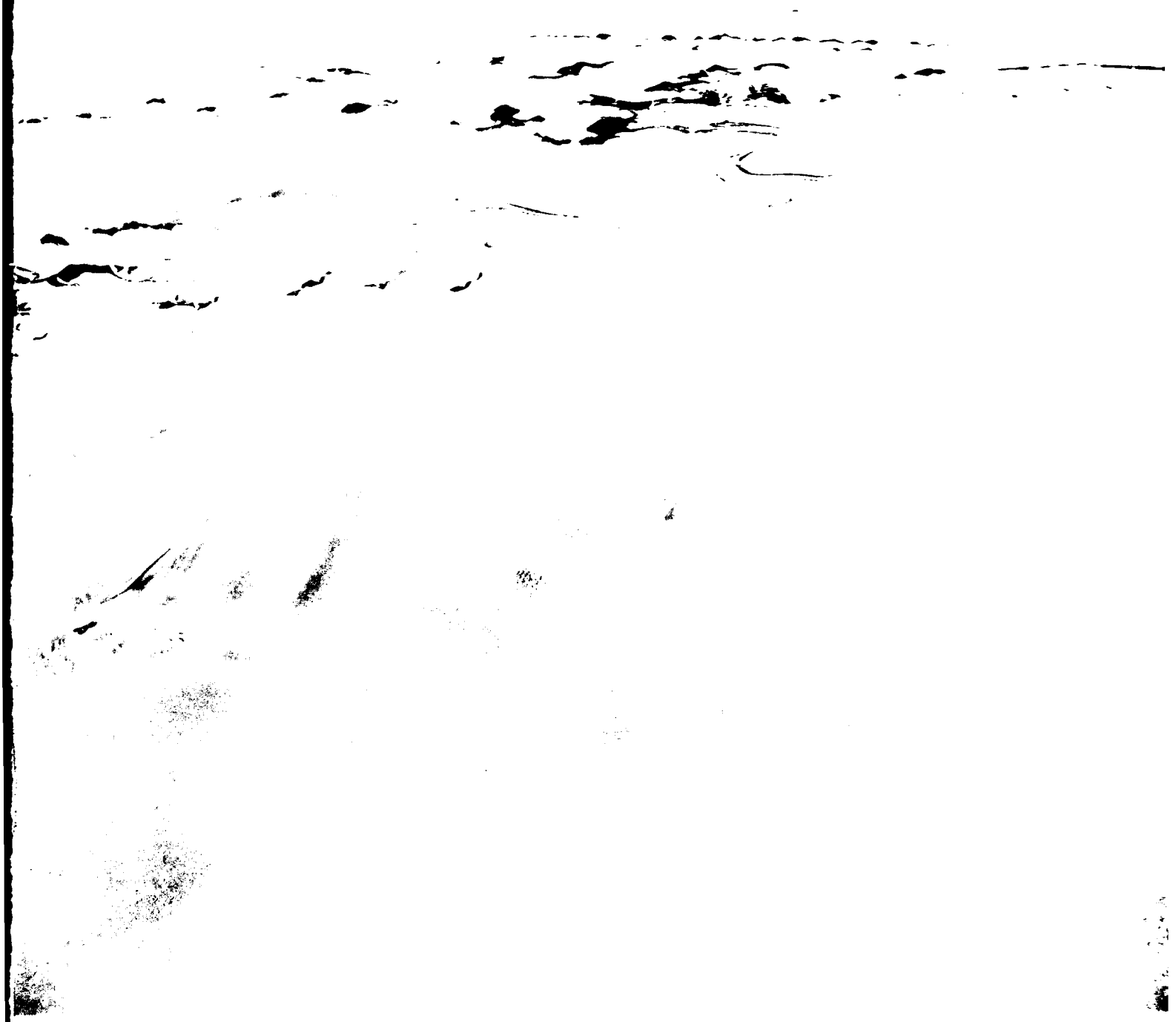


Figure 17. Patuxent Range (Site 16) seen from an altitude of 7200 m (23,500 ft). The camera faces Anderson Hills (310° true). Most of the area shown is blue ice. Photo: U.S. Navy for USGS (TMA 1500 R 120, 17 December 1964).

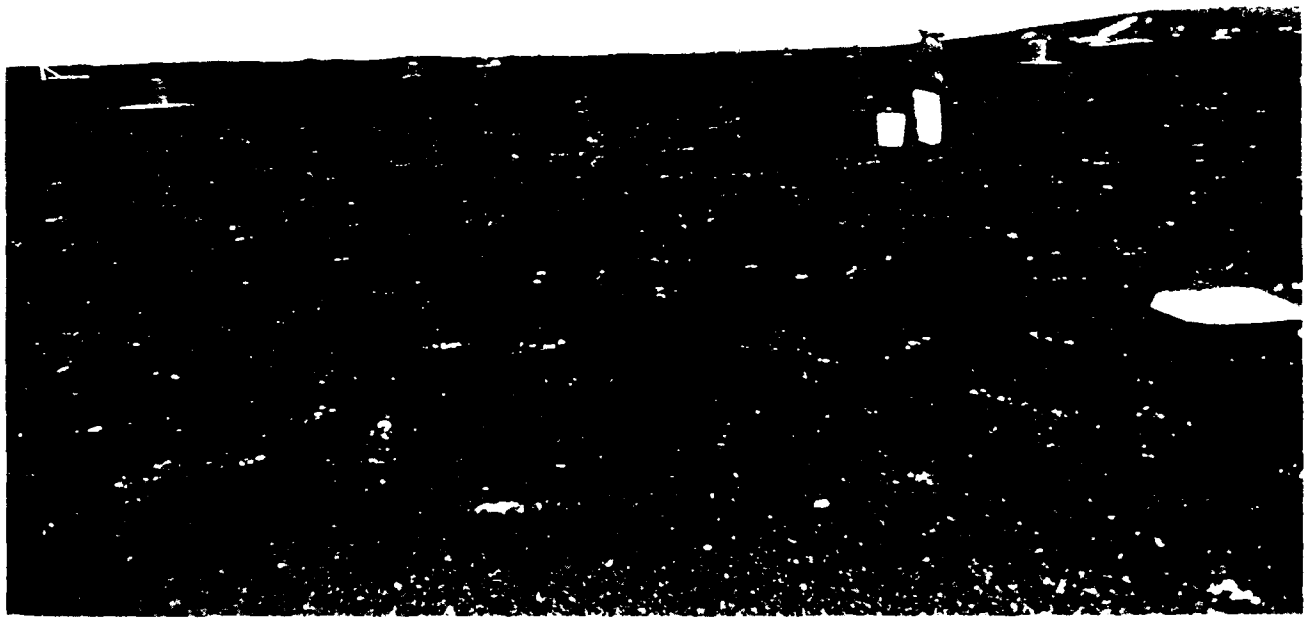


Figure 18. Unprepared runway on Deception Island (Site 17). The camera faces along the runway centerline (320° true). Photo: Charles Swithinbank (8 March 1975).

17. Deception Island (Fig. 18)

Map: Falkland Islands Dependencies 1:25,000, Deception Island (Tolworth, Directorate of Overseas Surveys, 1960). 62°59′S, 60°35′W, elevation 3 m (10 ft). A curving and essentially unprepared 760-m (2500-ft) volcanic tuff runway at Whaler's Bay was the site of the first powered flight over Antarctica; this took place on 16 November, 1928 with a Lockheed Vega aircraft flown by Ben Eielson (Wilkins 1929). The runway was destroyed by a volcanic eruption in, 1969. A 500-m (1600-ft) unprepared runway is currently in use by DHC-6 aircraft. An abandoned hangar could be made serviceable. A 1500-m (5000-ft) runway 15/33 true could fairly easily be made by cut and fill methods. It would be usable by transport aircraft, but obstructions at both ends would make the minimum glide slope $4^1/_2°$.

18. James Ross Island (Fig. 19)

Map: British Antarctic Territory 1:250,000, sheet SP 21-22/13 (Tolworth, Directorate of Overseas Surveys, 1974). 63°52′S, 57°55′W, elevation 50 m (160 ft). There is a 13-km^2 (5-mi^2) area of fairly level bare ground on Abernethy Flats at the head of Brandy Bay and along its western flank to San Carlos Point. In places the surface is poorly drained. The area has not been reconnoitered with a view to airfield construction. Depending on the orientation of runways, approach and climb paths could be sufficient for intercontinental aircraft.

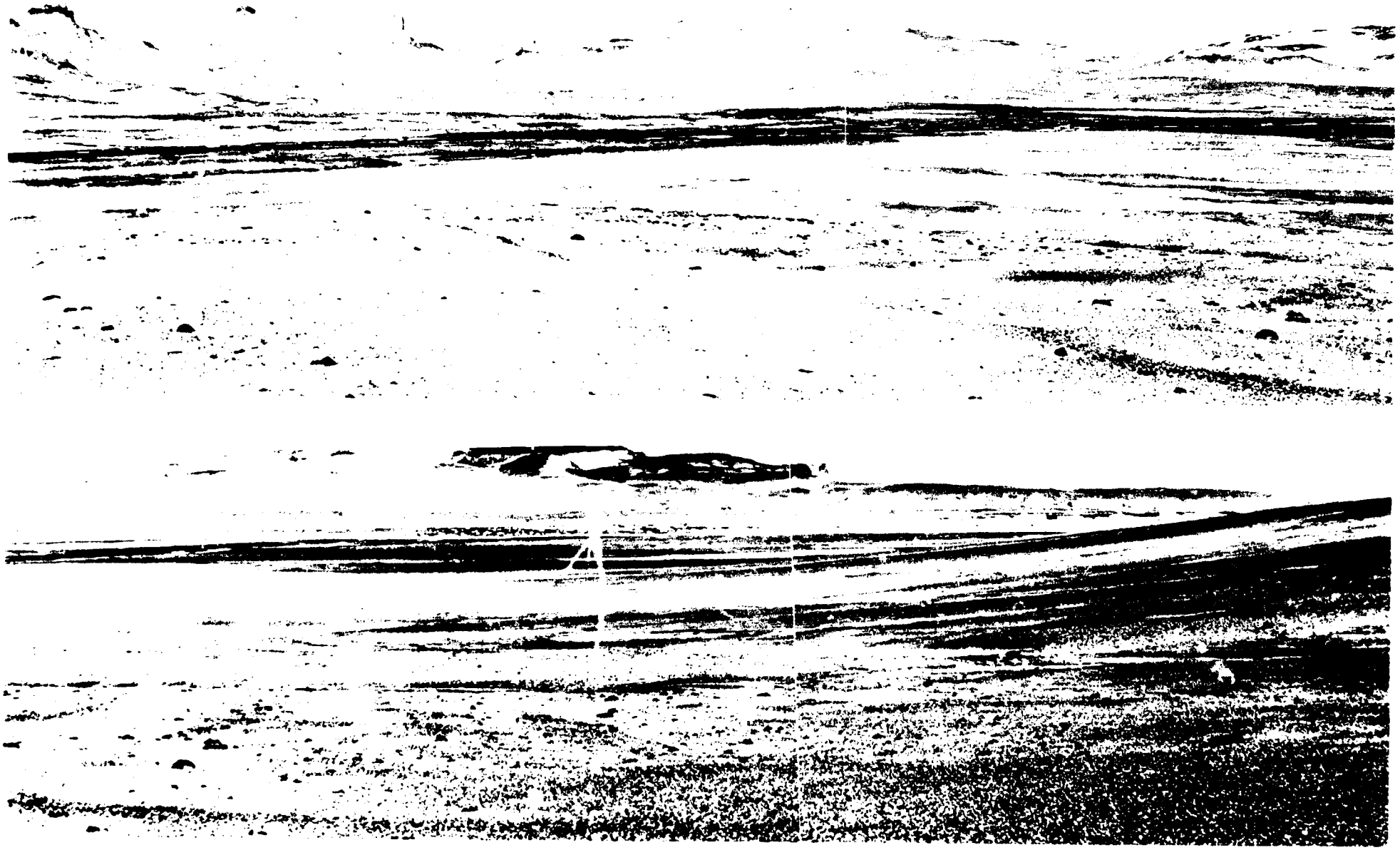


Figure 19. James Ross Island (Site 18). Overlapping panoramas of Abernethy Flats and Brandy Bay from Crame Col. Top: San Jose Pass (left) to Davies Dome (right). Bottom: Davies Dome (left) to San Carlos Point (right). Photo: Alistair Crame

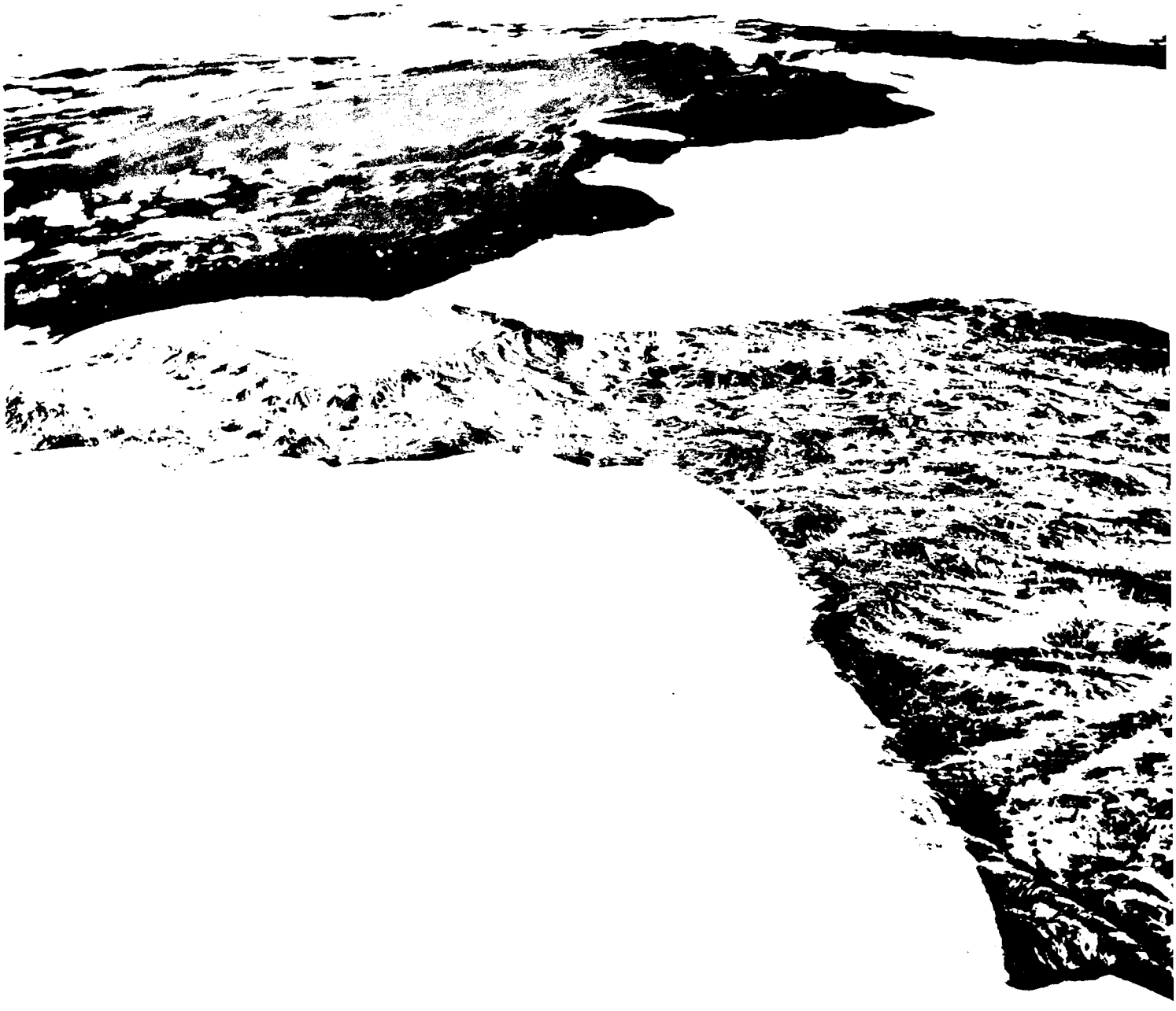


Figure 20. Seymour Island (Site 19). The camera faces 120° true. The airstrip crosses the large snow patch on top of the mesa (left center). Photo U.S. Navy for USGS (TMA 1352 L 217, 26 September 1964).

19. Seymour Island (Fig. 20)

Map: Seymour Island and part of Snow Hill Island 1:20,000 (in Brecher and Tope 1988). This map has a contour interval of 10 m (33 ft). 64°15′S, 56°38′W, elevation 200 m (650 ft). The Argentine Air Force operates C-130 aircraft from a 950-m (3100-ft) rolled dirt runway 07/25 true on the flat top of a mesa. The adjacent station is known as Vicecomodoro Marambio. A proposed new runway 05/23 true could be up to 2200 m (7200 ft) in length. I have operated DHC-6 aircraft off the existing strip. The approaches are unobstructed but turbulence is common owing to adjacent cliffs. The whole island is ice-free, leading to frequent low-lying convection clouds in summer. There are no other possible sites.

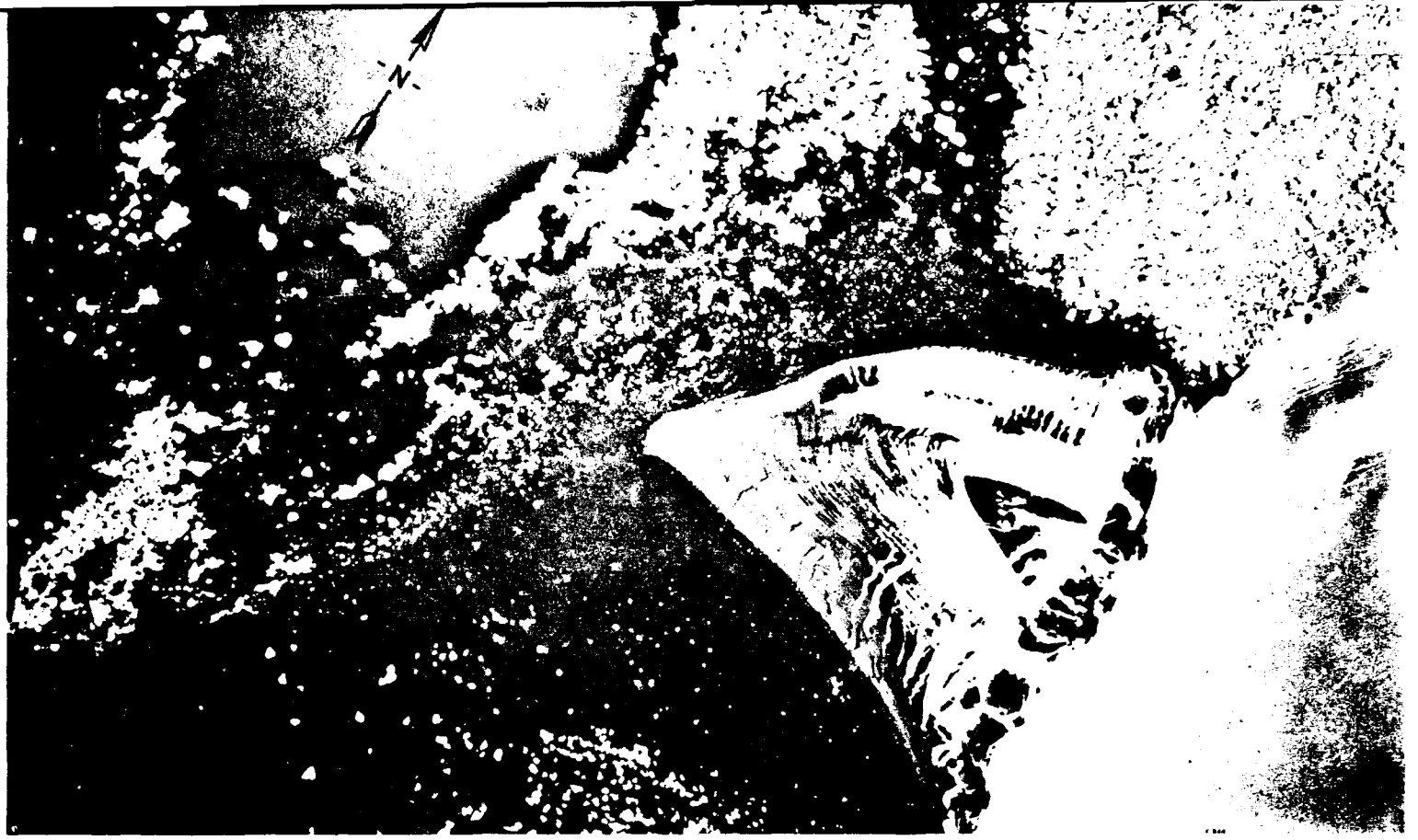


Figure 21. Dundee Island (Site 20). Vertical photograph from an altitude of 4000 m (13,000 ft). The distance between Welchness (center) and the terminal moraine (along the raised beach ridges) is 1700 m (5600 ft). Reproduced from an Ordnance Survey aerial photograph (26 FID 42 No. 016, December 1956) with the permission of the Controller of HMSO © Crown copyright.

20. Dundee Island (Fig. 21)

Map: British Antarctic Territory 1:250,000, sheet SP 21-22/14 (Tolworth, Directorate of Overseas Surveys, 1973). 63°29′S, 56°14′W, elevation 30 m (100 ft). The Argentine Navy is reported to have landed DHC-6 aircraft on a strip of raised beach gravel at Welchness. However, the maximum length of runway that could be constructed is about 1500 m (5000 ft), with clear approaches from the west but obstructed approaches from the east. Historically, the ice cap above Welchness was the point of departure of Hollick Kenyon's Trans-Antarctic flight on 23 November, 1935 (Ellsworth 1937). His Northrop aircraft was ski-equipped.

21. Argentina Range

Map: Argentina Range 1:250,000 (USGS, 1968). 82°10′S, 42°W, elevation 400 m (1300 ft). There are extensive areas of blue ice in the Argentina Range but none appears to offer gentle gradients and good approaches.

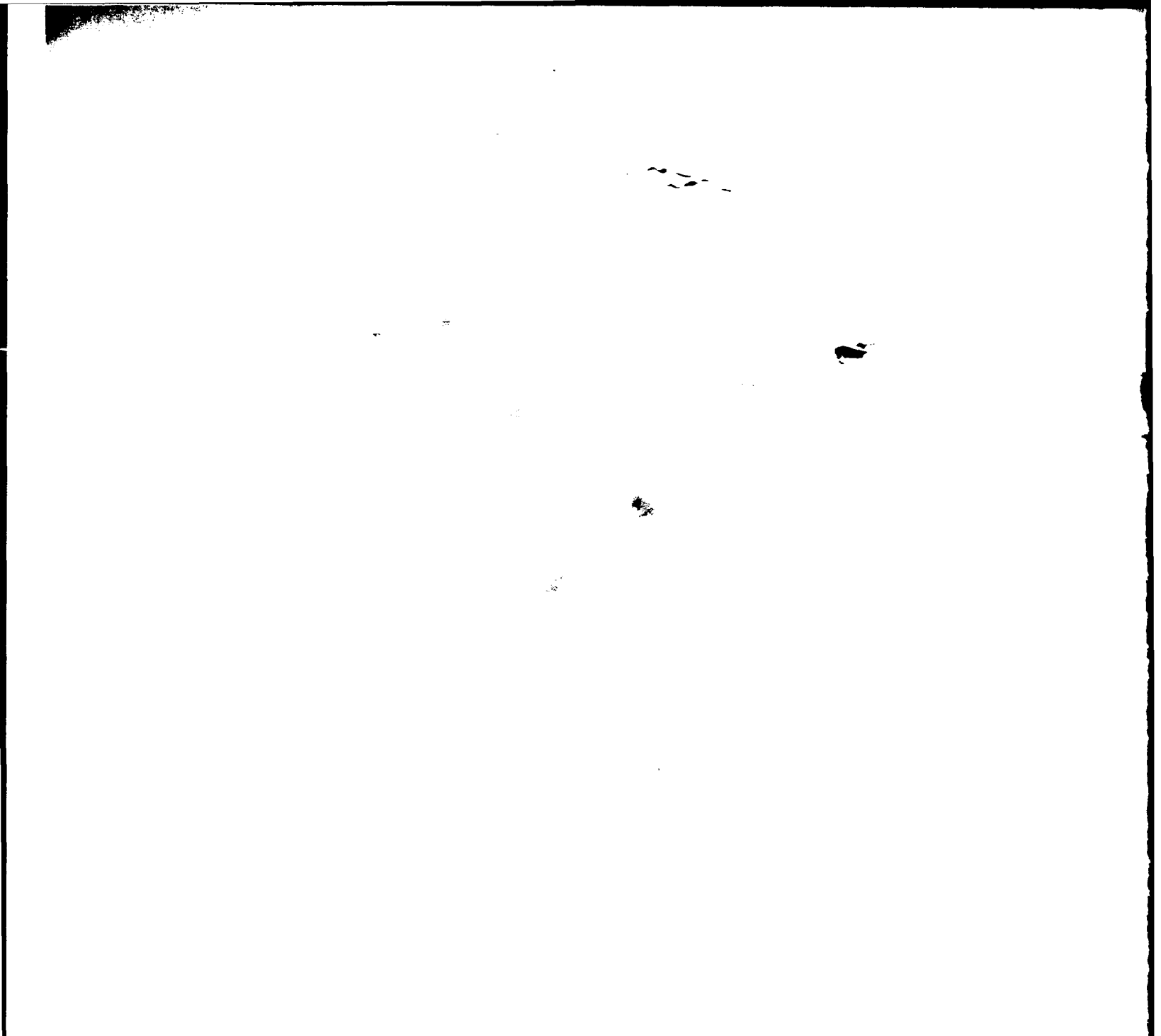


Figure 22. Whichaway Nunataks (Site 22) off Recovery Glacier seen from an altitude of 7500 m (24,500 ft). The camera faces 310° true. Photo: U.S. Navy for USGS (TMA 2051 L 269, 2 December 1967).

22. Whichaway Nunataks (Fig. 22 and 23)

Map: British Antarctic Territory 1:200,000, Sheet W 81 28/30 (DOS 610, Series D501, Tolworth, Directorate of Overseas Surveys, 1962). 81°33′S, 28°10′W, elevation 1100 m (3500 ft). There are a number of isolated patches of blue ice with dimensions of up to 3000 m (10,000 ft) among Whichaway Nunataks but undulations may make them unusable for other than STOL aircraft up to DHC-7 size.

23. Mount Sheffield

Map: Shackleton Range 1:250,000 (USGS, 1984). 80°09′S, 25°40′W, elevation 500 m (1600 ft). There are extensive blue ice areas south of Mount Sheffield, but they appear to be spoiled by undulations.

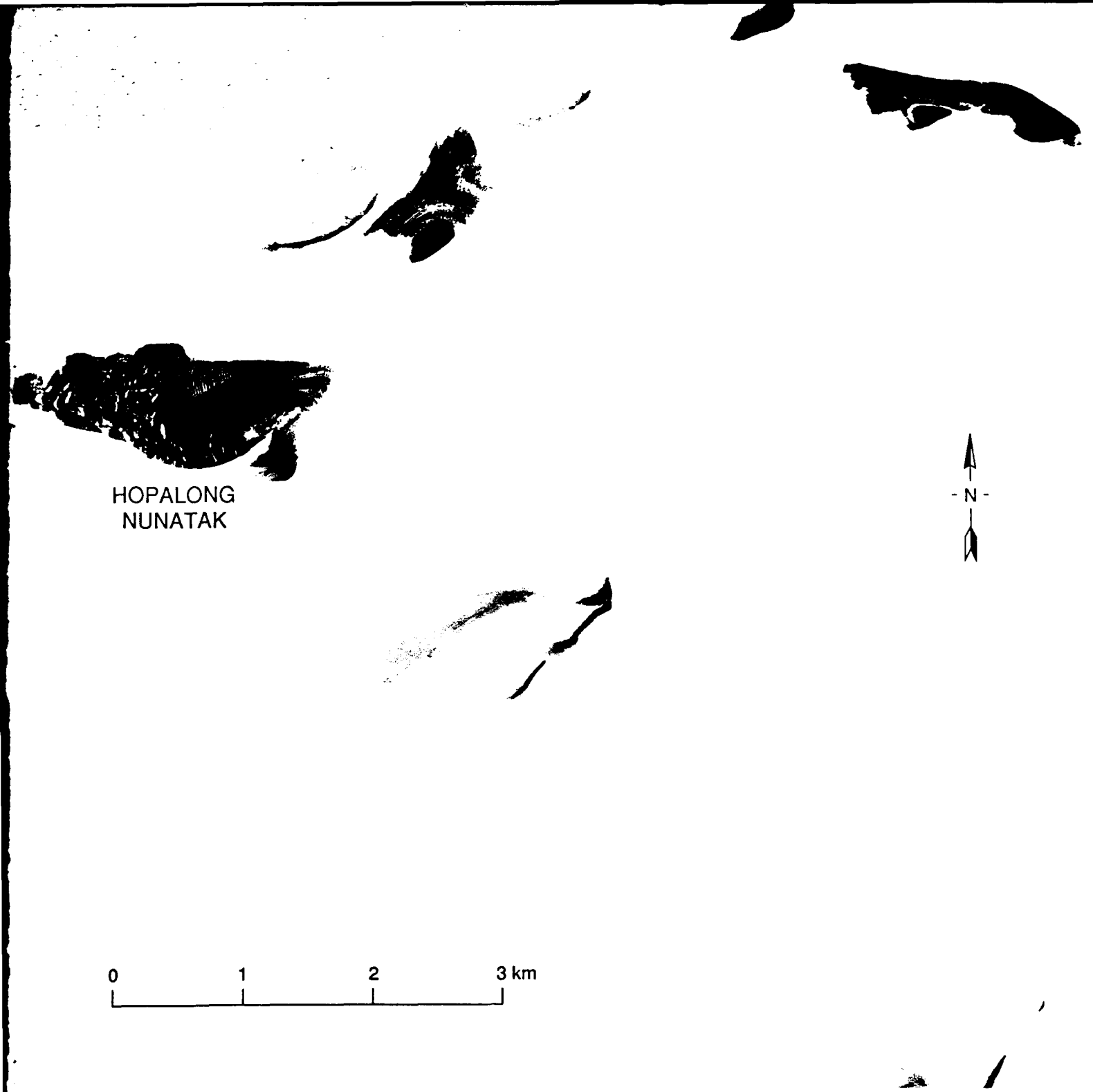


Figure 23. Vertical photograph of Whichaway Nunataks (Site 22) seen from an altitude of 7500 m (24,500 ft). Hopalong Nunatak (left). Photo: U.S. Navy for USGS (TMA 2049 V 101, 2 December 1967).

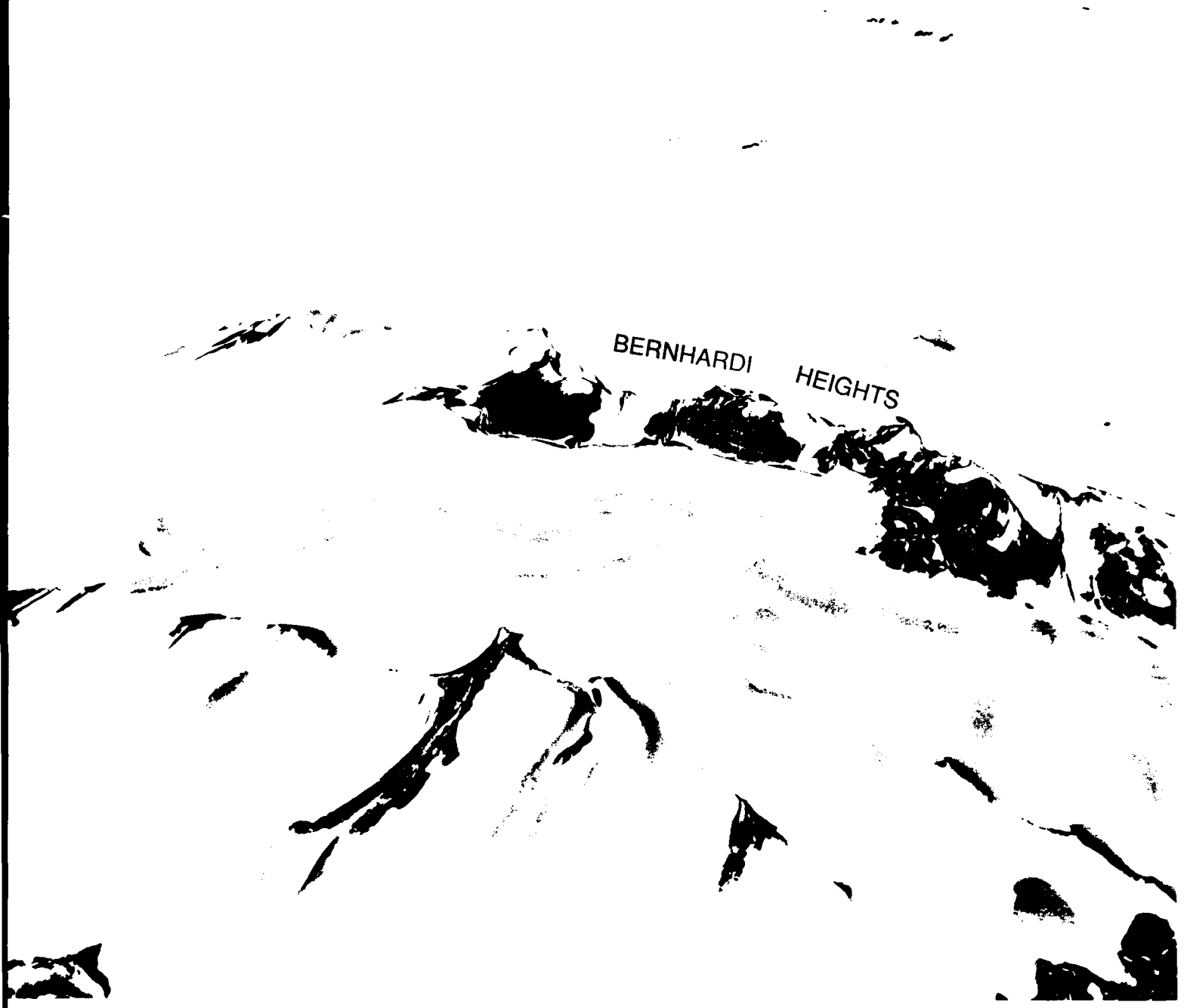


Figure 24. Schimper Glacier (Site 24) seen from an altitude of 7600 m (25,000 ft). The camera faces 085° true. The ridge (center) is Bernhardi Heights. Photo: U.S. Navy for USGS (TMA 2051 R 030, 2 December 1967).

24. Schimper Glacier (Fig. 24)

Map: Shackleton Range 1:250,000 (USGS, 1984). 80°18′S, 25°05′W, elevation 700 m (2300 ft). Landsat 50714-07386 and 50726-08031. There is a 9-km (5.6-mile) stretch of blue ice on Schimper Glacier. Approached up-glacier, glide slope could be as low as 1°. Take-off up-glacier would require a 7% climbout path.

25. Ritscher Upland

Map: Ritscherhochland 1:1,000,000, Satellite Image Map, Sheet SS 28-30 (Frankfurt, Institut für Angewandte Geodäsie, 1986). 72°00′–72°40′S, 10°30′–11°30′W, elevation 50–300 m (150–1000 ft). Landsat 1544-08322. There is more than 100 km^2 (40 mi^2) of blue ice on step-like slopes leading to Riiser-Larsen Ice Shelf. Melt features may make the area unattractive.

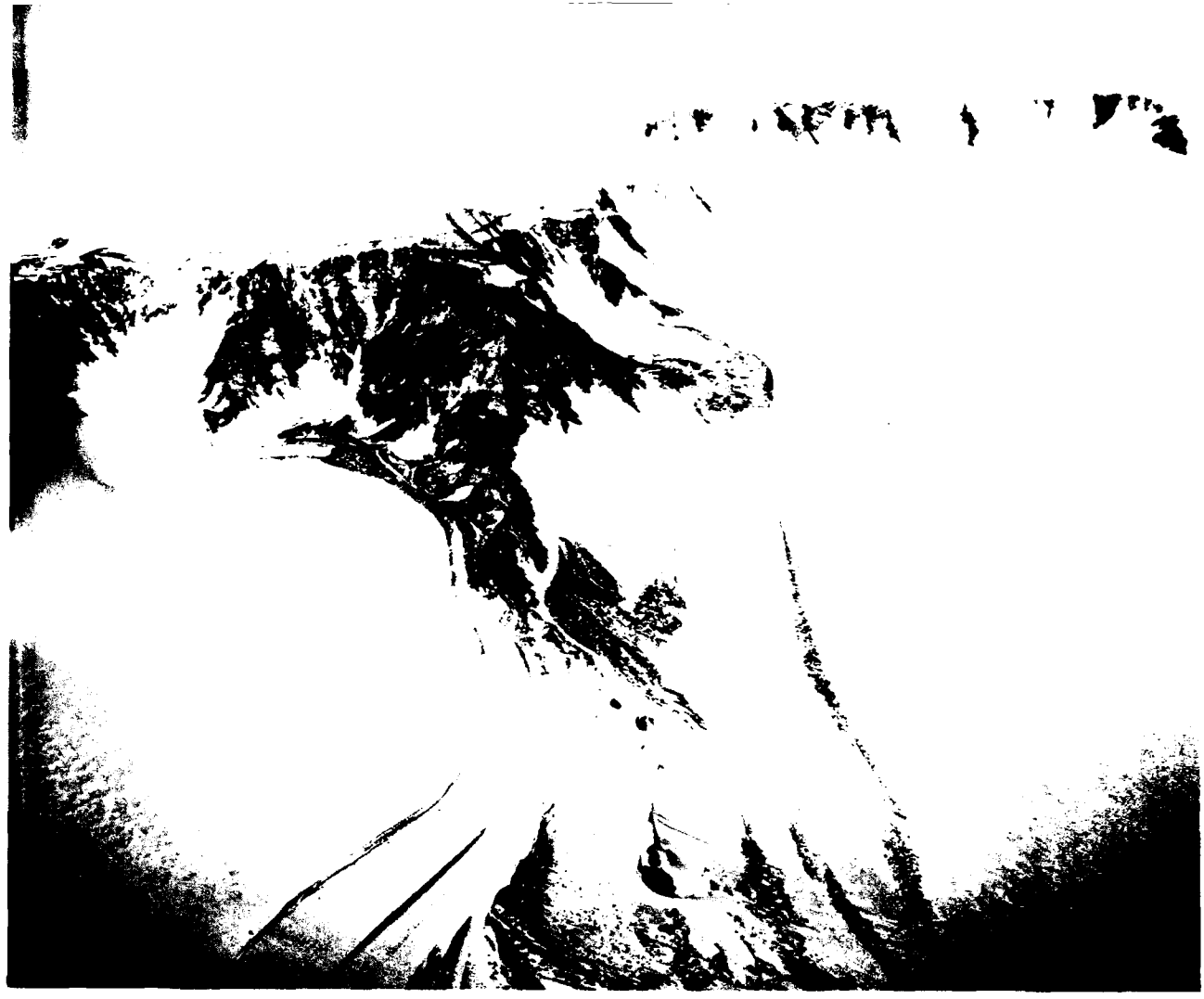


Figure 25. Milorgfjella (Site 27) in the Heimefront Range seen from an altitude of 4100 m (13,500 ft). The camera faces 160° true. Snow-flecked blue ice covers the foreground on both sides of the medial moraine. Photo reproduced with permission of Norsk Polarinstitutt (DML 51-52 S.29/24).

26. Heimefront Range (west)

Maps: Heimefrontfjella 1:250,000, Satellite Image Map, Sheet SS 28-30/10 (Frankfurt, Institut für Angewandte Geodäsie, 1988); Dronning Maud Land 1:250,000, Heimefrontfjella Nord, Sheet D8 (Oslo, Norsk Polarinstitutt, 1988). 74°35′S, 11°10′W, elevation 1250 m (4100 ft). There is a blue icefield here with dimensions of 5 × 2 km (3 × 1 mile), though landings would be towards high ground. Oblique aerial photographs can be obtained from Norsk Polarinstitutt, Oslo (DML 51-52 rolls S.27 and S.29). Vertical aerial photographs can be obtained from Institut für Angewandte Geodäsie, Frankfurt (rolls 86-02.02 and 02.04).

27. Heimefront Range (east) (Fig. 25)

Maps: Heimefrontfjella 1:250,000, Satellite Image Map, Sheet SS 28-30/10 (Frankfurt, Institut für Angewandte Geodäsie, 1988); Dronning Maud Land 1:250,000, Heimefrontfjella Nord, Sheet D8 (Oslo, Norsk Polarinstitutt, 1988). 74°20′S, 09°50′W, elevation 1400 m (4600 ft). There is an icefield here with dimensions of 9 × 3 km (5 × 2 miles). Landings would be towards high ground. Oblique aerial photographs can be obtained from Norsk Polarinstitutt, Oslo (DML 51-52 rolls S.27 and S.29). Vertical aerial photographs can be obtained from Institut für Angewandte Geodäsie, Frankfurt (rolls 86-02.02 and 02.04).

Figure 26. Urfjell Cliffs (Site 28) seen from an altitude of 4050 m (13,300 ft). The camera faces 150° true. Blue ice can be seen below the escarpment. Photo reproduced with permission of Norsk Polarinstitutt (DML 51-52 S.27/35).

28. Urfjell Cliffs (Fig. 26)

Maps: Dronning Maud Land 1:250,000, Kirwanveggen, Sheet F7 (Oslo, Norsk Polarinstitutt, 1961); Uhliggipfel 1:250,000, Satellite Image Map, Sheet SS 2830/7 (Frankfurt, Institut für Angewandte Geodäsie, 1990). 73°50′S, 05°15′W, elevation 2000 m (6600 ft). There are some blue icefields in this area with dimensions up to 5 × 2 km (3 × 1 mile). Oblique aerial photographs can be obtained from Norsk Polarinstitutt, Oslo (DML 51-52 Roll S.27), and vertical aerial photographs from Institut für Angewandte Geodäsie, Frankfurt (Roll 8703.11). The area looks promising, though landings would be towards high ground.

29. Borg Massif

Map: Geomorphologisch–Glaziologische Karte 1:50,000, Borgmassivet; Borgmassivet 1:250,000, Satellite Image Map, Sheet SS 28-30/4 (Frankfurt, Institut für Angewandte Geodäsie, 1989). 72°32′S, 03°42′W, elevation 1730 m (5700 ft). A 5- × 2-km (3- × 1-mile) blue icefield was described by Schytt (1961). I have walked across it on two occasions, and although it would be usable, pilots would probably be deterred by the adjacent high ground. An oblique aerial photograph (DML 51-52 S.23/43) is available from Norsk Polarinstitutt, Oslo. A vertical aerial photograph is available from Institut für Angewandte Geodäsie, Frankfurt (IAG 84-5.19); it shows a 40% thin snow cover. Approached from the northwest, a runway 10/28 true would have an overall gradient of 1.6 %. Minimum glide slope would be 1°; however, the approach faces steeply rising terrain, so only runway 28 would be available for take-off.

30. Jutulsessen Mountain (Fig. 27)

Maps: Dronning Maud Land 1:250,000, Jutulgryta, Sheet H5; and H.U. Sverdrupfjella, Sheet H6 (Oslo, Norsk Polarinstitutt, 1961). 72°00′S, 02°40′E, elevation 1200 m (4000 ft). Landsat 2279-07311 and 2330-07132. Aerial photographs of the area are reproduced as Bild 75 and Bild 76 in Brunk (1986); another appeared as plate 25 in Ritscher (1942). Other aerial photographs are available in Oslo (DML 51-52 rolls S.13 and S.14). A 15- × 10-km (9- × 6-mile) blue icefield was reported by Orheim and Lucchitta (1990). Their paper includes a Landsat image (TM band 4, No. 5034407520) and a SPOT image (Band 3, No. 176-680). The icefield is reported to be suitable for use by transport aircraft on wheels (oral information from Dr. Olav Orheim). Figure 27 shows the southeast corner of the icefield.

31. Orvin Mountains

Maps: Dronning Maud Land 1:250,000, Satellitkart, Filchnerfjella Nord, Sheet K5 (Oslo, Norsk Polarinstitutt, 1984); Dronning Maud Land 1:250,000, Filchnerfjella Nord, Sheet K5 (Oslo, Norsk Polarinstitutt, 1966); Dronning Maud Land 1:250,000, Humboldtfjella, Sheet L5 (Oslo, Norsk Polarinstitutt, 1968); Antarktida 1:100,000, Sheet R-32-141,142 (Moskva, Ministerstvo Morskogo Flota SSSR, 1967); and Satellite Image Map 1:250,000, Skjoldet, Sheet SS 28-30/2 (Frankfurt, Institut für Angewandte Geodäsie, 1989). 71°30′–72°30′S, 08°30′–11°00′E, elevation 1200–2000 m (4000–6600 ft). Landsat 1133-07102 and 2328-06504. Landsat 1167-06583 is reproduced in color as Figure 62 in Swithinbank (1988). Oblique aerial photographs can be obtained from Norsk Polarinstitutt, Oslo. There are a few hundred square kilometers (> 100 mi^2) of blue ice in this area with dimensions of up to 10 km (6 miles). The area holds good prospects for transport aircraft on wheels.

Figure 27. Jutulsessen (Site 30) seen from an altitude of 4450 m (14,600 ft). The camera faces 130° true. Snow-flecked blue ice covers the foreground. Photo reproduced with permission of Norsk Polarinstitutt (DML 51-52 S.14/3).

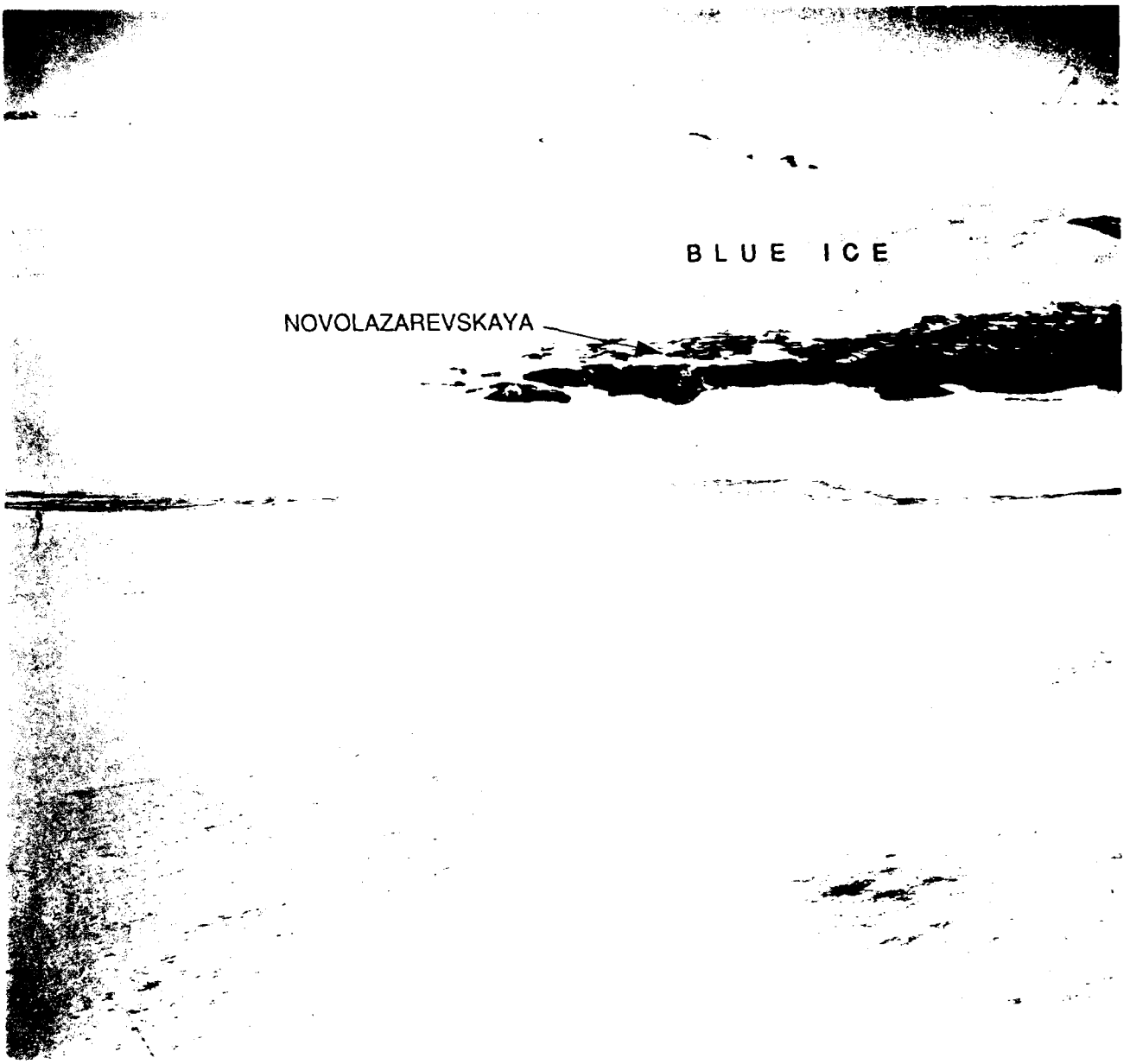


Figure 28. Schirmacher Hills (Site 32). The camera faces 220° true. Note the meltwater streams (foreground). The ice airfield is beyond the nunatak. Photo reproduced with permission of Norsk Polarinstitutt (DML 58-59 2416).

32. Schirmacher Hills (Fig. 28 and 29)

Maps: Dronning Maud Land 1:250,000, Schirmacheroasen, Sheet L4 (Oslo, Norsk Polarinstitutt, 1973); and Antarktida 1:25,000, Oazis Shirmakhera, Sheet 3 (Moskva, Ministerstvo Morskogo Flota SSSR, 1972). Landsat 2324-06390. Landsat 2308-06502 is reproduced as Figure 63 in Swithinbank (1988). Oblique aerial photographs can be obtained from Norsk Polarinstitutt, Oslo, and from the Arctic and Antarctic Research Institute, Leningrad. Ilyushin-14 aircraft have landed on wheels at 70°50′S, 11°50′E, elevation 500 m (1600 ft). I have walked over it and landed on it, but it is a poor choice because of surface roughness due to melt features. The Russians use the strip only because of its proximity to Novolazarevskaya Station.

33. Wohlthat Mountains (Fig. 29)

Maps: Dronning Maud Land 1:250,000, Humboldtfjella, Sheet L5; Wohlthatmassivet, Sheet M5 (Oslo, Norsk Polarinstitutt, 1968); Antarktida 1:100,000, Sheets R-33-109,110 and R-33-111,112 (Moskva, Ministerstvo Morskogo Flota S.S.S.R., 1967). 71°–72°S, 11°–14°E, elevation 1000 m (3300 ft). Landsat 2324-06390. Landsat 1167-06583 is reproduced in color as Figure 62 in Swithinbank (1988). There are several hundred square kilometers (>100 mi^2) of blue ice in this area, and it is

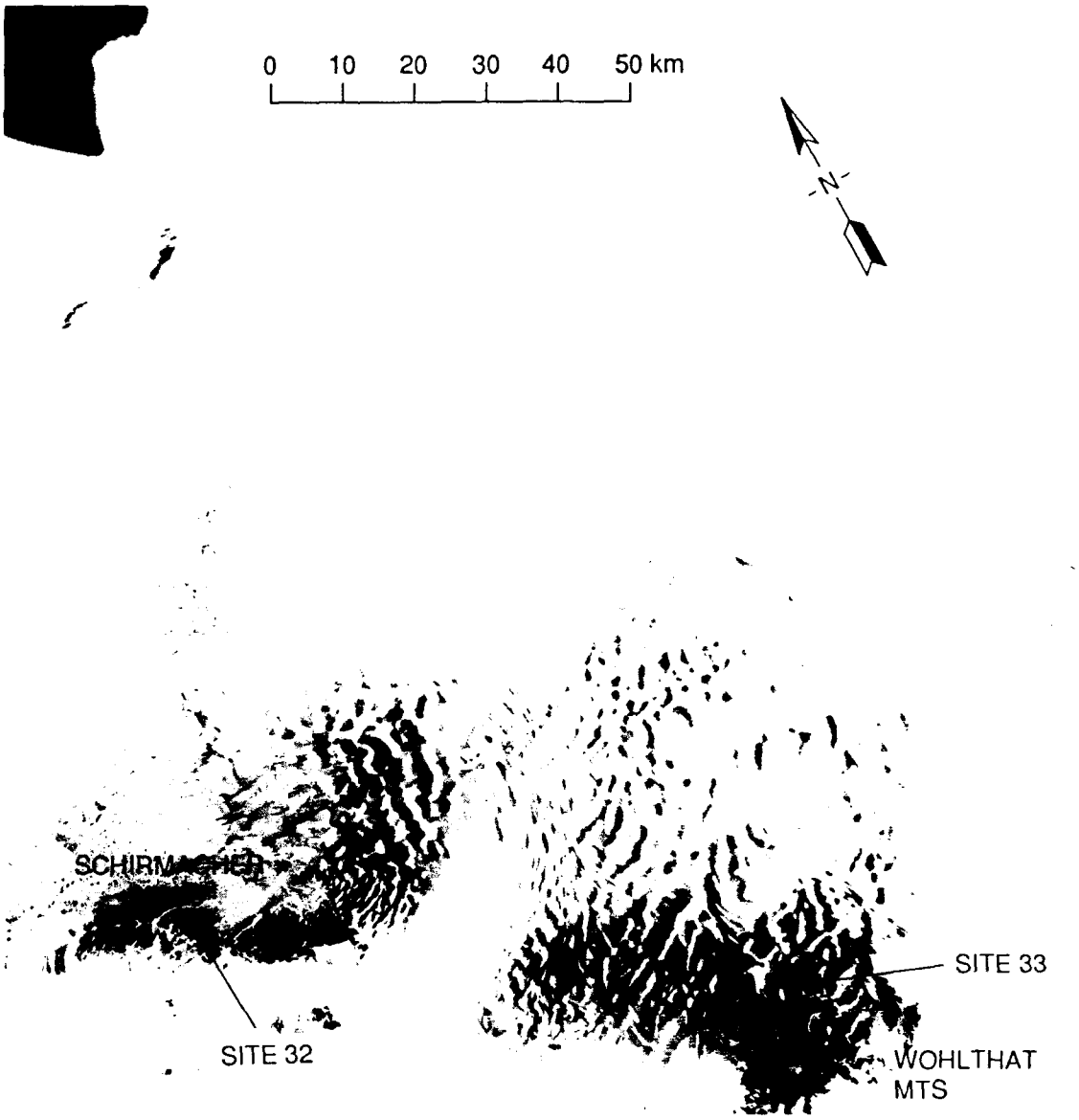


Figure 29. Schirmacher Hills (Site 32) and Wohlthat Massif (Site 33). NASA Landsat image (1167-06581, band 7, 6 January 1973, Path 174, Row 110).

likely that runways could be found with unobstructed approaches suitable for intercontinental aircraft.

34. Hoel Mountains

Map: Dronning Maud Land 1:250,000, Wohlthatmassivet, Sheet M5 (Oslo, Norsk Polarinstitutt, 1968). 71°55′S, 14°30′E, elevation, 1900 m (6200 ft). Landsat 2034-06300. There is more than 100 km^2 (40 mi^2) of blue ice in this area.

35. Vorposten Peak

Map: Dronning Maud Land 1:250,000, Forposten, Sheet N5 (Oslo, Norsk Polarinstitutt, 1975). 71°20′–71°45′S, 15°00′–15°45′E, elevation 1200–1700 m (4000–5600 ft). Landsat 2034-06300. There is more than 200 km^2 (80 mi^2) of blue ice in this area.

36. Princess Astrid Coast

Map: East Queen Maud Land–Enderby Land 1:2,000,000 (Tokyo, National Institute of Polar Research, 1988). 71°00′S, 20°00′E, elevation 400–600 m (1300–2000 ft). Landsat 1487-06324. There is more than 200 km^2 (80 mi^2) of undulating blue ice in this area.

37. Sør-Rondane Mountains

Maps: Sør-Rondane Mountains, Western 1:250,000 Landsat Map (Tokyo, Geographical Survey Institute, 1984); and Sør-Rondane Mountains, Eastern 1:250,000 Landsat Map (Tokyo, Geographical Survey Institute, 1985). 71°30′–73°00′S, 21°–28°E, elevation 1000–1500 m (3300–5000 ft). Landsat 1484-06160, 1535-05575, and 2386-05405. Landsat 1212-06072 is reproduced as Figure 61 in Swithinbank (1988). There are a few hun-

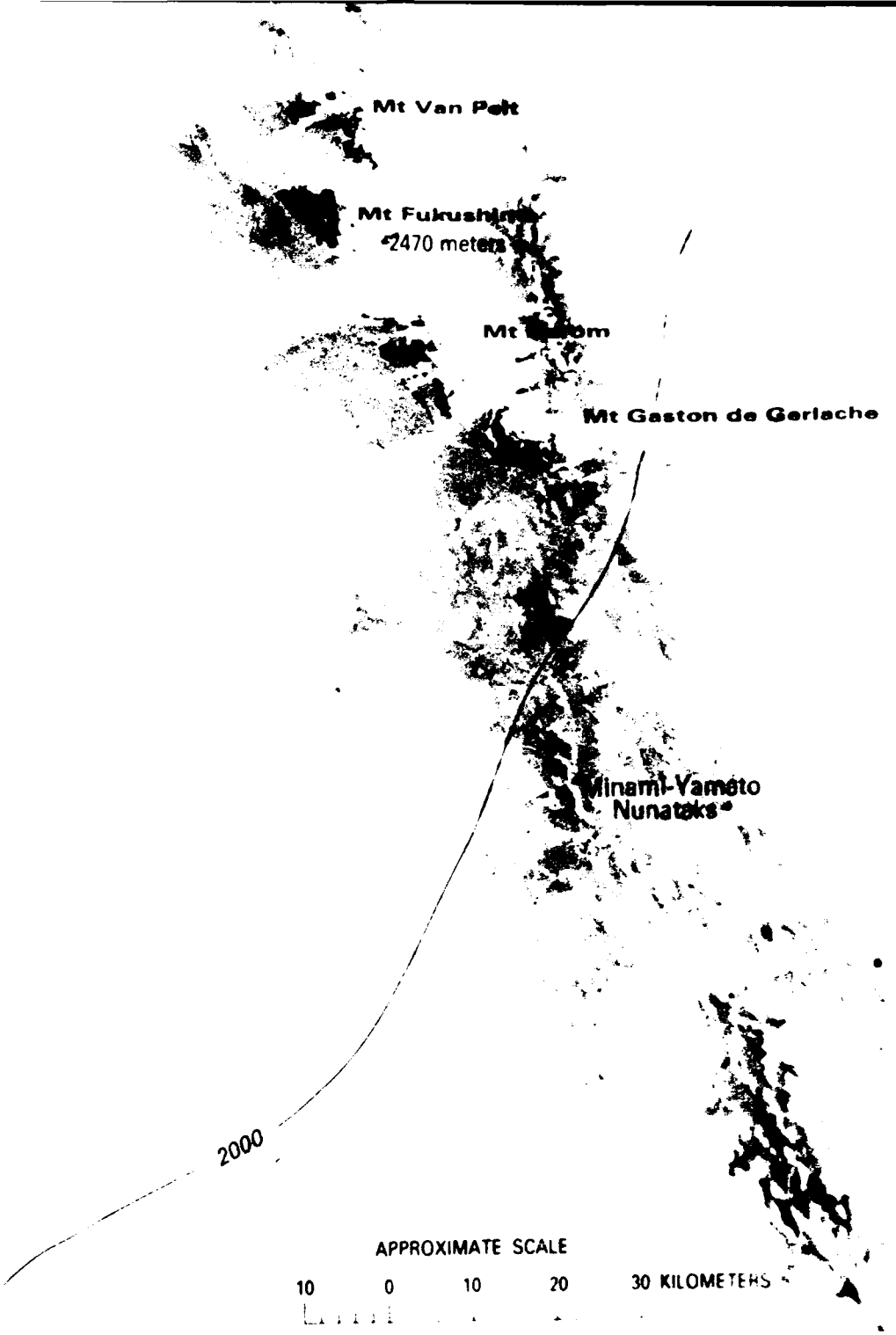


Figure 30. Satellite image of Queen Fabiola Mountains (Site 40). Digitally enhanced false-color composite image (NASA Landsat 1511-05240, 16 December 1973, Path 158, Row 111).

dred square kilometers (>100 square miles) of blue ice in and around these mountains. They offer good prospects for intercontinental operations. Aerial photographs are available from National Institute of Polar Research, Tokyo; Expéditions Antarctique Belge, Brussels; and Norsk Polarinstitutt, Oslo. The area is mapped on 12 sheets at a scale of 1:50,000 with a 20-m (65-ft) contour interval (Tokyo, Geographical Survey Institute, 1986). A typical blue ice surface appears as Photo 23 in Picciotto and others [n.d.].

38. Princess Ragnhild Coast

Map: East Queen Maud Land–Enderby Land 1:2,000,000 (Tokyo, National Institute of Polar Research, 1988). 70°30′–71°00′S, 27°30′–30°00′E, elevation 100–400 m (300–1300 ft). Landsat 2386-05403. There are a few hundred square kilometers (>100 mi^2) of blue ice in this area south of the ice shelf grounding line, but there may be surface melt features. Aerial photographs are available from the National Institute of Polar Research, Tokyo.

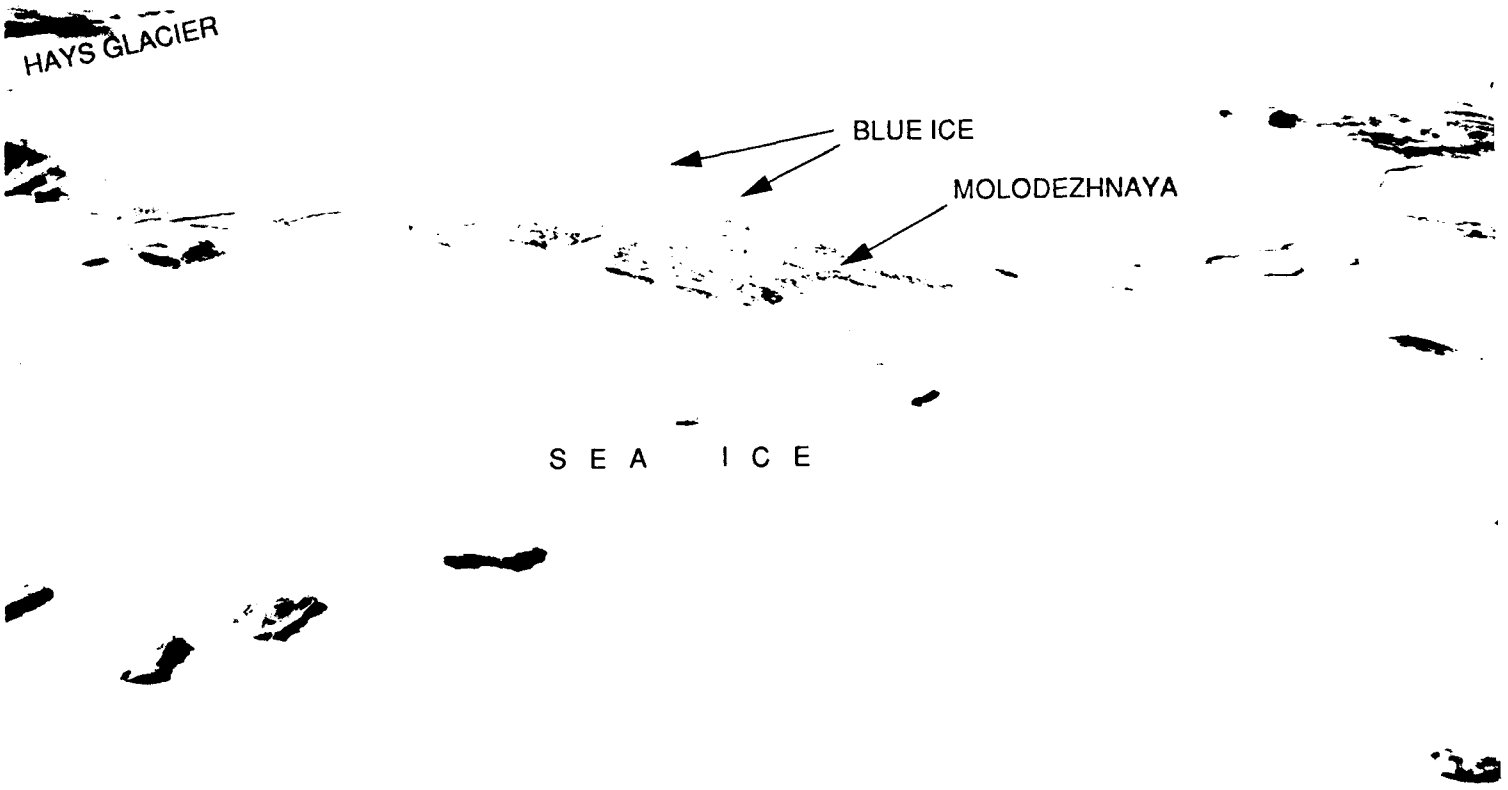


Figure 31. The Molodezhnaya station area (Site 43) seen from an altitude of 3100 m (9600 ft). The camera faces 150° true. Arrow shows station site. Patches of blue ice can be seen beyond. Photo: ANARE (ANT 46 Run 26 L 7063, 28 November 1956).

39. Belgica Mountains

Map: Monts Belgica 1:25,000 (Brussels, Institut Géographique Militaire, 1963). 72°33′S, 31°18′E, elevation 2000 m (6600 ft). Landsat 1547-05232. Aerial photographs are available from Expéditions Antarctique Belge, Brussels. There are some blue icefields with dimensions up to 4 × 1 km (2 × 0.6 mile) in this range. The map has a 20-m (65-ft) contour interval.

40. Queen Fabiola Mountains (Fig. 30)

Maps: The area is mapped on 11 sheets at 1:25,000 scale with a 10-m (33-ft) contour interval (Tokyo, Geographical Survey Institute, 1981). 71°10′–72°45′S, 34°30′–36°30′E, elevation 1600–2600 m (5200–8500 ft). Landsat 1528-05175. This is the most extensive blue ice area in Antarctica with a total of more than 1000 km^2 (400 mi^2) of ice. Somewhere in the area we could be certain to find a good site for an intercontinental airfield.

41. Lützow-Holm Bay

Maps: Lützow-Holm Bay 1:250,000 Landsat Map (Tokyo, Geographical Survey Institute, 1984); Lützow-Holm Bay 1:250,000 (Tokyo, Geographical Survey Institute, 1963). Coastal areas are mapped at 1:25,000 with a 10-m (33-ft) contour interval (Tokyo, Geographical Survey Institute, 1966–81). 69°00′–69°45′S, 39°–40°E. Landsat 1528-05170. There are a few hundred square kilometers (>100 mi^2) of blue ice at elevations of up to 500 m (1600 ft) near the coast in this area, but there is a likelihood of surface melt features. Aerial photographs are available from the National Institute of Polar Research, Tokyo.

42. Prince Olav Coast

Maps: 1:250,000 Landsat map, Prince Olav Coast (Tokyo, Geographical Survey Institute, 1988); 1:250,000, Prince Olav Coast (Tokyo, Geographical Survey Institute, 1990). 67°50′–68°45′S, 40°–45°E. There are blue ice patches all along the coast at elevations of up to 500 m (1600 ft) but melt features may make them unusable.

43. Molodezhnaya (Fig. 31)

Map: Antarktida 1:50,000, Molodezhnaya (Ministerstvo Morskogo Flota S.S.S.R., 1972). 67°40′S, 45°50′E, elevation 280 m (900 ft). The Soviet Antarctic Expedition has a skiway close to the station, plus a compacted snow/ice runway 14/32 true for heavy wheeled aircraft 20 km (12 miles) east of the station at an elevation of 250 m (800 ft). The runway is used by Ilyushin-18 and Ilyushin-76TD aircraft on wheels for intercontinental flights to and from Maputo, Mozambique.

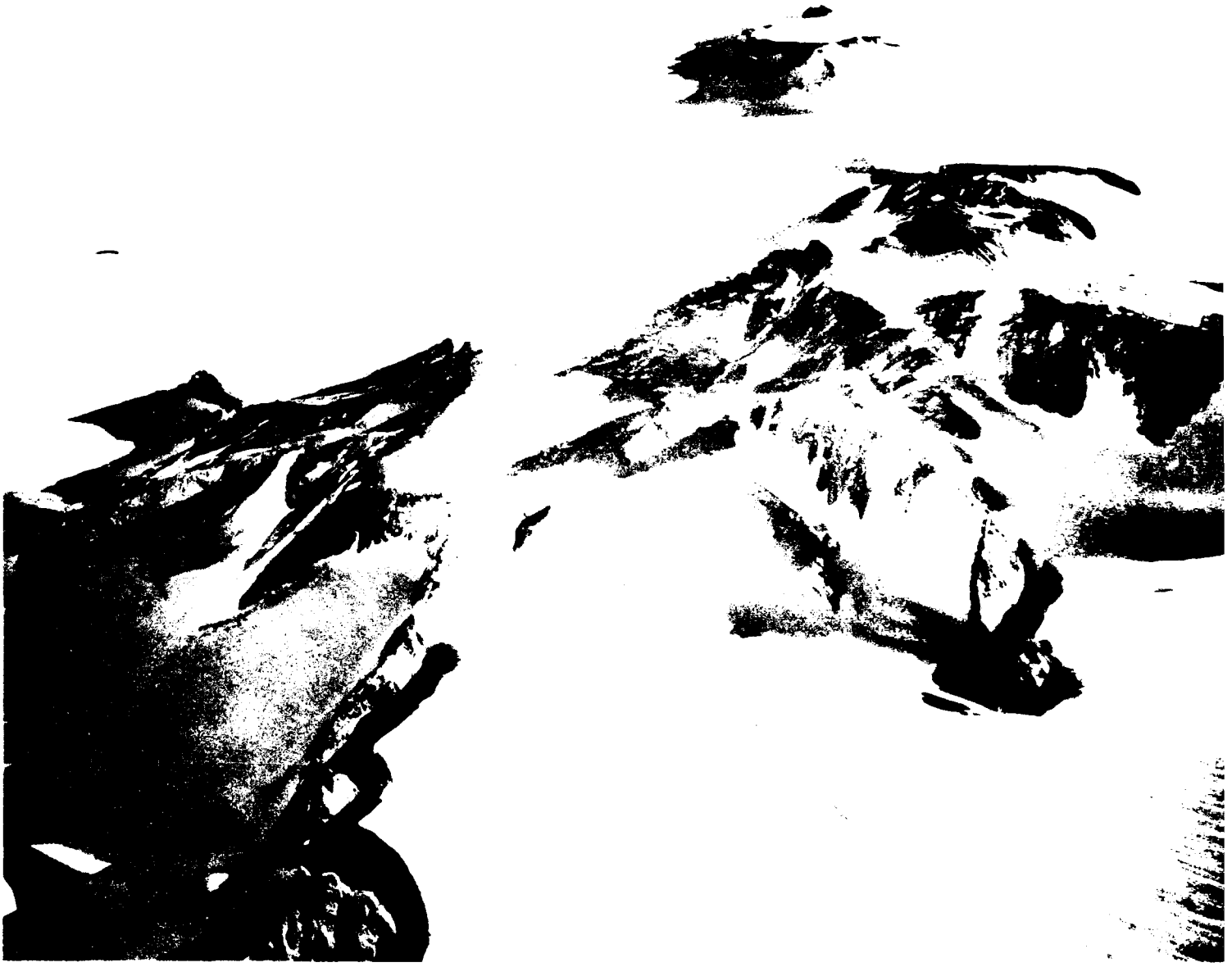


Figure 32. Leckie Range (Site 49) seen from an altitude of 3800 m (12,600 ft). The camera faces 020° true. Mount Cook (right). The blue ice is in the center of the picture just beyond the ridge. Photo: ANARE (ANT 42 Run 18 R 9020, 11 October 1956).

44. Nye Mountains

Maps: Australian Antarctic Territory 1:250,000, Nye Mountains, Sheet SR 3839/3 (Canberra, Division of National Mapping, 1966); Australian Antarctic Territory 1:250,000, Simpson Peak, Sheet SQ 38-39/15 (Canberra, Division of National Mapping, 1962); and Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SR 39-40/1 (Canberra, Division of National Mapping, 1976). 68°11′S, 49°10′E, elevation 800 m (2600 ft). Landsat 1506-04541 and 42414-05001. Landsat 1540-04415 is reproduced as Figure 57 in Swithinbank (1988). There is more than 200 km^2 (80 mi^2) of blue ice in this area.

45. Raggatt Mountains

Map: Australian Antarctic Territory 1:250,000, Simpson Peak, Sheet SQ 3839/15 (Canberra, Division of

National Mapping, 1962). 67°42′S, 49°15′E, elevation 500 m (1600 ft). Landsat 1506-04541 and 42414-05001. Landsat 1540-04415 is reproduced as Figure 57 in Swithinbank (1988). There is more than 100 km^2 (40 mi^2) of blue ice in this area.

46. Scott Mountains

Map: Australian Antarctic Territory 1:250,000, Simpson Peak, Sheet SQ 3839/15 (Canberra, Division of National Mapping, 1962). 67°42′S, 49°55′E, elevation 900 m (3000 ft). Landsat 1506-04541 and 42414-04595. Landsat 1540-04415 is reproduced as Figure 57 in Swithinbank (1988). There is more than 100 km^2 (40 mi^2) of blue ice in this area.

47. Enderby Land

Maps: Australian Antarctic Territory 1:250,000, Mount Codrington and Proclamation Island, Sheet SQ 38-39/12 and part 8; McLeod Nunataks, Sheet SQ 38-39/16 (Canberra, Division of National Mapping, 1964); and Australian Antarctic Territory 1:250,00, ERTS Imagery Series, Sheet SQ 39-40/10 (Canberra, Division of National Mapping, 1976). 66°48′–67°04′S, 52°00°–53°14′E, elevation 900-1600 m (3000–5200 ft). Landsat 1540-04412 and 42414-04595. There is more than 200 km^2 (80 mi^2) of blue ice in this area. Prevailing winds are from 090° true.

48. Napier Mountains

Maps: Australian Antarctic Territory 1:250,000, Napier Mountains, Sheet SQ 38-39/12; and Aker Peaks and Cape Borley, Sheet SQ 40-41/9 and part 5 (Canberra, Division of National Mapping, 1967). 66°17′–66°43′S, 52°45′–54°20′E, elevation 1000–1800 m (3300–5900 ft). Landsat 1540-04412 and 42414-04595. There is some 100 km^2 (40 mi^2) of blue ice in this area.

49. Leckie Range (Fig. 32)

Map: Australian Antarctic Territory 1:250,000, Rayner Peak and Dismal Mountains, Sheet SQ 40-41/13 (Canberra, Division of National Mapping, 1967). 67°49′S, 56°27′E, elevation 1400 m (4600 ft). Landsat 1177-04275. There is some 50 km^2 (20 mi^2) of blue ice in this range.

50. Framnes Mountains (Fig. 33)

Maps: Framnes Mountains 1:100,000; and Framnes Mountains 1:100,000, Satellite Image Map (Canberra, AUSLIG for Antarctic Division, 1990). 67°45′S, 62°45′E, elevation 500–800 m (1600–2600 ft). Landsat 1137-04053 is reproduced as Figure 56 in Swithinbank (1988). TMA 237 R 006, TMA 237 R 007, TMA 237 R 010. There are extensive blue ice areas on the north and west sides of David and Masson Ranges, and off Mount Henderson. The area of blue ice exceeds 200 km^2 (80 mi^2). Some prospective sites have been surveyed with a view to operating C-130 aircraft (Murphy 1990). A long runway could be aligned with the direction of strong winds (150° true). In December, 1960 a storm destroyed a DHC-2 and a DC-3 at the nearby Rumdoodle airstrip.

51. Prince Charles Mountains (south)

Maps: Australian Antarctic Territory 1:1,000,000, Sheet SS 40-42 (Canberra, Division of National Mapping, 1971); Australian Antarctic Territory 1:500,000, ERTS Imagery Series, Sheets SR 40-42a, SS 40-42b, and SS 40-42d (Canberra, Division of National Mapping, 1975); Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheets SS 40-42/3, SS 40-42/4, and SS 40-42/7 (Canberra, Division of National Mapping, 1975); and Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheets SS 40-42/6 and SS 40-42/11 (Canberra, Division of National Mapping, 1976). 72°00′S–74°25′S, 60°–68°E, elevation 200–2000 m (600–6600 ft). Landsat 1236-03153, 1580-03214, 42437–03290 and 42442-03473. Landsat 1196-02530 is reproduced as Figure 52 in Swithinbank (1988). There is more than 500 km^2 (200 mi^2) of blue ice scattered over this large area. Sites 52, 54, 55, 56, 57, 60, 61, and 62 are within the area, but aerial photograph coverage is patchy so there may be many other sites not yet identified.

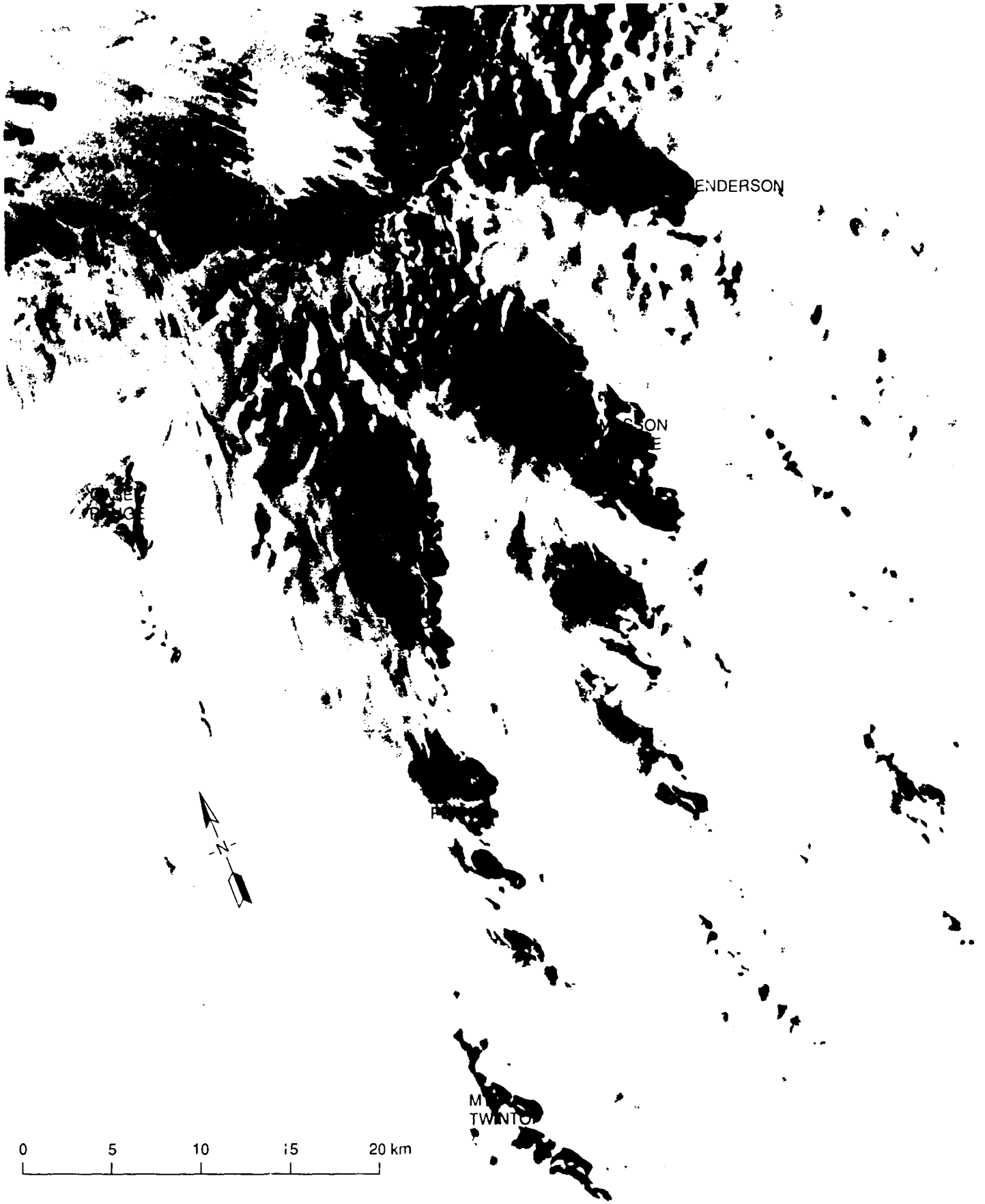


Figure 33. Frannes Mountains (Site 50). NASA Landsat image (1137-04053, 7 December 1972, Path 144, Row 108).

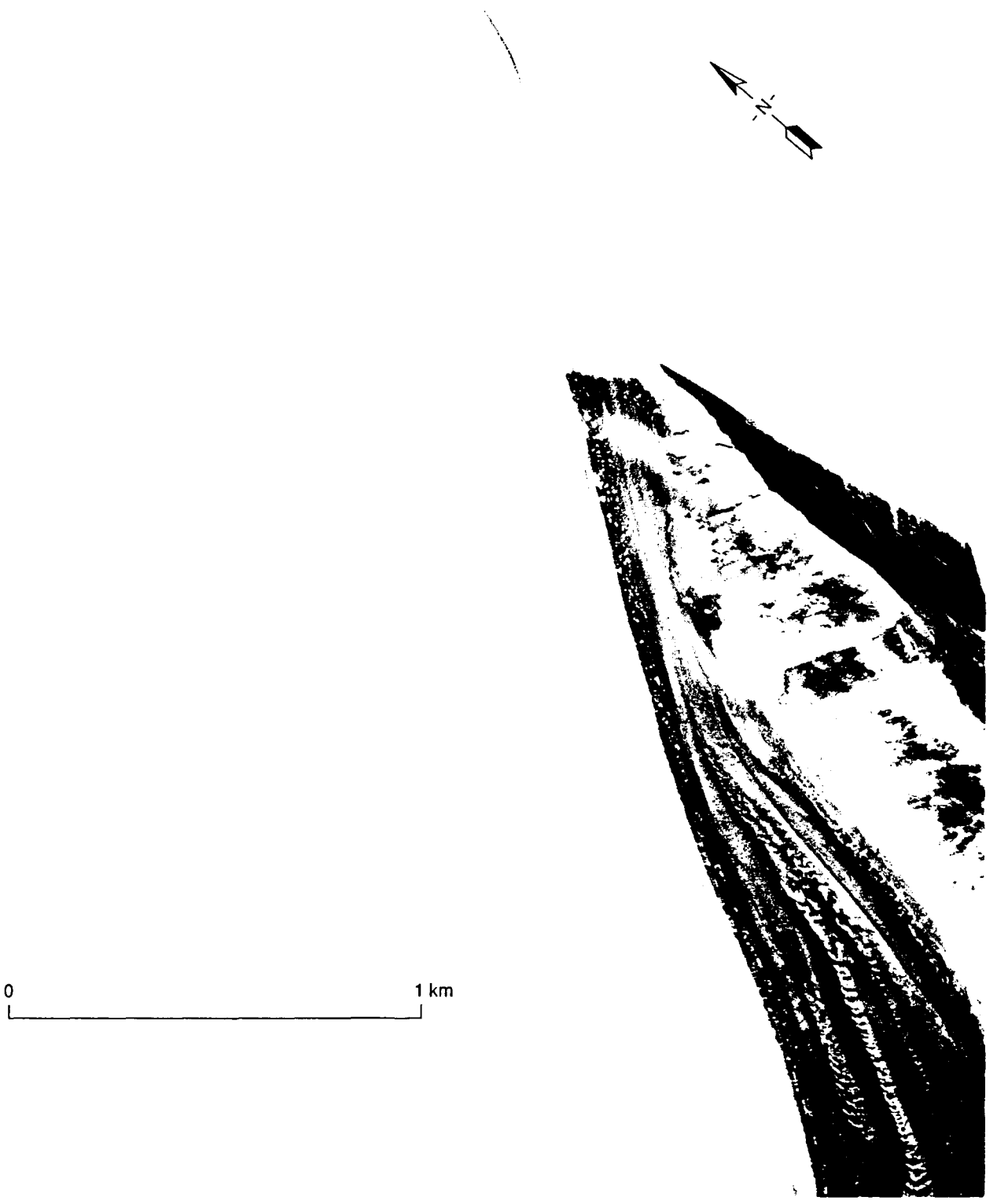


Figure 34. Vertical photograph of Mount Bayliss (Site 52) seen from an altitude of 2600 m (8500 ft). The smoothest blue ice parallels the lateral moraine. Photo: ANARE (ANT 87 Run 1A V 8111, 3 December 1960).

52. Mount Bayliss (Fig. 34)

Maps: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/6 (Canberra, Division of National Mapping, 1976); and Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/7 (Canberra, Division of National Mapping, 1975). 73°24′S, 63°12′E, elevation 1500 m (4900 ft). There is more than 100 km^2 (40 mi^2) of blue ice in

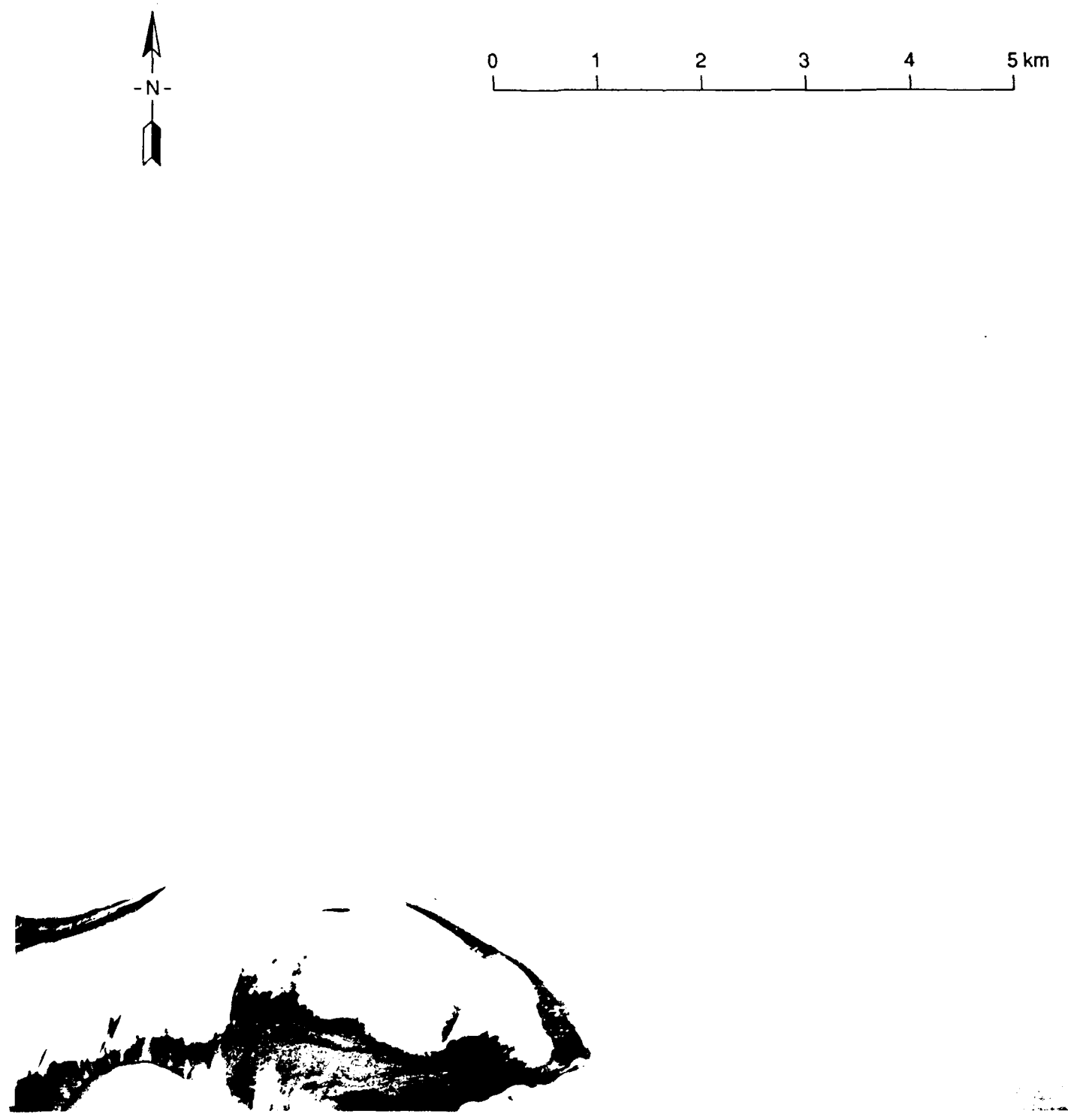


Figure 35. Vertical photograph of Mount Cresswell (Site 54) seen from an altitude of 6100 m (20,000 ft). Blue ice covers almost the whole area of the picture. Photo: ANARE (CAS 3989 Run 11 V 242, 13 January 1963).

the area. A smooth strip 5 × 1 km (3 × 0.6 mile) is on the north side of a lateral moraine at the east end of the nunatak.

53. Prince Charles Mountains (north)

Maps: Australian Antarctic Territory 1:1,000,000, Sheet SR 41-42 (Canberra, Division of National Mapping, 1973); Australian Antarctic Territory 1:500,000, ERTS Imagery Series, Sheet SR 41-42d (Canberra, Division of National Mapping, 1974); Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheets SR 41-42/10, SR 41-42/11, SR 41-42/14, and SR 41-42/

15 (Canberra, Division of National Mapping, 1975); and Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SR 41-42/15 (Canberra, Division of National Mapping, 1976). 70°10′–72°00′S, 64°–68°E, elevation 200–1700 m (600–5600 ft). Landsat 1236-03153, 1580-03214, and 1581-03270. A composite Landsat image in color is reproduced as Figure 53 in Swithinbank (1988). There is more than 500 km^2 (200 mi^2) of blue ice scattered over this large area. Sites 58 and 59 are within the area, but aerial photograph coverage is patchy so there may be many other sites not yet identified.

54. Mount Cresswell (Fig. 35)

Map: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/3 (Canberra, Division of National Mapping, 1975). 72°44′S, 64°22′E, elevation 1300 m (4300 ft). There is an area of more than 10 km^2 (4 mi^2) of blue ice on the north side of the east end of the nunatak. It has been used by light aircraft on wheels.

Figure 36. Mount Seddon (Site 55) seen from an altitude of 3500 m (11,600 ft). The camera faces 180° true. Blue ice covers the whole foreground as far as the nunatak (center). Photo: ANARE (ANT 71 Run 202 R 9120, March 1959).

55. Mount Seddon (Fig. 36)

Map: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/7 (Canberra, Division of National Mapping, 1975). 73°05′S, 65°00′E, elevation 1000 m (3300 ft). There is a field of blue ice extending over more than 10 km^2 (4 mi^2) on the north side of the nunatak.

Figure 37. Mount Newton (Site 56) seen from an altitude of 2600 m (8500 m). The camera faces 040° true. The smoothest blue ice is on Collins Glacier (left) close to the nunatak in the foreground, but there may be other good prospects to the left of the area shown. Photo: ANARE (ANT 87 Run 1A L 7169, 3 December 1960).

56. Mount Newton (Fig. 37)

Map: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/7 (Canberra, Division of National Mapping, 1975). 73°55'S, 65°15'E, elevation 1000 m (3300 ft). There is a 5- × 1-km (3- × 0.6-mile) strip of blue ice close to the northwest margin of the nunatak.

Figure 38. Mount Bloomfield (Site 57) seen from an altitude of 3500 m (11,600 ft). The camera faces 005° true. The closest of the distant nunataks (right) is Mount Johns. The smoothest blue ice is probably in the middle of the picture but there may be other good prospects in the vicinity. Photo: ANARE (ANT 71 Run 202 L 7112, March 1959).

57. Mount Bloomfield (Fig. 38)

Map: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/3 (Canberra, Division of National Mapping, 1975). 72°57'S, 65°40'E, elevation 700 m (2300 ft). There is a 5- × 1-km (3- × 0.6-mile) strip of blue ice close to the northern margin of the nunatak.

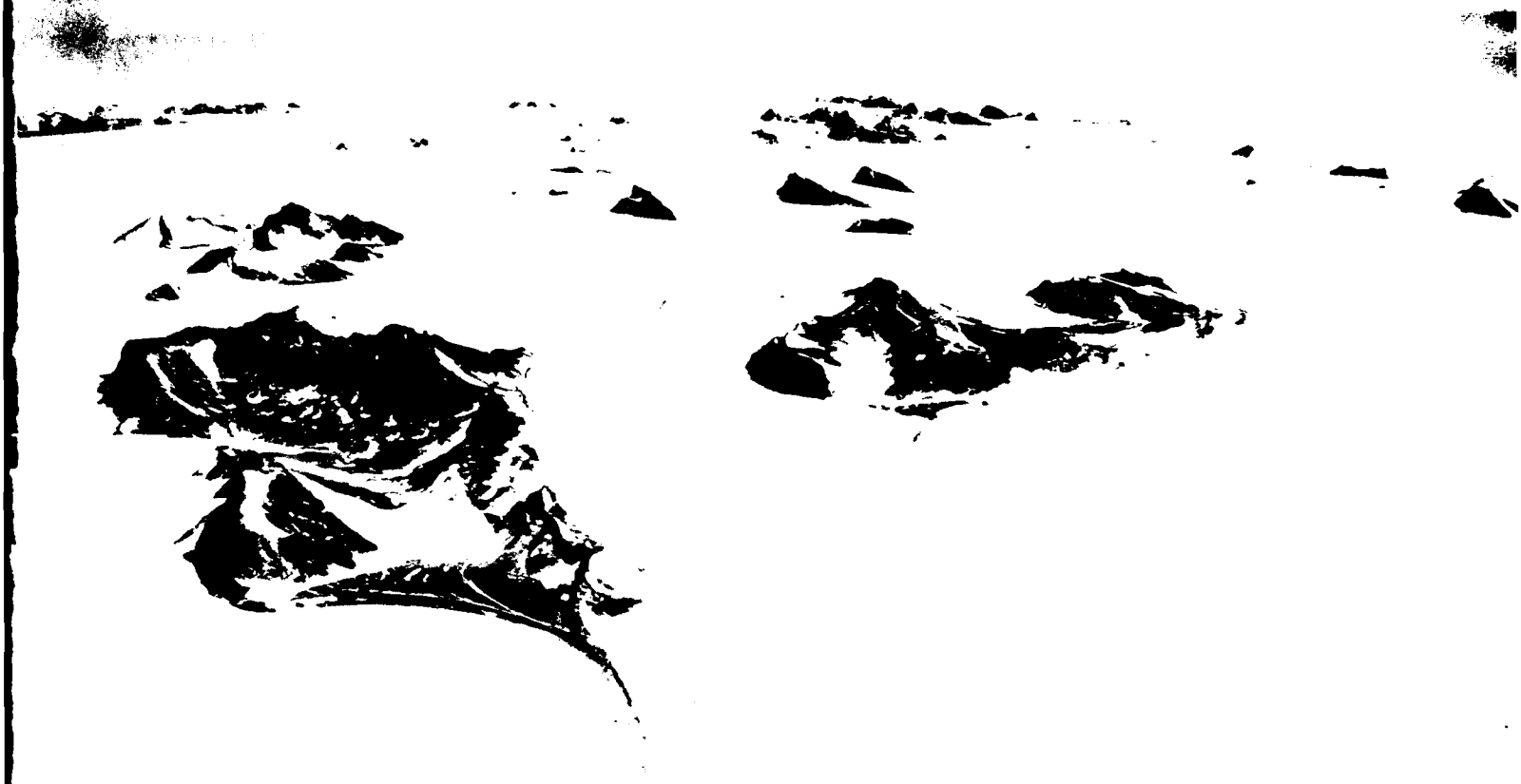


Figure 39. Mount Jacklyn (Site 58) seen from an altitude of 3100 m (10,000 ft). The camera faces 275° true. Mount Jacklyn (left), Farley Massif (right). Photo: ANARE (ANT 130 Run 36 L 7181, 11 January 1965).

58. Mount Jacklyn (Fig. 39)

Map: Mac.Robertson Land 1:100,000, Crohn Massif, Sheet SR 41-42/10 (Canberra, Division of National Mapping, 1967). 70°14′S, 65°50′E, elevation 1450 m (4800 ft). There is an area of more than 10 km^2 (4 mi^2) of blue ice between Mount Jacklyn and Farley Massif and on the east side of Farley Massif.

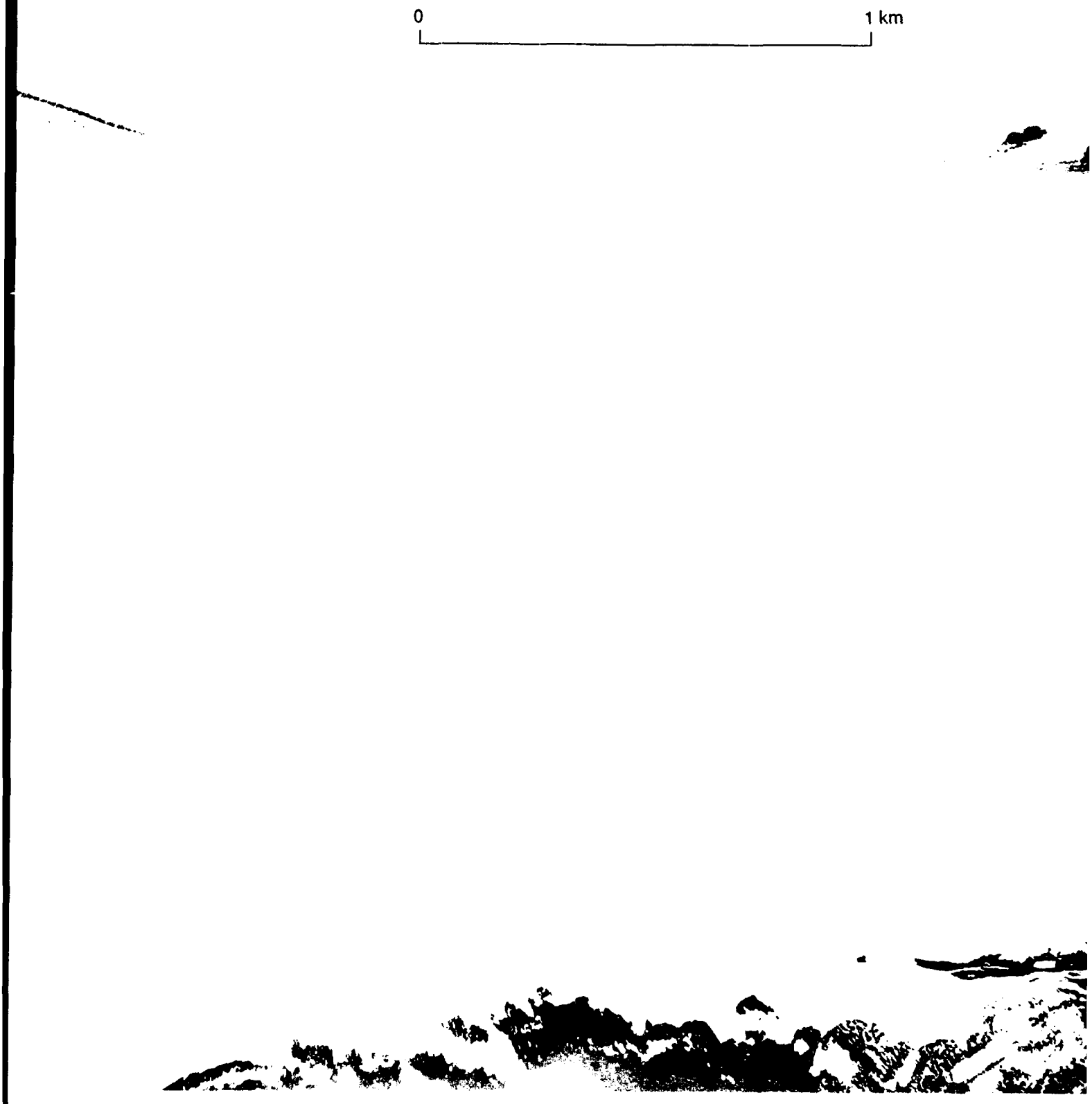


Figure 40. Vertical photograph of Mount Leckie (Site 59) seen from an altitude of 3200 m (10,600 ft). The blue ice is between the nunatak (bottom) and the strips of moraine (top). Photo: ANARE (ANT 130 Run 36 V 8151, 11 January 1965).

59. Mount Leckie (Fig. 40)

Maps: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheets SR 41-42/10 and 41-42/11 (Canberra, Division of National Mapping, 1975).

70°25′S, 66°00′E, elevation 1450 m (4800 ft). There is a strip of blue ice 3 × 1 km (2 × 0.6 mile) on the north side of the nunatak.

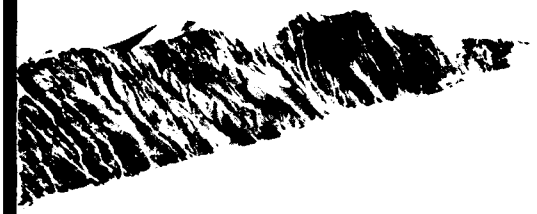


Figure 41. Mount Rymill (Site 60) seen from an altitude of 3200 m (10,600 ft). The camera faces 185° true. Mount Rymill (right), Mount Stinear (left), and Mount Rubin (right center distant) on the far side of Fisher Glacier. Almost the whole area shown consists of blue ice. Photo: ANARE (ANT 71 Run 202 R 9120, March 1959).

60. Mount Rymill (Fig. 41)

Map: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/7 (Canberra, Division of National Mapping, 1975). 73°03′S, 66°10′E, elevation 500 m (1600 ft). There is an area of more than 10 km^2 (4 mi^2) of blue ice on a distributary tongue of Fisher Glacier between Mounts Rymill and Stinear.

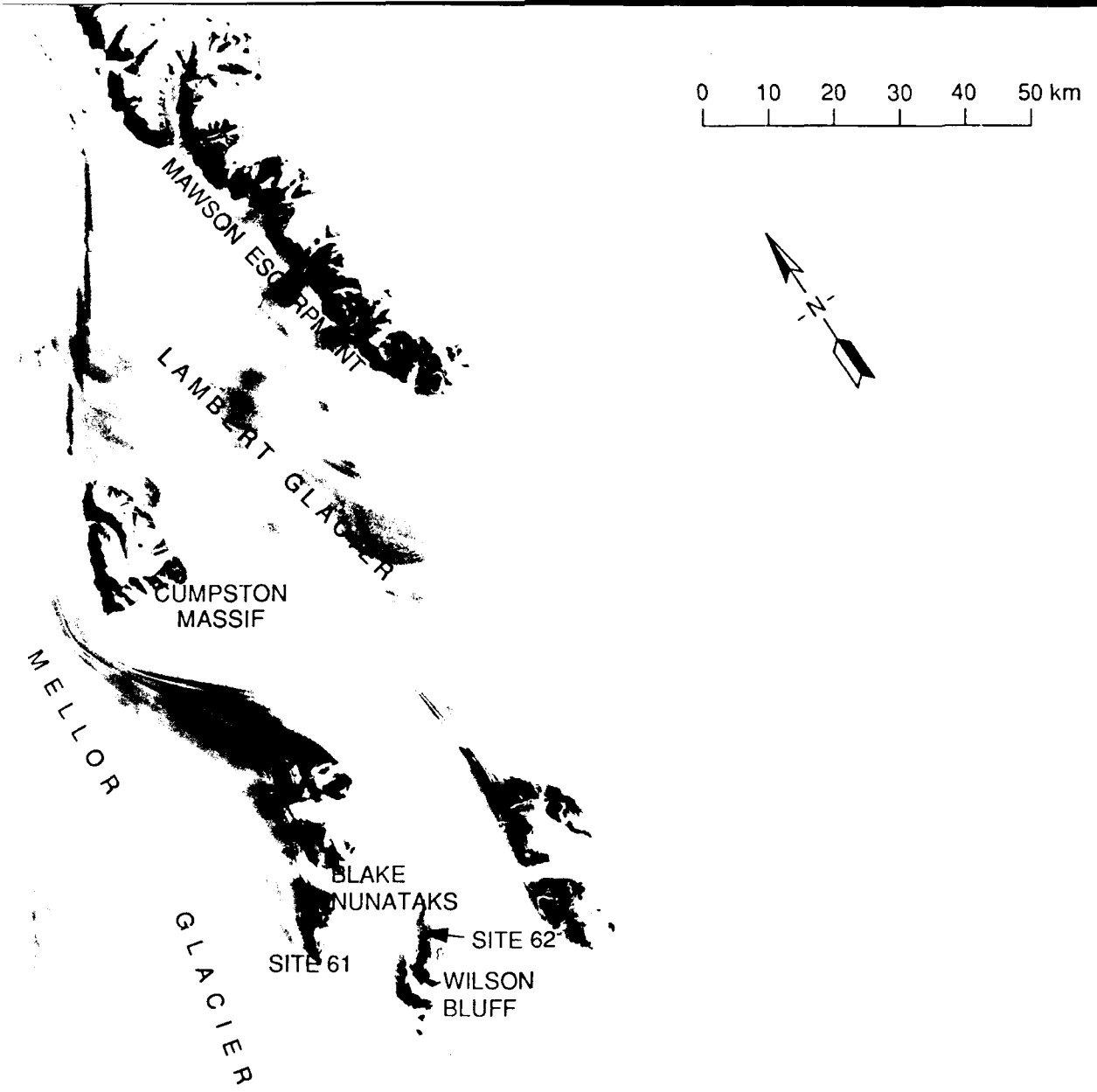


Figure 42. Blake Nunataks (Site 61) and Wilson Bluff (Site 62) at the head of Lambert Glacier. Digitally enhanced NASA Landsat image (1196-02530, band 7, 4 February 1973, Path 131, Row 113).

61. Blake Nunataks (Fig. 42 and 43)

Map: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/11 (Canberra, Division of National Mapping, 1976). 74°09′S, 66°25′E, elevation 1200 m (3900 ft). There is a 5- × 1-km (3- × 0.6-mile) strip of blue ice off a lateral moraine on the north side of the nunatak.

Figure 43. Blake Nunataks (Site 61) seen from an altitude of 2600 m (8500 ft). The camera faces 040° true. Mellor Glacier (left) and Mour Maguire (third from camera, center). The smoothest blue ice is just off the lateral moraine (center foreground). Photo: ANARE (ANT 87 Ru 1A L 7196, 3 December 1960).

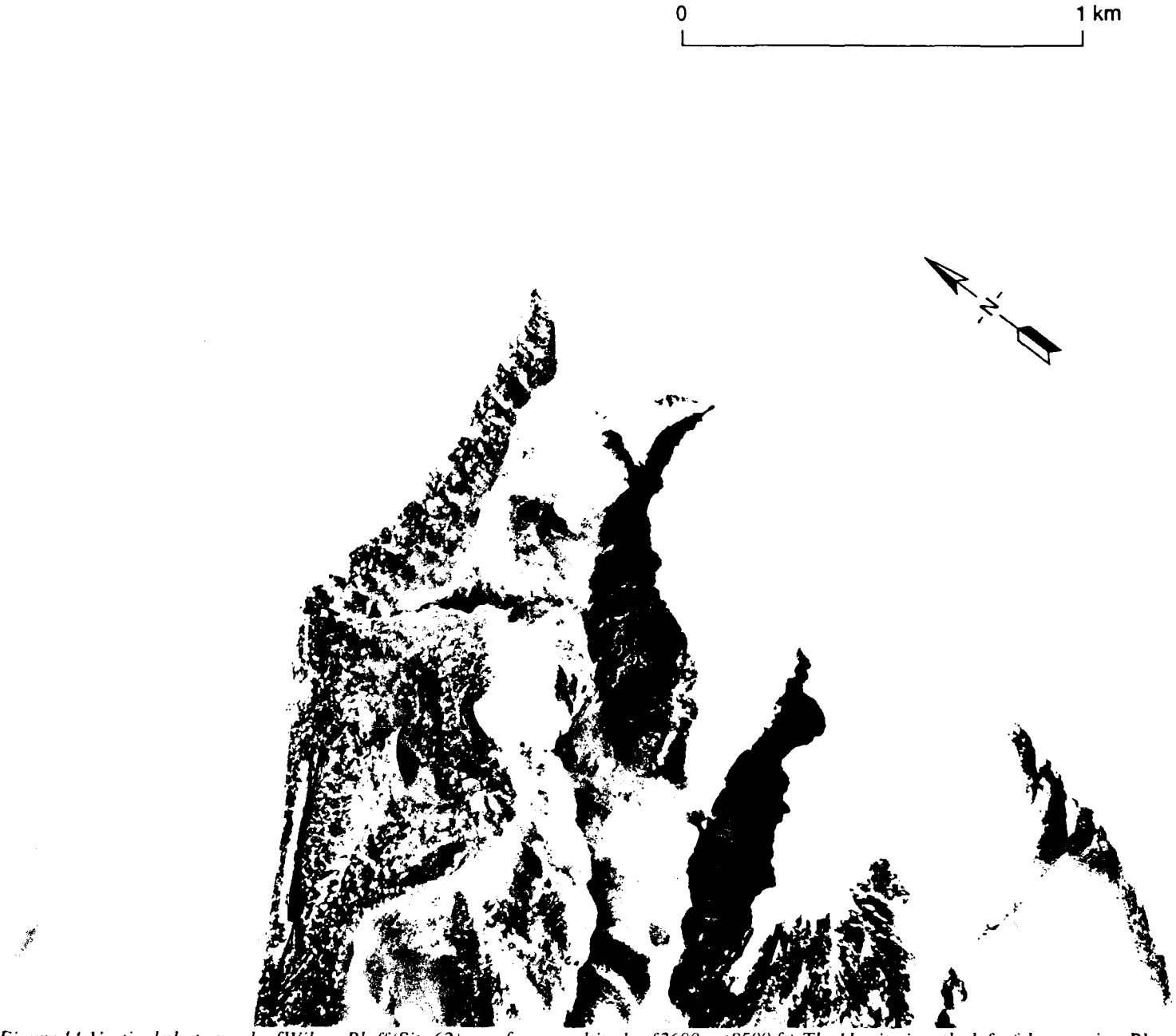


Figure 44. Vertical photograph of Wilson Bluff (Site 62) seen from an altitude of 2600 m (8500 ft). The blue ice is to the left of the moraine. Photo: ANARE (ANT 87 Run 1A V 8207, 3 December 1960).

62. Wilson Bluff (Fig. 42 and 44)

Map: Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/11 (Canberra, Division of National Mapping, 1976). 74°17′S, 66°54′E, elevation 1250 m (4100 ft). There is a 5- × 1-km (3- × 0.6-mile) strip of blue ice off a lateral moraine on the northwest side of the nunatak.

63. Lars Christensen Coast

Maps: Australian Antarctic Territory 1:250,000, Mount Henderson and Anniversary Nunataks, Sheet SQ 40-41/16 (Canberra, Division of National Mapping, 1967); Scullin Monolith, Sheet SQ 41-42/15 (Canberra, Division of National Mapping, 1970); Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheets

Figure 45. Beaver Lake (Site 64) seen from an altitude of 3000 m (10,000 ft). The camera faces 290° true. Photo: ANARE (ANT 38 Run 14 R 92-9 October 1956).

SQ 41-42/14 and SQ 41-42/15 (Canberra, Division of National Mapping, 1976). 67°30′–68°00′S, 65°30′–69°00′E, elevation 100–500 m (300–1600 ft). Landsat 1151-03423. There are a few hundred square kilometers (>100 mi^2) of blue ice along this coast, the best prospects being in the Gustav Bull Mountains (67°50′S, 66°00′E, elevation 400 m (1300 ft).

64. Beaver Lake (Fig. 45 and 46)

Maps: Beaver Lake 1:100,000; and Beaver Lake 1:100,000, Satellite Image Map (Canberra, AUSLIG for Antarctic Division, 1990). 70°48′S, 68°15′E, elevation 1 m (3 ft). This is a tidal sea lake 8 × 11 km (5 × 7 miles) covered by perennial freshwater ice reported to be about 3 m (10 ft) thick in summer. The surface of

Figure 46 Beaver Lake (Site 64) seen from an altitude of 1800 m (6000 ft). The camera faces 335° true. The lake ice is in the foreground. Photo: ANARE (ANT 132 BLS R 15, 12 December 1957).

much of the lake is smooth and has been used by ANARE for operating Beaver aircraft. Some roughness can be expected at the north end of the lake towards a stagnant glacier tongue (Fig. 46), and in summer there is a moat of open water between the lake ice and land. Surface ablation rates from sublimation have been measured at 2.6 mm/day (0.1 in./day) in October. Surface melting is not apparent. It appears that the site would be suitable for operating heavy wheeled aircraft (personal communication from W.F. Budd). A runway 03/21 true would face the prevailing wind (from 210° true). Approaches are clear (1° glide slope) and a climb gradient of 2% would avoid rising terrain.

65. Mac.Robertson Land

Maps: Australian Antarctic Territory 1:1,000,000,

Sheets SR 41-42, SR 43-44, and SS 40-42 (Canberra, Division of National Mapping, 1971); Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SR 41-42/16 (Canberra, Division of National Mapping, 1976); Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SS 40-42/4 (Canberra, Division of National Mapping, 1975). 70°00′–72°30′S, 68–74°E, elevation 100–500 m (300–1600 ft). Landsat 1196-02521. There are several hundred square kilometers of blue ice on slopes leading down to Amery Ice Shelf.

66. Publications Ice Shelf

Map: Australian Antarctic Territory 1:1,000,000, Sheet SR 43-44 (Canberra, Division of National Mapping, 1971). 69°30′–70°00′S, 74°–76°E, elevation 100–500 m (300–1600 ft). Landsat 1196-02514. There is more than 100 km^2 (40 mi^2) of blue ice on outlet glaciers flowing down towards Publications Ice Shelf.

67. Grove Mountains

Map: Australian Antarctic Territory 1:1,000,000, Sheet SS 43-45 (Canberra, Division of National Mapping, 1971). 72°30′–73°10′S, 74°–76°E, elevation 1700–2000 m (5600–6600 ft). Landsat 1210-02295. There is some 200 km^2 (80 mi^2) of blue ice in this group of small scattered nunataks.

68. Larsemann Hills

Map: Larsemann Hills 1:25,000, Satellite Image Map (AUSLIG for Antarctic Division, 1989). 69°26′S, 76°13′E, elevation 100–500 m (300–1600 ft). There are patches of blue ice with some snow cover in this area, which is within 10 km (6 miles) of Law Base (Australian), Progress Base (Soviet), and Zhong Shan Base (Chinese).

69. Prydz Bay

Map: Australian Antarctic Territory 1:1,000,000, Sheet SR 43-44 (Canberra, Division of National Mapping, 1971). 68°00′–69°30′S, 76°–80°E, elevation 100–500 m (300–1600 ft). Landsat 1196-02512. There are several hundred square kilometers (>100 square miles) of blue ice on slopes leading down to the coast.

70. Vestfold Hills

Map: Australian Antarctic Territory 1:50,000, Vestfold Hills (Canberra, Division of National Mapping, 1982). 68°35′S, 78°00′E, elevation 10 m (33 ft). Landsat 1142-02510. TMA M26 Roll 67 Run 1 R 59. A shallow ice-free valley here is reported to offer the best prospect for a hard runway near Davis Station.

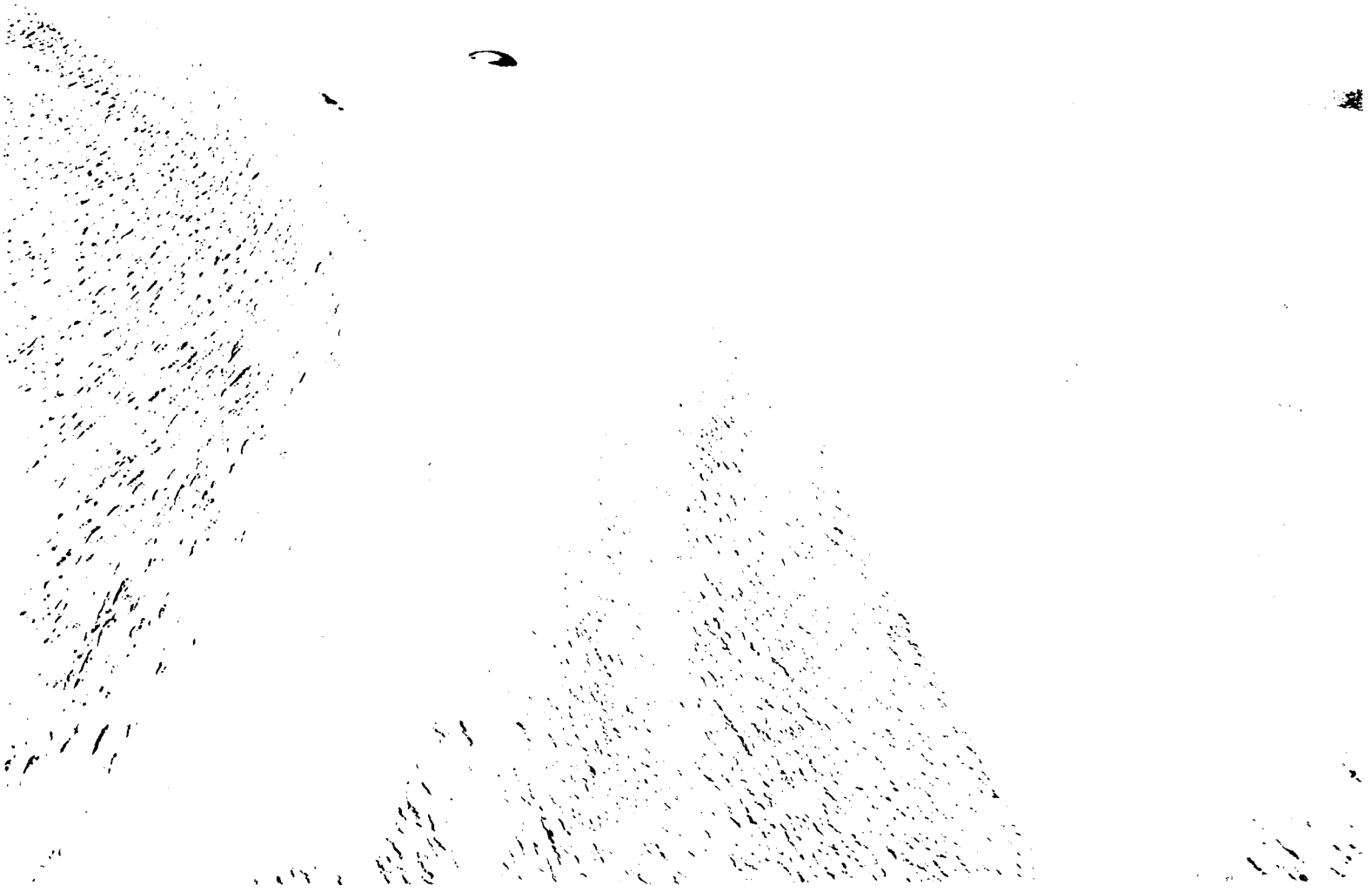


Figure 47. Denman Glacier (Site 71). The camera faces 170° true. Patches of blue ice are seen in the middle distance. Photo: U.S. Navy (TMA 154 R 117).

71. Denman Glacier (Fig. 47)

Maps: Australian Antarctic Territory 1:1,000,000, Sheet SQ 47-48 (Canberra, Division of National Mapping, 1969); and Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SQ 47-48/10 (Canberra, Division of National Mapping, 1976). 66°53′S, 99°18′E, elevation 800 m (2600 ft). There are some 20 km^2 (8 mi^2) of blue ice in this area but the nearest available aerial photograph was taken from a distance of 30 km (20 miles).

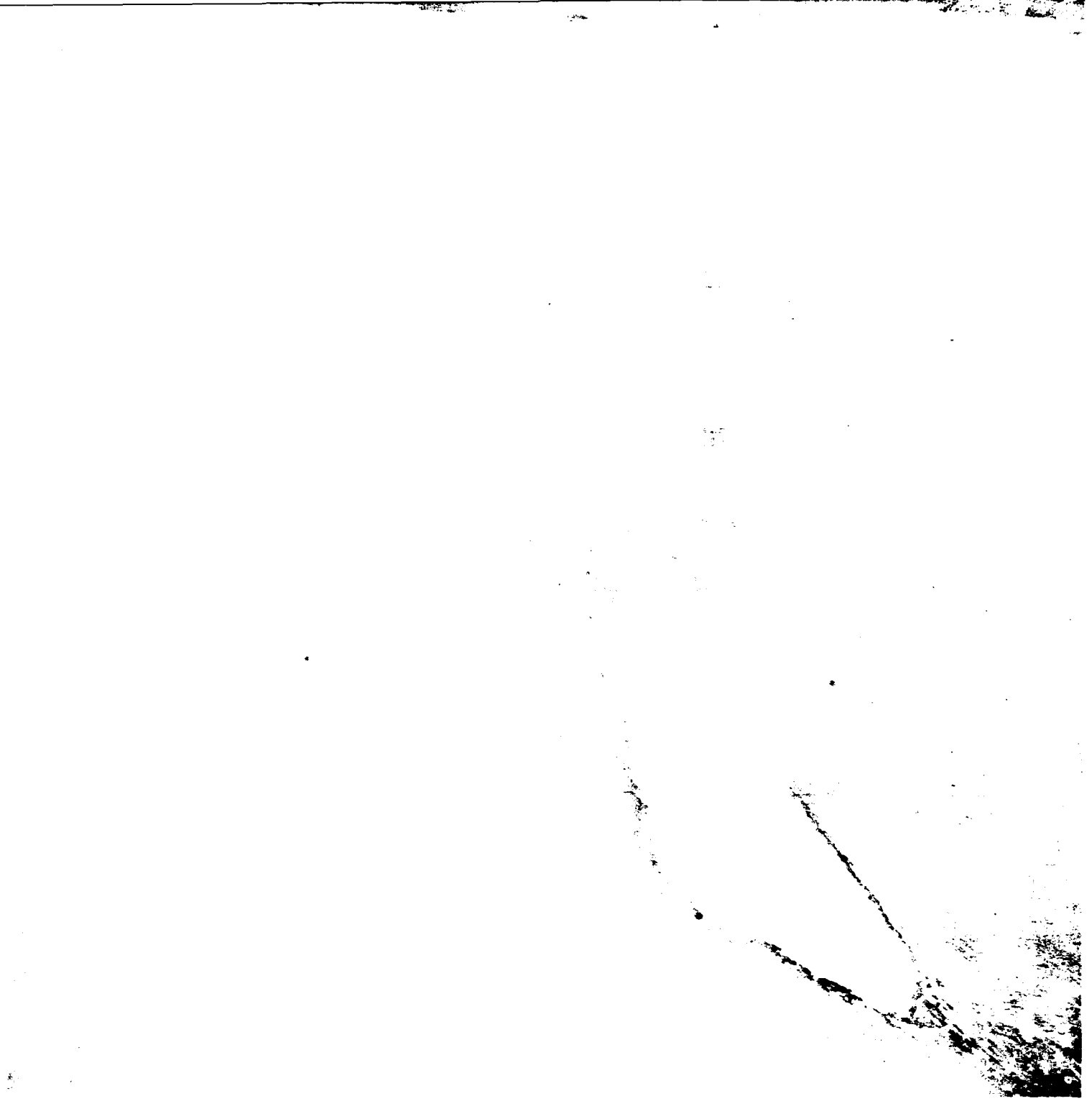


Figure 48. Scott Glacier (Site 72). The camera faces 200° true. Most of the foreground consists of blue ice. Photo: U.S. Navy (TMA 155 R 158).

72. Scott Glacier (Fig. 48)

Maps: Australian Antarctic Territory 1:1,000,000, Sheet SQ 47-48 (Canberra, Division of National Mapping, 1969); and Australian Antarctic Territory 1:250,000, ERTS Imagery Series, Sheet SQ 47-48/10 (Canberra, Division of National Mapping, 1976). 66°45′S, 100°30′E, elevation 700 m (2300 ft). There is some 100 km^2 (40 mi^2) of blue ice in this area.

73. Bunger Hills

Maps: Antarktida 1:100,000, Polyarnaya St Oazis, Sheet Q 47-81, 82, 69, 70; and Antarktida 1:50,000, Polyarnaya St Oazis, Sheet Q 47-82-V, G (Moskva, Ministerstvo Morskogo Flota, 1959). 66°15′S, 100°35′E, elevation 0.3 m (1 ft). TMA M19 Roll 39 Run 2R193. The best prospect (anywhere in the 70°–160°E sector of Antarctica) for a year-round all-weather runway for

Figure 49. Hatherton Glacier (Site 79) seen from an altitude of 5800 m (19,000 ft). The camera faces 095° true. The whole area consists of blue ice. Photo: U.S. Navy for USGS (TMA 1002 L 062, 4 November 1962).

intercontinental operations is reported to be a 4-km (2.5-mile) stretch of permanent land-fast sea ice off the Australian Edgeworth David Base. The ice is smooth, hard, clear, and more than 2 m (7 ft) in thickness. A runway 06/24 true would face into the prevailing wind (from 060° true). The surrounding terrain is low, allowing unobstructed approach and climb paths. Soviet Ilyushin-18 transport aircraft have landed on lake ice nearby and also on Apfel Glacier.

74. Vincennes Bay

Map: Wilkes Land 1:100,000, Vincennes Bay, Sheet SQ 49-50/9 (Canberra, Division of National Mapping, 1967). 66°30′–67°00′S, 109°30′–111°E, elevation 100-300 m (300-1000 ft). Landsat 1482-00530. There is more than 100 km^2 (40 mi^2) of blue ice on coastal slopes and outlet glaciers in this area.

75. Law Dome

Maps: Windmill Islands 1:50,000; and Windmill Islands 1:50,000, Satellite Image Map (AUSLIG for Antarctic Division, 1989). 66°17′S, 110°40′E, elevation 250 m (800 ft). A compacted ice/snow runway was prepared at this site in, 1989 with a view to intercontinental operations of C-130 aircraft on wheels. However, no landings have yet been attempted (Sheers 1990).

76. Budd Coast

Map: Wilkes Land 1:100,000, Vincennes Bay, Sheet SQ 49-50/9 (Canberra, Division of National Mapping, 1968). 66°05′–66°30′S, 110°30′–111°E, elevation 100–500 m (300–1600 ft). There are extensive small blue icefields on coastal slopes near Casey Station.

77. Adélie Land

Map: Australian Antarctic Territory—Terre Adélie 1:1,000,000, Sheet SQ 53-54 (Canberra, Division of National Mapping, 1971). 66°15′–67°00′S, 136°–142°E, elevation 100–500 m (300–1600 ft). Landsat 1190-22551. There is more than 100 km^2 (40 mi^2) of blue ice on small outlet glaciers leading down to the coast.

78. Commonwealth Bay

Map: Australian Antarctic Territory 1:1,000,000, Sheet SQ 53-54 (Canberra, Division of National Mapping, 1971). 67°00′S, 142°30′E, elevation 300 m (1000 ft). Landsat 1224-22440. The surface can be judged from a photograph in Mawson (1915). There are areas of blue ice with dimensions of up to 10 km (6 miles) near Cape Denison. However, with a yearly mean wind speed of, 19 m/s or 37 kt (Madigan 1929) the area must be considered a poor prospect for safe aircraft operations.

79. Hatherton Glacier (Fig. 49)

Map: Carlyon Glacier 1:250,000 (USGS, 1966). 79°58′S, 156°50′E, elevation 1000 m (3000 ft). A colored satellite image of the area appears as Figure 23 in Swithinbank (1988). Hatherton Glacier has extensive longitudinal bands of blue ice trending 055/235° true on a gradient of about 1%. Approaches upglacier could be into wind on a 2° glide slope, but climb-out in the same direction would be into rising terrain (3% climb).

Figure 50. Matusevich Glacier (Site 80). The camera faces 125° true. The near massif is Thompson Peak. The smoothest ice appears to be along the glacier margin at the foot of the massif in the center of the photograph. Photo: U.S. Navy (TMA 28 L 71, 4 January 1947).

80. Matusevich Glacier (Fig. 50)

Map: Australian Antarctic Territory—Ross Dependency 1:1,000,000, Sheet SR 57 58 (Canberra, Division of National Mapping, 1975). 69°23′S, 157°35′E, elevation 400 m (1300 ft). There are extensive areas of blue ice along the right (east) bank of the glacier.

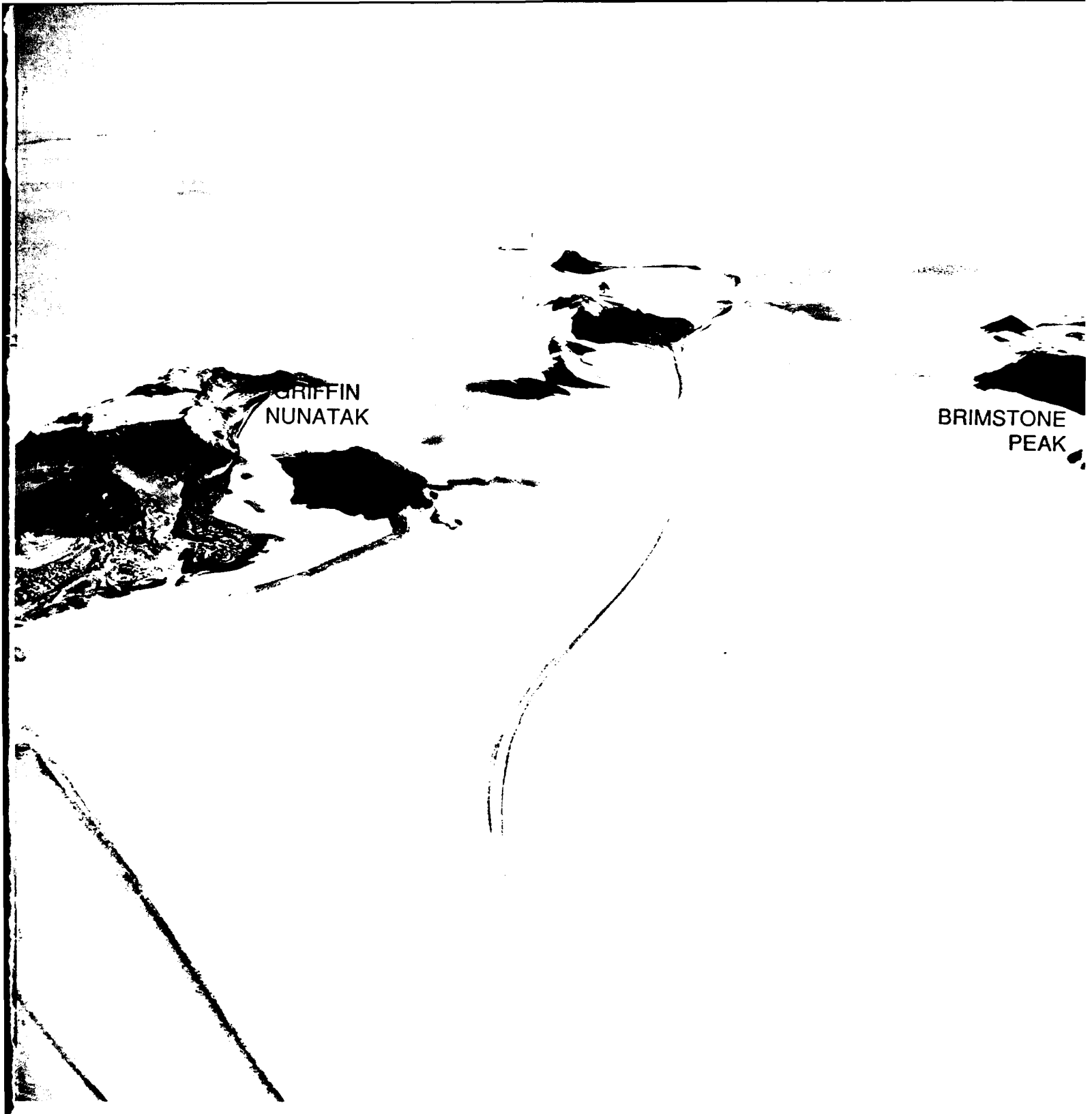


Figure 51. Griffin Nunatak (Site 81) and Brimstone Peak (right) seen from an altitude of 5700 m (19,000 ft). The camera faces 245° true. The whole area shown consists of blue ice. Photo: U.S. Navy for USGS (TMA 704 R 175, 14 November 1960).

81. Griffin Nunatak (Fig. 51)

Maps: Mount Joyce 1:250,000 (USGS, 1968); and Satellite Image Map 1:250,000, Mount Joyce (USGS, 1989). 75°56′S, 158°35′E, elevation 1700 m (5600 ft). There is a blue icefield with dimensions of 10 × 6 km (6 × 4 miles) on the northeast side of Griffin Nunatak.

Figure 52. Brimstone Peak (Site 82) seen from an altitude of 5700 m (19,000 ft). The camera faces 245° true. The smoothest ice is along the near side of the nunatak. Photo: U.S. Navy for USGS (TMA 704 R 173, 14 November 1960).

82. Brimstone Peak (Fig. 52)

Maps: Mount Joyce 1:250,000 (USGS, 1968); and Satellite Image Map 1:250,000, Mount Joyce (USGS, 1989). 75°49′S, 159°37′E, elevation 1700 m (5600 ft). There is an area of blue ice on the east side of Brimstone Peak. A possible runway 01/19 true might be up to 5 km (3 miles) long. The prevailing wind is from 220° true.

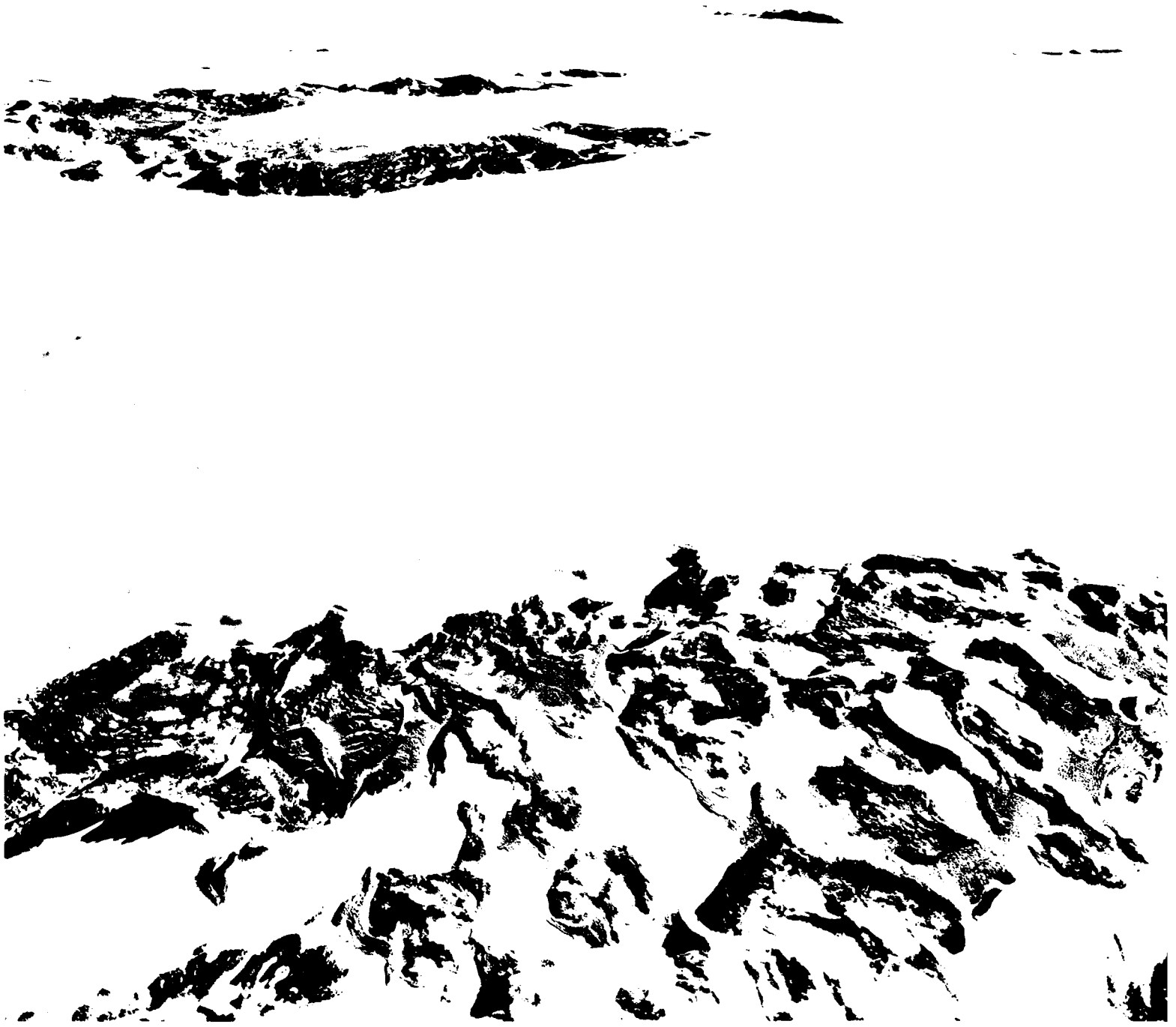


Figure 53. Wyandot Ridge (Site 83) seen from an altitude of 5700 m (19,000 ft). The camera faces 280° true. Wyandot Ridge is in the foreground, with the blue ice immediately beyond it. Photo: U.S. Navy for USGS (TMA 701 R 149, 11 October 1960).

83. Wyandot Ridge (Fig. 53)

Maps: Convoy Range 1:250,000 (USGS, 1965); and Satellite Image Map 1:250,000, Convoy Range (USGS, 1989). 76°40′S, 160°15′E, elevation 1700 m (5600 ft). There may be a possibility of an up to 5-km (4-mile) ice runway 00/18 true on the west side and parallel with southern Wyandot Ridge. The runway would face into the prevailing wind with unobstructed approaches and a satisfactory climb-out towards rising terrain.

Figure 54. The Mitten (Site 84) seen from an altitude of 5700 m (19,000 ft). The camera faces 330° true. The blue ice is just off the moraine (center). Photo: U.S. Navy for USGS (TMA 539 R 123, 7 November 1959).

84. The Mitten (Fig. 54)

Maps: Mount Joyce 1:250,000 (USGS, 1968); and Satellite Image Map 1:250,000, Mount Joyce (USGS, 1989). 75°58′S, 160°35′E, elevation 1300 m (4300 ft). There may be a possible 3-km (2-mile) runway off the north end of The Mitten, but the prevailing wind would be across it.

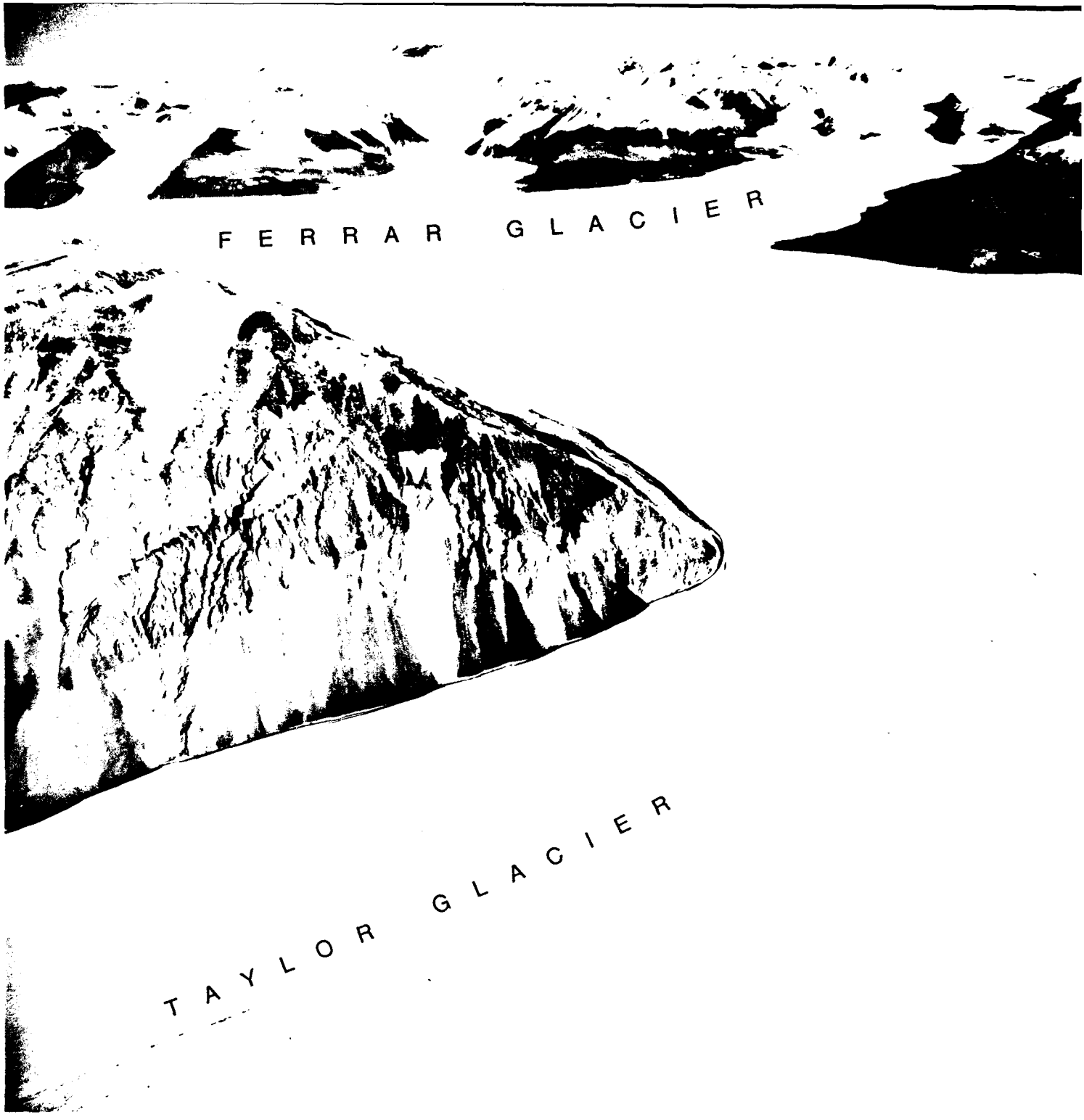


Figure 56. Kukri Hills (Site 86) seen from an altitude of 2800 m (9300 ft). The camera faces 155° true. Possible runways are on Taylor Glacier (left foreground) and between the point of land (center) and Ferrar Glacier in the distance. Photo: USGS (TMA 2373 R 003, 12 January 1975)

86. Kukri Hills (Fig. 56)

Maps: Taylor Glacier 1:250,000 (USGS, 1965); and Satellite Image Map 1:250,000, Taylor Glacier (USGS, 1989). 77°50′S, 161°40′E, elevation 900 m (3000 ft). There are possible blue ice runways up to 3 km (2 miles) in length, one on the south side of Kukri Hills trending 10/28 true, another on the west side of Kukri Hills trending 03/21. The drawback is that the area is largely surrounded by mountains. Runway 28 could be approached via Ferrar Glacier on a 3° glide slope, and a 4% climb-out would clear rising terrain.

Figure 55. Renirie Rocks (Site 85) seen from an altitude of 7400 m (24,300 ft). The camera faces 025° true. Note blue ice patches (middle distance.
Photo: U.S. Navy for USGS (TMA 1035 R 106, 25 November 1962).

85. Renirie Rocks (Fig. 55)

Map: Daniels Range 1:250,000 (USGS, 1970). 71°18′S, 161°20′E, elevation 500 m (1600 ft). Landsat 1169-20561. There are many blue ice patches south and north of Renirie Rocks on Gressitt Glacier but slopes may render them unacceptable.

Figure 57. Rennick Glacier (Site 87) seen from an altitude of 7400 m (24,300 m). The camera faces 025°true. Most of the area shown consists of blue ice. Photo: U.S. Navy for USGS (TMA 1035 R 093, 25 November 1962).

87. Rennick Glacier (Fig. 57)

Map: Mount Soza 1:250,000 (USGS, 1989). 71°20′–71°40′S. 162°00′–162°30′E, elevation 100–600 m (300–2000 ft). Landsat 1169-20561 is reproduced as Figure 42 in Swithinbank (1988). There are vast areas of blue ice on Rennick Glacier between 71°20′S and Tenterhooks Crevasses. Some of the central flow bands of the glacier appear smooth, crevasse-free, and suitable for intercontinental aircraft. Prevailing winds are probably down-glacier.

Figure 58. Davis Nunataks (Site 88) seen from an altitude of 5900 m (19,000 ft). The camera faces 280° true. A strip of smooth blue ice extend away from the camera immediately to the left of a moraine loop (left). Photo: U.S. Navy for USGS (TMA775 R 122, 17 November 1960).

88. Davis Nunataks (Fig. 58)

Map: Plunket Point 1:250,000 (USGS, 1967). 85°37′S, 167°00′E, elevation 2400 m (7900 ft). A 4300- × 100-m (14,000- × 330-ft) strip 08/26 true on the north side of a moraine loop was inspected from a low-flying aircraft in 1988, and may be usable. Approaches from the east would be relatively unobstructed, but Davis Nunataks obstruct the west end of the runway.

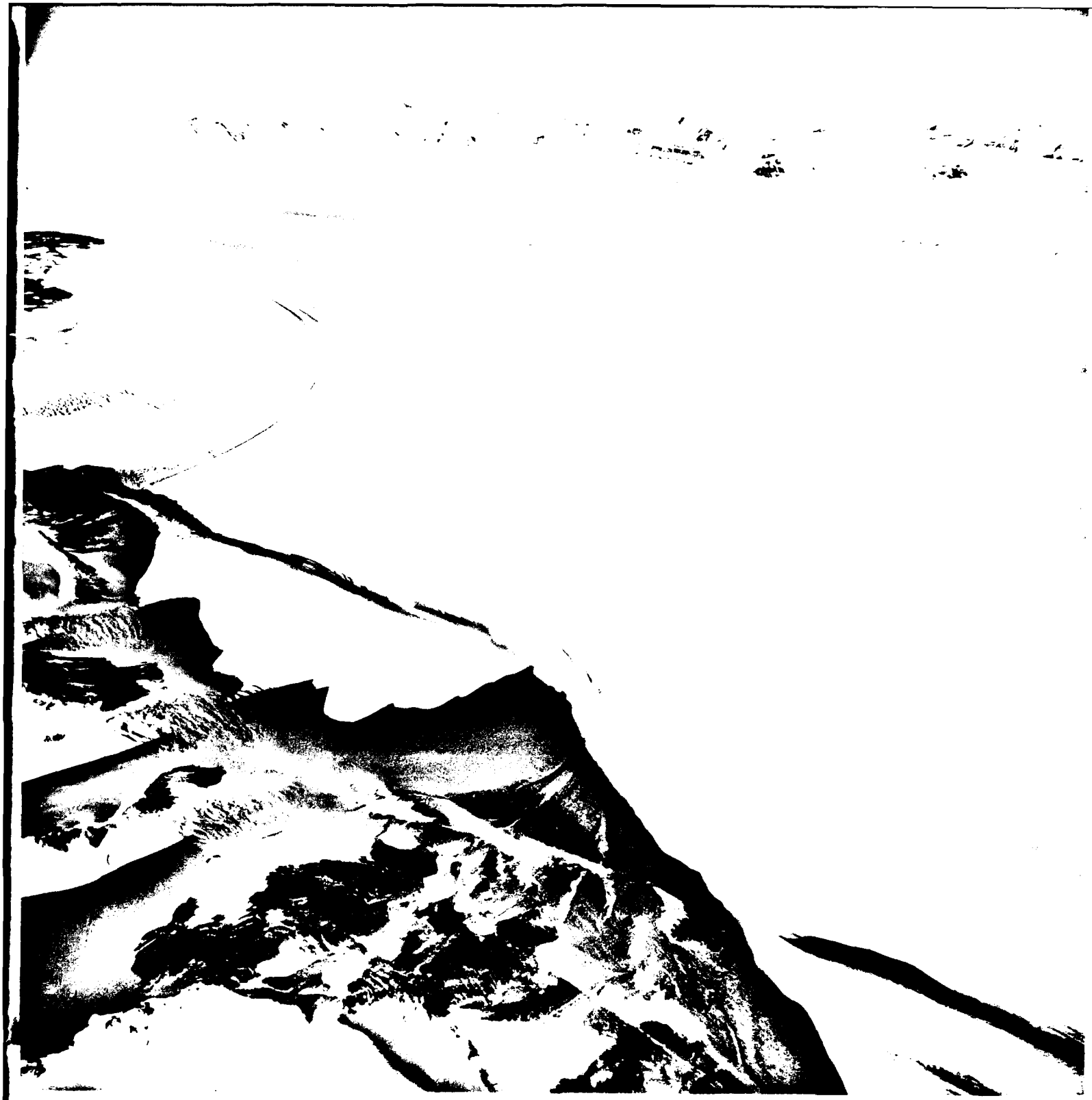


Figure 59. Adams Mountains (Site 89) seen from an altitude of 5900 m (19,000 ft). The camera faces 085° true. The whole area beyond the Adams Mountains in the foreground is blue ice. Photo: U.S. Navy for USGS (TMA 766 R 038, 6 November 1960).

89. Adams Mountains (Fig. 59)

Map: The Cloudmaker 1:250,000 (USGS, 1967). 84°33′S, 167°10′E, elevation 1450 m (4800 ft). This is a 5- × 1-km (3- × 0.6-mile) blue icefield beside a narrow string of moraine off the left bank of Beardmore Glacier below the Adams Mountains. It was inspected from a low-flying aircraft in, 1988. There are a number of smooth sites on level bands between subdued steps in the longitudinal profile of the glacier.

Figure 60. Mill Glacier off Plunket Point. The ice surface texture in the foreground is typical of blue icefields. Photo: Malcolm Mellor (26 January 1990).

90. Mill Glacier (Fig. 60)

Map: Plunket Point 1:250,000 (USGS, 1967). 85°09′S, 167°12′E, elevation 1800 m (5900 ft). This has good potential for intercontinental operations. Its ice runway is on the direct route between McMurdo and South Pole, and could be reached by surface vehicles operating from South Pole. I have operated DHC-6 aircraft off it and the strip is currently in use by LC-130 aircraft on wheels. The area has been the subject of close inspection from the ground (Mellor and Swithinbank 1989, p. 27–37). Stake measurements over a period of 23 months indicated an average ablation rate of 12 cm/yr (4.7 in./yr) (personal communication from S. Den-Hartog).

Figure 61. Beardmore Glacier (Site 91) seen from an altitude of 5900 m (19,000 ft). The camera faces 280° true. Blue ice covers large areas off the foot of the mountains (right foreground). The Adams Mountains (Fig. 59) are on the left. Photo: U.S. Navy for USGS (TMA 775 L 164, 17 November 1960).

91. Beardmore Glacier (Fig. 61)

Map: The Cloudmaker 1:250,000 (USGS, 1967). 84°28′S, 168°20′E, elevation 1250 m (4100 ft). This is a 5- × 1-km (3- × 0.6-mile) blue icefield off a lateral moraine on the left bank of Beardmore Glacier. It was inspected from a low-flying aircraft in 1988. There are long and very smooth areas oriented 07/25 true. Approaches from the east would involve a gentle 20° left turn to avoid terrain. Climb-out would also involve a gentle left turn.

Figure 62. The Cloudmaker (Site 92) seen from an altitude of 5900 m (19,000 ft). The camera faces 100° true. The smoothest blue ice is on a flow band 3 km (2 miles) out from the ice margin on the left. Photo: U.S. Navy for USGS (TMA 775 R 168, 17 November 1960).

92. The Cloudmaker (Fig. 62)

Map: The Cloudmaker 1:250,000 (USGS, 1967). 84°23′S, 169°42′E, elevation 950 m (3100 ft). This is a 5000- × 100-m (16,000- × 300-ft) blue ice flow band on Beardmore Glacier oriented 04/22 true. It was inspected from a low-flying aircraft in, 1988. The surface has many transverse cracks a few inches wide but these would not be a problem for transport aircraft. Approaches from either direction would be unobstructed.

Figure 63. Mount Bumstead (Site 93) seen from an altitude of 7300 m (24,000 ft). The camera faces 220° true. Blue ice covers the center foreground. Photo: U.S. Navy for USGS (TMA 1156 L 139, 16 February 1963).

93. Mount Bumstead (Fig. 63)

Map: Plunket Point 1:250,000 (USGS, 1967). 85°39′S, 173°55′E, elevation 2450 m (8000 ft). This is a 5- × 2-km (3- × 1-mile) icefield that could yield a very smooth runway 08/26 true. It was inspected from a low-flying aircraft in 1988 and appears to consist of ice less dense than most blue ice.

CONCLUSION

The choice of an airfield site involves a compromise between the aviator's ideal and its distance from his intended destination. Pilots who fly transport aircraft into Kai Tak Airport (Hong Kong), Narssarsuaq (Greenland), or Valdez (Alaska) tolerate obstructions in their approach and climb-out paths because there is nowhere else to go. Antarctic operations require a similar compromise. At one extreme, a near-perfect site may prove attractive for intercontinental operations even if it is 1000 km from the ultimate destination in Antarctica. At the other extreme, a relatively poor site may be attractive because of its proximity to the intended destination. The choice depends on the task in hand.

It is for this reason that we have listed sites ranging from excellent to hazardous. Decisions about which to go for cannot be made wholly on grounds of safety nor of proximity; both must be weighed together. Any potentially useful site should be reconnoitered with STOL aircraft before formulating plans to use it.

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This is a report on a search for possible or potential airfield sites in Antarctica, using aerial photographs and satellite images supplemented by other data. A few sites are on ice-free ground but the majority are on inland blue ice fields. Earlier studies of potential airfields on Antarctic glacier ice are referenced. The attraction of a well-chosen blue-ice runway is that construction and maintenance costs are almost nil. A number of sites have been found suitable for the operation of unmodified transport aircraft on wheels. An inland icefield site on Mill Glacier (85°09′S, 167°12′E) is in use for wheel landings by LC-130 aircraft; another at Patriot Hills (80°19′S, 81°16′W) is in use for wheel landings by DC-6 aircraft.

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