

GLACIOLOGICAL RESEARCH PROGRAM

IN EAST QUEEN MAUD LAND, EAST ANTARCTICA

PART 8, 1986-1987

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1. Introduction

The 27th Japanese Antarctic Research Expedition 1985-1987 (JARE-27) extended the field work of the East Queen Maud Land Glaciological Project (abbreviated to EQGP). The details of the project were described by Higashi (1981) and Associate Committee on Glaciological Research Program in East Queen Maud Land (1982a, b), which was initiated by JARE-23 (Nishio, 1984). The major activities of JARE-27 involved oversnow traverses along the flow line of the Shirase Glacier, in Meteorite Ice Field in the Yamato Mountains and toward the Sør Rondane Mountains along the 2000 m contour of elevation, and ice core drillings of 100 m, 30 m and 50 m in depth at G6 (73° 07'S, 39° 46'E), Motoi Nunatak in the Yamato Meteorite Ice Field (71° 49'S, 36° 11'E) and Asuka Camp (71° 32'S, 24° 08'E), respectively. Temperature distributions and variations of diameters of the drill-hole were measured at Mizuho Station using the hole of 700m in depth bored by JARE-24 and -25.

Oversnow traverses by JARE-27 are shown in Fig. A (see the end of this volume), and listed in Table 1. Among the data obtained during these traverses, the following data were already published in the report (Nishio et al., 1988); net accumulation of snow measured by the stake method; surface meteorological data during the oversnow traverses. Surface meteorological data at Mizuho Station were published as JARE Data Reports, No. 130 (Meteorology 20) by Ohmae et al. (1987).

Compiled in this volume are the following data obtained by JARE-27 during oversnow traverses; position, elevation, ice thickness and bedrock elevation of stations along the routes.

Net accumulation of snow measured by the stake method at Asuka Camp and along the routes obtained by JARE-28 in 1987-88 are also compiled in this volume.

The authors would like to thank Prof. Akira Higashi of International Christian University, the supervisor of the present project. Thanks are also due to all members of the wintering party of JARE-27 led by Dr. Yasuhiko Naito, who extended generous supports in the field work.

References

- Associate Committee on Glaciological Research Program in East Queen Maud Land (1982a): A scheme of Japanese Antarctic Glaciological Research (1). *Seppyô* (J. Jpn. Soc. Snow Ice), 44(2), 115-124.
- Associate Committee on Glaciological Research Program in East Queen Maud Land (1982b): A scheme of Japanese Antarctic Glaciological Research (2). *Seppyô* (J. Jpn. Soc. Snow Ice), 44(3), 173-182.
- Higashi, A. (1981): Glaciological Research Project in the East Queen Maud Land, Antarctica. *Seppyô* (J. Jpn. Soc. Snow Ice), 43(2), 129-130.
- Nishio, F. (1984): Outline of glaciological research program in East Queen Maud Land, East Antarctica. *JARE Data Rep.*, 94 (Glaciol. 10), 1-2.
- Nishio, F., Ohmae, H. and Osada, K. (1988): Glaciological Research Program in East Queen Maud Land, East Antarctica Part 7, 1986. *JARE Data Rep.*, 137 (Glaciol. 16), 49p.
- Ohmae, H., Osada, K. and Nishio, F. (1987): Meteorological data at Mizuho Station, Antarctica in 1986. *JARE Data Rep.*, 130 (Meteorol. 20), 77p.

Table 1. Oversnow traverses carried out by JARE-27 and -28, 1986-1988.

Period	Traverse route	Route name	Distance (km)	Position, elevation, ice thickness and bedrock bedrock elevation	Net accumulation
Mar.20-24,1986	Mizuho-G15	NY	90	Table 2-2	
Nov. 8,1986-	G2-G7-Yamato-	SZ,YG,	1500	Table 2-1, - 3,	
Feb.10,1987	Belgica-Asuka	RY,L		-4 and -5	
Jan.11,1987-	S16-Mizuho	S,H,Z	260		Table 3-1,-2,
Jan.19,1988	L0-Asuka	L	105		-3, -4, -5 and -6

2. Position, Elevation, Ice Thickness and Bedrock Elevation of Stations along the Routes

1) Position along the routes

Observer: Fumihiko NISHIO

Five routes were newly established in 1982 by JARE-23 (see Fig. A). Route SS runs along a flow line of the Shirase Glacier. Route YM connects the Yamato Mountains with Mizuho Station along the 2000 m contour line, and Route SY extends from YM 179 (1 km south of Massif A in the Yamato Mountains) towards the Minami Yamato Nunataks, where the datum points of triangulation network are installed and the route is called Route K. Route IM is extended from Mizuho Station towards the inland station ($74^{\circ}12'S$, $34^{\circ}59'E$: 3193m) established by JARE-25 (Fujii et al., 1985). Route IM between Mizuho Station and G1 grid station was established by JARE-23.

In every route except Route K of triangulation network, the marker stakes were installed every 1 km, as the short distance between stakes will be helpful for the next visit. Every other marker stake was numbered from the beginning to the end of the routes. These numbered stakes were to be used for snow accumulation measurements. The stakes between the numbered stakes were called with prime, for example, a stake between RY 1 and RY 2 was called RY 1'.

Navigational data, the distance and the azimuth between neighboring stations, were obtained with a magnetic hand compass and an odometer of a vehicle. By operating a doppler satellite positioning system (JMR 4A), the positions of stations were determined from place to place along the routes. The JMR data, which were calculated on the WGS-72 earth ellipsoid with broadcasted ephemeris, were interpolated by the help of the navigational data using a standard spherical trigonometry. The positions of the stations were thus obtained on the routes as shown in Tables 2-1 for Route SZ, 2-2 for Route NY, 2-3 for Route YG6,

2-4 for Route RY and 2-5 for Route L. For positioning with JMR, the number of pass was 10 to 50 at most stations, and the error would be 10 to 30 m (Shibuya et al., 1982), which approximately corresponds to $\pm 1''$ in latitude and $\pm 3''$ in longitude.

2) Elevation along the routes

Observers: Fumihiko NISHIO and Hirokazu OHMAE

The measurements with barometric altimeters (American Paulin Altimeter MM1) were made every 1 km along the routes.

The observations with JMR also gave the data on elevation. These data are much more precise than those by barometric altimeter, and are considered as basic data for elevation. They were obtained, however, only sporadically along the routes, and hence the JMR data were interpolated by the use of barometric data for stations between the JMR stations.

The errors in determining elevation by JMR would be about +10 m for the pass number of 10 to 50 (Shibuya et al., 1982).

3) Ice thickness along new routes

Observer: Hirokazu OHMAE

The ice thickness was measured using a radio echo sounder equipped on an oversnow vehicle. The instrument was an NIPR type consisting of a 60 MHz transmitter and a receiver with an oscilloscope as an indicator. Their specifications were given by Nishio et al. (1984). A pair of 3-element Yagi antennas (8db) was used, each for transmitting and for receiving, in observations mainly on every route. The antennas were set up on sledge facing each other at a distance of about 2.5 m.

The measurements were made on the moving oversnow vehicle. A reflective wave was displayed on an oscilloscope, showing a time-intensity curve (A-scope) and photographed at 1 km intervals. Continuous records on 35-mm films (Z-scope) were also obtained on the running oversnow vehicle and the ice thickness was

calculated from the readings of the echo time on these continuous records using the electromagnetic wave velocity of $168 \text{ m}\cdot\text{S}^{-1}$ (Robin *et al.*, 1969).

The results are shown in Tables 2-1 to 2-5. Although the measurements were made at every station, there were many stations where no echo was obtained. When no reflective echo was noticeable on Z-scope, the ice thickness was obtained by the reading of echo time on the A-scope at the same station. A blank in Tables 2-1 to 2-5 shows no echo was observed at the stations.

References

- Fujii, Y, Kawada, K., Yoshida, M., Matsumoto, S., Tanizaki, M., Hara, T., Yamashita, K. and Shibuya, H. (1985): Dai 25-ji Nankyoku Chiiki Kansokutai nairiku ch^osa oyobi ryok^o h^okoku (Report of the oversnow traverse by the 25th Japanese Antarctic Research Expedition field season). Nankyoku Shiry^o (Antarct. Rec.), 87, 46-69.
- Nishio, F., Ishikawa, M. and Ohmae, H. (1984): Position, elevation and ice thickness of stations between Syowa Station and Mizuho Station. JARE Data Rep., 94(Glaciol. 10), 6-14.
- Robin, G. de Q., Evans, S. and Bailey, J.T. (1969): Interpretation of radio echo sounding in polar ice sheets. Philos. Trans. R. Soc. London, Ser. A, 265, 437-505.
- Shibuya, K., Ito, K. and Kaminuma, K. (1982): Utilization of an NNSS receiver in the explosion seismic experiments on the Prince Olav Coast, East Antarctica 2. Positioning. Nankyoku Shiry^o(Antarct. Rec.), 76, 73-88.

Table 2-1. Position, elevation, ice thickness and bedrock elevation of stations along Route SZ.

		*JMR station				
Station		Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
SZ	1	70° 36' 37"	44° 8' 5"	2197	2083	114
	1 ,			2192		
	* 2	70 36 43	44 4 19	2189		
	2 ,			2189		
	3	70 36 20	44 1 13	2187	2080	107
	3 ,			2185		
	4	70 36 0	43 58 5	2181		
	4 ,			2177		
	5	70 35 39	43 54 58	2176		
	5 ,			2171	2260	-89
	6	70 35 19	43 51 50	2169	2260	-91
	6 ,			2167		
	7	70 34 59	43 48 42	2162		
	7 ,			2158		
	8	70 34 38	43 45 35	2154		
	8 ,			2152		
	9	70 34 18	43 42 26	2151		
	9 ,			2143		
	10	70 33 58	43 39 19	2140		
	10 ,			2135		
11	70 33 39	43 36 10	2135			
11 ,			2133			
12	70 33 21	43 33 0	2133			
12 ,			2133			
13	70 33 1	43 29 52	2128			
13 ,			2119			
14	70 32 41	43 26 44	2107			
14 ,			2093			
15	70 32 22	43 23 36	2078			
15 ,			2076			
*16	70 32 1	43 20 29	2072			
16 ,			2069			
17	70 31 43	43 17 20	2061	2100	-39	
17 ,			2059	2040	19	
18	70 31 20	43 14 17	2059	2040	19	
18 ,			2053	2040	13	
19	70 30 58	43 11 12	2042	2047	-5	
19 ,			2040	1998	42	
*20	70 30 33	43 8 11	2036	1840	196	

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
SZ 20	'		2027	1920	107
21	70° 30' 12"	43° 5' 5"	2013	1780	233
21	'		2002	1800	202
22	70 29 52	43 1 58	1993	1920	73
22	'		1991	1920	71
23	70 29 29	42 58 54	1988	1920	68
23	'		1983	1980	3
24	70 29 8	42 55 47	1983	1980	3
24	'		1985	2000	-15
25	70 28 46	42 52 42	1983	2100	-117
25	'		1979	2120	-141
26	70 28 26	42 49 36	1971	2100	-129
26	'		1967	2108	-141
27	70 28 5	42 46 29	1962		
27	'		1959		
28	70 27 44	42 43 23	1954		
28	'		1947		
29	70 27 23	42 40 17	1946		
29	'		1944		
30	70 27 1	42 37 13	1934	1840	94
30	'		1926	1840	86
*31	70 26 40	42 34 7	1916	1704	212
31	'		1912	1609	303
32	70 26 18	42 30 45	1916	1612	304
32	'		1907	1580	327
33	70 25 53	42 28 29	1905	1641	264
33	'		1902	1600	302
34	70 25 48	42 26 24	1890	1453	437
34	'		1873	1296	577
35	70 25 23	42 23 7	1838	1244	594
35	'		1806	1352	454
36	70 25 10	42 19 39	1804	1532	272
36	'		1817	1629	188
37	70 24 46	42 16 22	1819	1635	184
37	'		1819		
38	70 24 23	42 13 3	1820		
38	'		1824		
39	70 23 58	42 9 46	1823	1980	-157
39	'		1815	1967	-152
*40 (G16)	70 23 34	42 6 28	1811	1978	-167

Table 2-2. Position, elevation, ice thickness and bedrock elevation of stations along Route NY.

		*JMR station				
Station		Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation
		(S)	(E)	(m)	(m)	(m)
NY	1	70° 42' 17"	44° 18' 12"	2256		
	2	70 42 25	44 19 4	2261	2040	221
	3	70 42 34	44 19 54			
	4	70 42 44	44 20 52	2268	2040	228
	5	70 42 54	44 21 40			
	6	70 43 7	44 22 35	2273	2080	193
	7	70 43 17	44 23 22			
	8	70 43 27	44 24 9	2280	2080	200
	9	70 43 39	44 25 5			
	10	70 43 49	44 25 53	2282	2100	182
	11	70 44 0	44 26 40			
	12	70 44 13	44 27 32	2291	2120	171
	13	70 44 25	44 28 15			
	14	70 44 40	44 29 7	2297	2160	137
	15	70 44 52	44 29 50			
	16	70 45 4	44 30 32	2310	2200	110
	17	70 45 17	44 31 15			
	18	70 45 32	44 32 4	2314	2240	74
	19	70 45 46	44 32 53			
	20	70 45 59	44 33 35	2315	2160	155
	21	70 46 12	44 34 17			
	22	70 46 27	44 35 6	2315	2080	235
	23	70 46 43	44 35 51			
	24	70 46 56	44 36 33	2317	2160	157
	25	70 47 8	44 37 17			
	26	70 47 22	44 38 8	2329	2200	129
	27	70 47 34	44 38 52			
	28	70 47 46	44 39 35	2337	2240	97
	29	70 48 0	44 40 25			
	30	70 48 13	44 41 8	2337	2360	-23
	31	70 48 25	44 41 52			
	32	70 48 40	44 42 42	2339	2360	-21
	33	70 48 54	44 43 33			
	34	70 49 8	44 44 24	2344	3325	-981
	35	70 49 22	44 45 14			
	36	70 49 35	44 45 57	2346	2327	19
	37	70 49 49	44 46 48			
	38	70 50 3	44 47 41	2347	2462	-115
	39	70 50 15	44 48 24			
	40	70 50 27	44 49 8	2315		
	41	70 50 41	44 49 59			
	42	70 50 53	44 50 43	2354	2493	-139
	43	70 51 7	44 51 34			
	44	70 51 22	44 52 25	2364		
	45	70 51 43	44 53 35			
	46	70 52 5	44 54 46	2369		
	47	70 52 27	44 55 56			
	48	70 52 49	44 57 7	2381		
	49	70 53 10	44 58 17			
	50	70 53 32	44 59 28	2389	2134	255

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
NY 51	70° 53' 54"	45° 0' 38"			
52	70 54 16	45 1 49	2399	2149	250
53	70 54 37	45 3 0			
54	70 54 59	45 4 10	2410	2279	131
55	70 55 21	45 5 21			
56	70 55 43	45 6 32	2413		
57	70 56 5	45 7 42			
58	70 56 26	45 8 53	2417	2388	29
59	70 56 48	45 10 4			
60	70 57 10	45 11 15	2418	2493	-75
61	70 57 32	45 12 25			
62	70 57 53	45 13 36	2424	2506	-82
63	70 58 15	45 14 47			
64	70 58 37	45 15 58	2429	2469	-40
65	70 58 59	45 17 9			
66	70 59 20	45 18 20	2438	2448	-10
67	70 59 42	45 19 31			
68	71 0 4	45 20 42	2447	2428	19
69	71 0 26	45 21 53			
70	71 0 48	45 23 4	2451	2435	16
71	71 1 9	45 24 15			
72	71 1 31	45 25 26	2466	2474	-8
73	71 1 53	45 26 37			
74	71 2 15	45 27 48	2468	2454	14
75	71 2 36	45 28 59			
76	71 2 58	45 30 10	2484	2318	166
77	71 3 20	45 31 22			
78	71 3 42	45 32 33	2501		
79	71 4 3	45 33 44			
80	71 4 25	45 34 55	2499		
81	71 4 47	45 36 6			
82	71 5 8	45 37 18	2500		
83	71 5 30	45 38 29			
84	71 5 52	45 39 41	2509		
85	71 6 14	45 40 52			
86	71 6 35	45 42 3	2516		
87	71 6 27	45 43 15			
88	71 7 19	45 44 26	2521		
89	71 7 41	45 45 37			
90	71 8 2	45 46 49	2528		
91	71 8 24	45 48 0			
92	71 8 46	45 49 12	2551		
93	71 9 8	45 50 23			
94	71 9 30	45 51 35	2553	2540	13
95	71 9 51	45 52 47			
96	71 10 13	45 53 58	2558		
97	71 10 35	45 55 10			
98	71 10 56	45 56 22	2566		
99	71 11 18	45 57 33			
*100	71 11 40	45 58 45	2571		

Table 2-3. Position, elevation, ice thickness and bedrock elevation of stations along Route YG6.

Station	Latitude		Longitude		Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
	(S)		(E)				
(G6)* 0	73°	6' 41"	39°	45' 30"	3005	2500	505
YG6 0'	73	6 36	39	43 37	3009	2481	528
1	73	6 34	39	41 22	3009	2488	521
1'	73	6 33	39	39 41	3009	2380	629
2	73	6 30	39	37 26	3007	2331	676
2'	73	6 29	39	35 50	3006	2340	666
3	73	6 26	39	33 35	3006	2019	987
3'	73	6 25	39	31 56	3004		
4	73	6 23	39	29 45	3004	2111	893
4'	73	6 21	39	28 4	3003	1919	1084
5	73	6 19	39	25 54	3009	1516	1493
5'	73	6 19	39	23 43	3010	1463	1547
6	73	6 19	39	21 34	3004	1395	1609
6'	73	6 17	39	19 41	3002	1654	1348
7	73	6 18	39	17 57	3006	1655	1351
7'	73	6 19	39	15 50	3008	1937	1071
8	73	6 19	39	13 44	3005	1827	1178
8'	73	6 19	39	11 53	3000	1635	1365
9	73	6 17	39	9 47	2998	1822	1176
9'	73	6 16	39	7 53	2995	1775	1220
10	73	6 14	39	5 47	2994		
10'	73	6 12	39	3 57	2995		
11	73	6 9	39	1 53	2997		
11'	73	6 7	39	0 1	2998	1753	1245
12	73	6 6	38	57 58	2998		
12'	73	6 4	38	56 6	2997	1766	1231
13	73	6 3	38	54 6	2998	1712	1286
13'	73	6 1	38	52 14	2998	1562	1436
14	73	5 58	38	50 13	2999	1497	1502
14'	73	5 56	38	48 21	3002	1788	1214
15	73	5 53	38	46 24	3001	2026	975

*JMR station

Station	Latitude			Longitude			Elevation	Ice thickness	Bedrock elevation
	(S)			(E)			(m)	(m)	(m)
15	'	73°	5' 51"	38°	44'	32"	2999	2043	956
16		73	5 49	38	42	29	2999	1751	1248
16	'	73	5 47	38	40	37	2999	1470	1529
17		73	5 45	38	38	40	2996	1342	1654
17	'	73	5 43	38	36	59	2996	1546	1450
18		73	5 41	38	34	45	2998	1835	1163
18	'	73	5 37	38	32	58	2998	1630	1368
19		73	5 33	38	31	11	2998	1436	1562
19	'	73	5 31	38	29	21	2998	1697	1301
20		73	5 29	38	27	18	2999	1731	1268
20	'	73	5 25	38	25	31	2998	1123	1875
21		73	5 22	38	23	34	2996		
21	'	73	5 21	38	21	28	2997	1063	1934
22		73	5 18	38	19	34	2997	1398	1599
22	'	73	5 17	38	17	48	2998	1712	1286
23		73	5 16	38	15	40	2995	1772	1223
23	'	73	5 14	38	13	48	2995	1760	1235
24		73	5 10	38	12	4	2993	1859	1134
24	'	73	5 8	38	11	15	2991	1494	1497
*25		73	5 7	38	10	15	2992	1394	1598
25	'	73	5 3	38	8	37	2999	1233	1766
26		73	4 59	38	6	46	3003	1437	1566
26	'	73	4 56	38	4	48	3001	1493	1508
27		73	4 51	38	2	59	3005	1430	1575
27	'	73	4 48	38	1	5	3016	1799	1217
28		73	4 41	37	59	16	3009	1491	1518
28	'	73	4 37	37	57	19	3014	1531	1483
29		73	4 36	37	55	16	3007	1585	1422
29	'	73	4 34	37	53	20	3001	1622	1379
30		73	4 28	37	51	27	2996	1961	1035

*JMR station

Station	Latitude			Longitude			Elevation	Ice thickness	Bedrock elevation
	(S)			(E)			(m)	(m)	(m)
30	'	73	4	'	26	"	2992	1811	1181
31	'	73	4	'	22	"	2996	1923	1073
31	'	73	4	'	19	"	3005	2182	823
32	'	73	4	'	15	"	3005	2235	770
32	'	73	4	'	10	"	3003	2292	711
33	'	73	4	'	10	"	3001		
33	'	73	4	'	3	"	3014	2322	692
34	'	73	4	'	1	"	3007	2231	776
34	'	73	4	'	0	"	3003	2174	829
35	'	73	3	'	58	"	3005		
35	'	73	3	'	55	"	3001	2107	894
36	'	73	3	'	52	"	2998	2070	928
36	'	73	3	'	50	"	2999	2027	972
37	'	73	3	'	48	"	2992	1624	1368
37	'	73	3	'	45	"	2988	1526	1462
38	'	73	3	'	41	"	2973	1467	1506
38	'	73	3	'	37	"	2959	1298	1661
39	'	73	3	'	33	"	2957	1463	1494
39	'	73	3	'	30	"	2955	1489	1466
40	'	73	3	'	25	"	2955	1782	1173
40	'	73	3	'	23	"	2947	1812	1135
41	'	73	3	'	18	"	2942	1843	1099
41	'	73	3	'	15	"	2944	1947	997
42	'	73	3	'	12	"	2946		
42	'	73	3	'	10	"	2957		
43	'	73	3	'	7	"	2959		
43	'	73	3	'	2	"	2955		
44	'	73	2	'	57	"	2955	2128	827
44	'	73	2	'	54	"	2949	2209	740
45	'	73	2	'	51	"	2949		

*JMR station

Station	Latitude			Longitude			Elevation	Ice thickness	Bedrock elevation
	(S)			(E)			(m)	(m)	(m)
45	'	73	2' 48"	'	36	51' 43"	2946		
46		73	2 45		36	49 45	2934		
46	'	73	2 43		36	47 50	2936		
47		73	2 41		36	45 43	2936		
47	'	73	2 42		36	4 33	2936		
48		73	2 44		36	41 24	2931		
48	'	73	2 42		36	39 28	2931	1802	1129
49		73	2 40		36	37 28	2925	1755	1170
49	'	73	2 37		36	35 38	2919	1499	1420
50		73	2 32		36	33 32	2927		
50	'	73	2 29		36	31 42	2934		
51		73	2 25		36	29 47	2921		
51	'	73	2 21		36	27 58	2921		
52		73	2 17		36	26 8	2929		
52	'	73	2 13		36	24 21	2931		
53		73	2 8		36	22 33	2927		
53	'	73	2 5		36	20 44	2929		
54		73	2 0		36	18 37	2927		
54	'	73	1 59		36	17 39	2912	2165	747
*55		73	1 59		36	16 41	2899	2066	833
55	'	73	2 1		36	15 34	2893		
56		73	2 2		36	14 30	2895	2058	837
56	'	73	2 3		36	13 29	2898		
57		73	2 4		36	12 22	2893		
57	'	73	2 5		36	11 17	2887		
58		73	2 6		36	10 16	2887		
58	'	73	2 6		36	9 17	2891		
59		73	2 8		36	8 7	2885		
59	'	73	2 8		36	7 9	2887		
60		73	2 9		36	6 4	2880	2281	599

*JMR station

Station	Latitude (S)		Longitude (E)		Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
60	73	2 10"	36	5 3"	2881		
61	73	2 13	36	3 54	2879		
61	73	2 9	36	3 4	2874	2367	507
62	73	2 12	36	1 54	2868		
62	73	2 14	36	0 48	2865		
63	73	2 13	35	59 52	2864		
63	73	2 12	35	58 55	2857		
64	73	2 12	35	57 54	2853		
64	73	2 13	35	56 41	2848	2075	773
65	73	2 16	35	55 27	2848	1897	951
65	73	2 19	35	54 20	2836	1764	1072
66	73	2 19	35	53 21	2828	1816	1012
66	73	2 23	35	52 7	2820		
67	73	2 24	35	51 3	2826		
67	73	2 24	35	50 5	2828		
68	73	2 27	35	48 58	2823		
68	73	2 27	35	47 58	2814		
69	73	2 28	35	46 52	2817		
69	73	2 29	35	45 52	2808		
70	73	2 30	35	44 48	2812	2034	778
70	73	2 32	35	43 42	2804	1973	831
71	73	2 32	35	42 38	2793	1981	812
71	73	2 33	35	41 41	2791	1844	947
72	73	2 34	35	40 37	2771	1867	904
72	73	2 34	35	39 41	2768	1945	823
73	73	2 35	35	38 32	2779		
73	73	2 36	35	37 35	2782	2025	757
74	73	2 38	35	36 26	2780		
74	73	2 3	35	35 34	2781		
75	73	1 13	35	34 4	2776		

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
75	' 73 0' 30"	' 35 32' 50"	2775		
76	72 59 47	35 31 37	2767	2059	708
76	' 72 59 6	35 30 30	2758	2117	641
77	72 58 22	35 29 20	2756	1926	830
77	' 72 57 39	35 28 7	2749		
78	72 56 51	35 26 46	2744	1937	807
78	' 72 56 0	35 25 12	2744	1719	1025
79	72 55 19	35 24 0	2739	1702	1037
79	' 72 54 36	35 22 46	2737	1645	1092
80	72 53 50	35 21 28	2734	1570	1164
80	' 72 53 6	35 20 9	2727	1519	1208
81	72 52 21	35 18 49	2719	1578	1141
81	' 72 51 38	35 17 41	2711	1514	1197
82	72 50 58	35 16 35	2710	1399	1311
82	' 72 50 15	35 15 22	2706	1333	1373
83	72 49 33	35 14 9	2696	1300	1396
83	' 72 48 48	35 12 52	2691	1284	1407
84	72 48 4	35 11 35	2681	1156	1525
84	' 72 47 43	35 10 23	2678	936	1742
*85	72 47 13	35 9 22	2674	1027	1647
85	' 72 47 14	35 10 15	2663	1041	1622
86	72 47 1	35 11 59	2656	1117	1539
86	' 72 46 41	35 11 33	2639	1118	1521
87	72 46 5	35 11 39	2613	972	1641
87	' 72 45 35	35 11 56	2608	906	1702
88	72 45 5	35 12 11	2603	957	1646
88	' 72 44 45	35 12 49	2600	949	1651
89	72 44 11	35 12 57	2586	998	1588
89	' 72 43 36	35 12 46	2580	1039	1541
90	72 43 2	35 13 8	2569	951	1618

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
90	' 72 42 25"	' 35 13 1"	2561	984	1577
91	' 72 41 52	' 35 12 55	2569	1010	1559
91	' 72 40 37	' 35 12 24	2567	1244	1323
92	' 72 40 5	' 35 12 45	2576	1301	1275
92	' 72 39 30	' 35 12 45	2576	1494	1082
93	' 72 38 55	' 35 12 54	2575	1393	1182
93	' 72 38 24	' 35 13 9	2569	1240	1329
94	' 72 37 47	' 35 13 12	2562	1354	1208
94	' 72 37 14	' 35 13 4	2556	1412	1144
95	' 72 36 39	' 35 13 14	2560	1293	1267
95	' 72 36 4	' 35 13 13	2562	1374	1188
96	' 72 35 32	' 35 13 30	2552	1471	1081
96	' 72 34 59	' 35 13 42	2549	1478	1071
97	' 72 34 37	' 35 14 19	2537	1391	1146
97	' 72 34 18	' 35 14 56	2530	1283	1247
98	' 72 33 49	' 35 15 23	2512	1201	1311
98	' 72 33 25	' 35 15 53	2499	1059	1440
99	' 72 32 48	' 35 15 43	2486	1114	1372
99	' 72 32 12	' 35 15 29	2480	776	1704
100	' 72 31 35	' 35 15 40	2479	1270	1209
100	' 72 30 57	' 35 15 16	2472	1377	1095
101	' 72 30 16	' 35 14 11	2460	1330	1130
101	' 72 29 38	' 35 13 44	2454	1429	1025
102	' 72 28 49	' 35 13 29	2467	1078	1389
102	' 72 28 35	' 35 13 12	2467	1079	1388
* K 32	' 72 28 33	' 35 13 2	2468		

Table 2-4. Position, elevation, ice thickness and bedrock elevation of stations along Route RY.

Station	Latitude	Longitude	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
	(S)	(E)			
YM *179	71° 44' 15"	35° 54' 21"	2157	287	1870
RY 1	71 44 27	35 50 36			
1 ,					
2	71 44 38	35 47 0			
2 ,					
3	71 44 50	35 43 36			
3 ,					
* 4	71 45 6	35 40 14	1945		
4 ,					
5	71 45 21	35 36 52	1943	892	1051
5 ,			1951	768	1183
6	71 45 32	35 33 27	1956	708	1248
6 ,			1959	615	1344
7	71 45 43	35 30 2	1946	533	1413
7 ,			1945	614	1331
8	71 45 53	35 26 37	1933	565	1368
8 ,			1941	800	1141
9	71 46 3	35 23 11	1937	800	1137
9 ,			1932	836	1096
10	71 46 14	35 19 46	1924	864	1060
10 ,			1920	936	984
11	71 46 36	35 16 20	1913	860	1053
11 ,			1917	1225	692
* 12	71 47 0	35 13 8	1909	1239	670
12 ,			1908	1224	684
13	71 47 19	35 9 50	1907	1221	686
13 ,			1908	1274	634
14	71 47 46	35 6 43	1909	1215	694
14 ,			1913	1203	710
15	71 47 54	35 3 18	1916	887	1029
15 ,			1918	929	989

*JMR station						
Station		Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation
		(S)	(E)	(m)	(m)	(m)
RY	16	71° 48' 58"	35° 2' 48"	1920	859	1061
	16 ,			1930	738	1192
	17	71 49 59	35 1 51	1939	809	1130
	17 ,			1938	628	1310
	18	71 50 43	34 59 20	1936	536	1400
	18 ,			1939	551	1388
	19	71 51 17	34 56 23	1942	554	1388
	19 ,			1942	600	1342
	20	71 51 57	34 53 43	1942	685	1257
	20 ,			1944	764	1180
	21	71 52 38	34 51 3	1945	779	1166
	21 ,			1944	674	1270
	22	71 53 11	34 48 5	1943	713	1230
	22 ,			1944	811	1133
	23	71 53 32	34 44 48	1945	939	1006
	23 ,			1947	936	1011
	24	71 53 58	34 41 39	1948	903	1045
	24 ,			1951	938	1013
	* 25	71 54 24	34 38 29	1954	1090	864
	(G9)					
	25 ,			1956	1360	596
	26	71 54 54	34 35 26	1958		
	26 ,			1963	1524	439
	27	71 55 28	34 32 30	1968	1394	574
	27 ,			1968	1194	774
	28	71 55 58	34 29 27	1968	1152	816
	28 ,			1970	1144	826
	29	71 56 22	34 26 14	1971	1115	856
	29 ,			1979	967	1012
	30	71 56 51	34 23 8	1987	970	1017
	30 ,			1995	1091	904

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
RY 31	71° 57' 18"	34° 20' 0"	2003	1167	836
31'			2006	1198	808
32	71 58 5	34 17 39	2009	1352	657
32'			2013	1248	765
33	71 58 26	34 14 21	2017	1375	642
33'			2023	1376	647
34	71 58 57	34 11 20	2029	1334	695
34'			2032	1348	684
35	71 59 32	34 8 26	2035	1262	773
35'			2040	1178	862
36	72 0 3	34 5 23	2044	1186	858
36'			2040	1257	783
37	72 0 11	34 1 55	2036	1488	548
37'			2029	1469	560
38	72 0 27	33 58 32	2021	1492	529
38'			2019	1371	648
39	72 0 42	33 55 8	2017	1355	662
39'			2017	1435	582
40	72 0 53	33 51 41	2016	1396	620
40'			2012	1244	768
41	72 1 20	33 48 32	2007	1317	690
41'			2011	1422	589
42	72 2 9	33 46 17	2015	1507	508
42'			2023	1494	529
43	72 3 2	33 44 26	2031	1385	646
43'			2039	1256	783
44	72 3 56	33 42 32	2047	1378	669
44'			2047	1403	644
45	72 4 43	33 40 15	2046	1356	690
45'			2044	1382	662

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
RY 46	72° 5' 6"	33° 43' 30"	2041	1306	735
46 '			2039	1128	911
47	72 5 20	33 46 54	2036	1152	884
47 '			2054	1199	855
48	72 5 44	33 50 7	2071	1027	1044
48 '			2075	999	1076
49	72 6 13	33 53 13	2078	1142	936
49 '			2086	1214	872
50	72 6 41	33 56 20	2093	1260	833
50 '			2095	1422	673
51	72 6 59	33 59 40	2096	1418	678
51 '			2102	1486	616
52	72 7 49	34 1 50	2107	1150	957
52 '			2112	1218	894
53	72 8 37	33 59 33	2116	1196	920
53 '			2126	1215	911
54	72 9 28	33 57 31	2136	1535	601
54 '			2141	1605	536
* 55	72 10 23	33 55 44	2146	1563	583
55 '			2150	1479	671
56	72 10 56	33 52 46	2154	1477	677
56 '			2157	1447	710
* 57	72 11 31	33 49 53	2160	1459	701
(G10) 57 '			2167	1598	569
58	72 11 60	33 46 47	2173	1670	503
58 '			2172	1528	644
59	72 12 19	33 43 29	2171	1445	726
59 '			2168	1388	780
60	72 12 33	33 40 5	2165	1285	880
60 '			2161	1191	970

*JMR station						
Station		Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation
		(S)	(E)	(m)	(m)	(m)
RY	61	72° 12' 41"	33° 36' 26"	2156	1295	861
	61'			2151	1229	922
	62	72 12 51	33 32 60	2146	1257	889
	62'			2137	1301	836
	63	72 13 12	33 29 42	2127	1247	880
	63'			2121	1277	844
	* 64	72 13 6	33 26 13	2115	1354	761
	64'			2118	1391	727
	65	72 13 34	33 23 1	2121	1504	617
	65'			2125	1621	504
	66	72 14 1	33 19 47	2128	1655	473
	66'			2130	1693	437
	67	72 14 31	33 16 37	2131	1746	385
	67'			2133	1312	821
	68	72 15 6	33 13 36	2134		
	68'			2135	1495	640
	69	72 15 36	33 10 26	2135	1590	545
	69'			2140	1612	528
	70	72 16 14	33 7 33	2144	1712	432
	70'			2144	1851	293
	71	72 16 42	33 4 20	2144	1907	237
	71'			2146	1844	302
	72	72 17 14	33 1 13	2147	1820	327
	72'			2153	1674	479
	73	72 17 47	32 58 8	2158	1523	635
	73'			2164	1519	645
	74	72 18 22	32 55 8	2169	1581	588
	74'			2165	1469	696
	75	72 18 58	32 52 9	2160	1402	758
	75'			2163	1348	815

*JMR station						
Station		Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation
		(S)	(E)	(m)	(m)	(m)
RY	76	72° 19' 34"	32° 49' 9"	2165	1304	861
	76'			2164	1423	741
	77	72 19 59	32 45 52	2162	1532	630
	77'			2158	1681	477
	78	72 20 19	32 42 27	2154	1799	355
	78'			2157	1869	288
	79	72 20 51	32 39 20	2159	1880	279
	79'			2160	1882	278
	80	72 21 21	32 36 9	2160	1783	377
	80'			2163	1772	391
	81	72 21 49	32 32 56	2165	1921	244
	81'			2162	1929	233
	82	72 22 18	32 29 43	2158	1960	198
	82'			2162	1926	236
	83	72 22 49	32 26 34	2165	1716	449
	83'			2168	1747	421
	84	72 23 20	32 23 25	2171	1801	370
	84'			2175	1782	393
	* 85	72 23 40	32 20 0	2178	1810	368
	(G11)					
	85'			2179	1788	391
	86	72 23 50	32 16 11	2179	1788	391
	86'			2176	1799	377
	87	72 24 11	32 12 57	2173	1706	467
	87'			2175	1585	590
	88	72 24 33	32 9 45	2177	1570	607
	88'			2174	1595	579
	89	72 24 57	32 6 36	2170	1599	571
	89'			2170	1726	444
	90	72 25 21	32 3 25	2170	1698	472
	90'			2162	1686	476

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
RY 91	72° 25' 45"	32° 0' 16"	2153	1798	355
91 '			2153	1784	369
92	72 26 12	31 57 12	2152	1750	402
92 '			2149	1793	356
93	72 26 23	31 53 46	2145	1765	380
* 93 '	72 26 14	31 52 0	2135	1751	384
94	72 26 13	31 50 14	2124		
94 '			2117		
95	72 26 12	31 46 41	2110	1733	377
95 '			2107	1634	473
96	72 26 10	31 43 7	2104	1528	576
96 '			2102		
97	72 26 10	31 39 34	2100		
97 '			2098		
98	72 26 5	31 36 1	2095	1896	199
98 '			2092	1764	328
99	72 25 57	31 32 29	2088	1779	309
99 '			2091		
100	72 25 49	31 28 57	2093		
100 '			2085	1647	438
101	72 25 38	31 25 27	2076	1536	540
101 '			2056	1526	530
102	72 25 24	31 21 47	2036	1624	412
102 '			2030	1735	295
103	72 25 11	31 18 18	2023	1844	179
103 '			2026		
104	72 25 3	31 14 46	2028		
104 '			2024		
105	72 24 48	31 11 18	2020		
105 '			2011		

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
RY 106	72° 24' 36"	31° 7' 38"	2001		
106 ,			1994		
107	72 24 28	31 4 6	1987		
107 ,			1984	1995	-12
108	72 24 28	31 0 33	1980		
108 ,			1974		
109	72 24 29	30 57 0	1967		
109 ,			1967		
*110	72 24 30	30 53 27	1967		
(G12)					
110 ,			1967		
111	72 24 13	30 50 2	1966		
111 ,			1966		
112	72 23 59	30 46 35	1965		
112 ,			1965		
113	72 23 50	30 43 4	1964		
113 ,			1964		
114	72 23 42	30 39 34	1963		
114 ,			1964		
115	72 23 43	30 36 2	1964		
115 ,			1965		
116	72 23 47	30 32 29	1965	1723	242
116 ,			1966	1896	70
117	72 23 45	30 28 57	1967	1827	140
117 ,			1968	1850	118
118	72 23 47	30 25 25	1968	1981	-13
118 ,			1969	1985	-17
119	72 23 48	30 21 52	1969	1920	49
119 ,			1969	1843	126
120	72 23 42	30 18 21	1968	1797	171
120 ,			1968	1715	253

*JMR station						
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation	
	(S)	(E)	(m)	(m)	(m)	
RY 121	72° 23' 40"	30° 14' 48"	1967	1903	64	
121 '			1970	1595	375	
122	72 23 47	30 11 6	1972	1820	152	
122 '			1974	1625	349	
*123	72 24 29	30 8 24	1975	1642	333	
123 '			1983	1739	244	
124	72 25 26	30 6 57	1991	1768	223	
124 '			2008	1806	202	
125	72 25 59	30 3 59	2024	2041	-17	
125 '			2031	2048	-17	
126	72 26 31	30 1 0	2038	2163	-125	
126 '			2034	2403	-370	
127	72 27 6	29 58 9	2029			
127 '			2025			
128	72 27 43	29 55 8	2020			
128 '			2026			
129	72 28 19	29 52 18	2032	2287	-255	
129 '			2037			
130	72 28 57	29 49 31	2041			
130 '			2041			
131	72 29 25	29 46 13	2041			
131 '			2040	1387	653	
132	72 29 52	29 43 6	2039	1952	87	
132 '			2049	2031	18	
133	72 30 19	29 39 58	2059	2045	14	
133 '			2066	2093	-28	
134	72 30 32	29 36 34	2072	2156	-84	
134 '			2074			
*135	72 30 20	29 33 8	2076			
(G13)						
135 '			2043	2028	15	

*JMR station						
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation	
	(S)	(E)	(m)	(m)	(m)	
RY 136	72° 30' 11"	29° 29' 10"	2010	2099	-89	
136 '			2064	2161	-98	
137	72 29 59	29 25 13	2117	2229	-112	
137 '			2117	2166	-50	
138	72 29 37	29 21 22	2116	2168	-52	
138 '			2111	2130	-20	
139	72 29 4	29 17 45	2105	2151	-46	
139 '			2094	2154	-61	
140	72 28 27	29 14 14	2082	1988	94	
140 '			2080	1921	159	
141	72 27 52	29 10 41	2077	1917	160	
141 '			2071	1896	175	
142	72 27 8	29 7 12	2065	1805	260	
142 '			2071	1835	236	
143	72 26 21	29 4 5	2077	1773	304	
143 '			2066	1535	531	
144	72 25 34	29 0 56	2055	1495	560	
144 '			2035	1417	618	
145	72 24 40	28 58 15	2014	1473	541	
145 '			1989	1499	490	
146	72 23 44	28 55 37	1964	1558	406	
146 '			1951	1611	340	
147	72 24 17	28 58 9	1937	1745	192	
147 '			1938	1717	221	
148	72 23 45	28 54 31	1938	1816	122	
*148 '			1932	1792	140	
149	72 23 12	28 50 36	1926	1850	76	
149 '			1930	1983	-54	
150	72 22 54	28 46 55	1933	2102	-169	
150 '			1942	2042	-101	

*JMR station					
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation
	(S)	(E)	(m)	(m)	(m)
RY 151	72° 22' 34"	28° 43' 16"	1950	2093	-143
151 '			1954	2077	-124
152	72 22 9	28 39 41	1957	2166	-209
152 '			1959	2220	-262
153	72 21 44	28 36 6	1960		
153 '			1962	2382	-421
154	72 21 21	28 32 29	1963	2258	-295
154 '			1961	2165	-204
155	72 20 57	28 28 53	1959	2006	-47
155 '			1957	2092	-136
156	72 20 31	28 25 19	1954	1960	-6
156 '			1945	1692	253
157	72 20 5	28 21 45	1936	1448	488
157 '			1935	1352	583
158	72 19 37	28 18 14	1934		
158 '			1940		
159	72 19 10	28 14 42	1945	1693	252
159 '			1949	1381	568
160	72 18 44	28 11 9	1952	901	1051
160 '			1948	758	1190
161	72 18 16	28 7 37	1943	852	1091
161 '			1939	698	1241
162	72 17 53	28 4 1	1935	419	1516
162 '			1924	311	1613
163	72 17 3	26 1 12	1913	384	1529
163 '			1908	485	1423
164	72 16 20	27 58 5	1903	628	1275
164 '			1909	682	1227
165	72 15 40	27 54 53	1914	578	1336
165 '			1897	489	1408

*JMR station					
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation
	(S)	(E)	(m)	(m)	(m)
RY 166	72° 16' 27"	27° 56' 44"	1879	313	1566
*166			1862	220	1642
167	72 15 25	27 56 38	1845	-	-
167			1810	-	-
168	72 14 26	27 56 25	1775	-	-
168			1755	-	-
169	72 13 12	27 56 32	1734	-	-
169			1707	-	-
170	72 11 57	27 56 12	1680	-	-
170			1674	-	-
171	72 10 46	27 55 2	1668	-	-
171			1658	-	-
172	72 9 34	27 53 58	1648	-	-
172			1640	-	-
173	72 8 22	27 52 29	1632	-	-
173			1628	-	-
174	72 7 10	27 51 26	1624	-	-
174			1619	-	-
*175	72 7 44	27 51 58	1615	-	-
175			1604	-	-
176	72 6 39	27 51 18	1593	-	-
176			1584	-	-
177	72 5 43	27 49 23	1575	-	-
177			1576	-	-
178	72 4 40	27 49 15	1577	-	-
178			1560	-	-
179	72 3 38	27 49 56	1543	-	-
179			1525	-	-
180	72 2 24	27 49 26	1508	-	-
180			1498	-	-

(-): no measurement

*JMR station						
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation	
	(S)	(E)	(m)	(m)	(m)	
RY 181	72° 1' 32"	27° 47' 29"	1488	-	-	
181 ,			1462	-	-	
182	72 0 38	27 45 54	1436	-	-	
182 ,			1399	-	-	
183	71 59 39	27 46 29	1362	-	-	
183 ,			1355	-	-	
184	71 58 37	27 46 6	1348	-	-	
184 ,			1345	-	-	
185	71 57 45	27 45 17	1341	-	-	
185 ,			1337	-	-	
186	71 57 46	27 41 48	1332	-	-	
186 ,			1332	-	-	
187	71 57 27	27 38 28	1331	-	-	
187 ,			1342	-	-	
188	71 56 28	27 37 3	1353	-	-	
188 ,			1350	-	-	
189	71 55 31	27 35 17	1346	-	-	
189 ,			1346	-	-	
190	71 54 31	27 34 8	1346	-	-	
190 ,			1327	-	-	
191	71 53 35	27 32 17	1308	-	-	
191 ,			1302	-	-	
192	71 52 41	27 30 14	1290	-	-	
192 ,			1265	-	-	
193	71 51 48	27 28 4	1240	-	-	
193 ,			1224	-	-	
194	71 50 53	27 26 8	1208	-	-	
194 ,			1198	-	-	
195	71 50 3	27 23 45	1188	-	-	
195 ,			1177	-	-	

(-): no measurement

*JMR station						
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation	
	(S)	(E)	(m)	(m)	(m)	
RY 196	71° 49' 11"	27° 21' 35"	1166	-	-	
196 ,			1161	-	-	
197	71 48 8	27 20 30	1156	-	-	
197 ,			1149	-	-	
198	71 47 11	27 18 36	1142	-	-	
198 ,			1130	525	605	
199	71 46 23	27 15 42	1127	363	764	
199 ,			1124	372	752	
200	71 45 45	27 12 51	1124	358	766	
200 ,			1127	490	637	
201	71 45 6	27 10 1	1118	679	439	
201 ,			1099	441	658	
202	71 44 28	27 7 11	1081	980	101	
202 ,			1075	656	419	
203	71 43 49	27 4 21	1066	699	367	
203 ,			1061	946	115	
204	71 43 1	27 1 57	1054	1073	-19	
204 ,			1043	1013	30	
205	71 42 8	26 59 51	1025	1070	-45	
205 ,			1009	1295	-286	
206	71 41 10	26 58 10	999	1057	-58	
206 ,			991	1000	-9	
207	71 40 11	26 56 33	994	849	145	
207 ,			961	596	365	
208	71 39 45	26 53 21	933	670	263	
208 ,			926	863	63	
209	71 39 22	26 50 29	883	868	15	
209 ,			895	948	-53	
210	71 38 55	26 47 18	900	1140	-240	
210 ,			898	1300	-402	

(-): no measurement

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
RY 211	71° 38' 28"	26° 44' 8"	891	1196	-305
211 '			877	1266	-389
212	71 38 4	26 40 55	859	1275	-416
212 '			848	1325	-477
213	71 37 41	26 37 41	849	1131	-282
213 '			843	822	21
214	71 37 17	26 34 27	822	768	54
214 '			811	780	31
215	71 36 53	26 31 14	808	809	-1
215 '			819	800	19
216	71 36 25	26 28 6	817	806	11
216 '			817	797	20
217	71 35 57	26 24 59	839	860	-21
217 '			842	1331	-489
*218	71 35 51	26 21 49	851	1264	-413
218 '			857	1247	-390
219	71 35 3	26 18 40	857	1206	-349
219 '			865	1159	-294
220	71 34 38	26 15 28	870	1132	-262
220 '			829	1162	-333
221	71 34 12	26 12 18	835	1243	-408
221 '			826	1259	-433
222	71 33 45	26 8 58	813	1183	-370
222 '			799	1079	-280
223	71 33 19	26 5 48	799	1074	-275
223 '			796	1187	-391
224	71 33 9	26 2 9	785	1391	-606
224 '			774	1436	-662
225	71 32 58	25 59 1	785	1410	-625
225 '			785	1377	-592

*JMR station					
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation
	(S)	(E)	(m)	(m)	(m)
RY 226	71° 32' 49"	25° 55' 38"	799	1377	-578
226 ,			824	1361	-537
227	71 32 37	25 52 15	857	1400	-543
227 ,			865	1352	-487
228	71 32 49	25 49 7	851	1229	-378
228 ,			846	1041	-195
229	71 32 40	25 45 44	832	994	-162
229 ,			837	769	68
230	71 32 30	25 42 20	810	813	-3
230 ,			813	866	-53
231	71 32 22	25 38 57	826	982	-156
231 ,			843	893	-50
*232	71 32 35	25 35 35	840	937	-97
232 ,			840	876	-36
233	71 32 6	25 32 9	840	889	-49
233 ,			841	888	-47
234	71 32 2	25 28 44	844	887	-43
234 ,			844	968	-124
235	71 31 51	25 25 21	845	808	37
235 ,			848	847	1
236	71 31 41	25 21 59	850	983	-133
236 ,			852	927	-75
237	71 31 33	25 18 35	853	1015	-162
237 ,			858	991	-133
238	71 31 25	25 15 6	859	1088	-229
238 ,			859	1018	-159
239	71 31 16	25 11 47	859	933	-74
239 ,			859	957	-98
240	71 31 8	25 8 24	861	960	-99
240 ,			860	959	-99

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
RY 241	71° 31' 0"	25° 5' 0"	860	1013	-153
241 '			859	1049	-190
242	71 30 53	25 1 36	860	1158	-298
242 '			860	1290	-430
243	71 30 47	24 58 12	860	1312	-452
243 '			860	1285	-425
244	71 30 41	24 54 48	863	1265	-402
244 '			866	1192	-326
245	71 30 33	24 51 10	868	1060	-192
245 '			867	698	169
246	71 30 26	24 48 1	866	543	323
246 '			869	525	344
247	71 30 19	24 44 37	874	661	213
247 '			873	996	-123
248	71 30 11	24 41 13	868	773	95
248 '			863	460	403
249	71 30 5	24 37 49	864	1004	-140
249 '			866	1169	-303
250	71 29 59	24 34 25	868	1163	-295
250 '			864	1177	-313
251	71 29 53	24 31 1	863	1179	-316
251 '			864	1168	-304
252	71 29 48	24 27 37	864	1171	-307
252 '			863	1149	-286
253	71 29 42	24 24 13	863	989	-126
253 '			864	1469	-605
254	71 29 36	24 20 49	867	990	-123
254 '			870	1329	-459
255	71 29 29	24 17 26	869	759	110
255 '			874	913	-39

*JMR station						
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation	
	(S)	(E)	(m)	(m)	(m)	
RY 256	71° 29' 47"	24° 14' 29"	881	936	-55	
256 '			889	1036	-147	
257	71 30 29	24 11 58	902	589	313	
257 '			905	497	408	
258	71 31 12	24 9 28	917	550	367	
258 '			930	395	535	
(Asuka Camp)	71 31 34	24 8 17	931			

Table 2-5. Position, elevation, ice thickness and bedrock elevation of stations along Route L.

Station	Latitude		Longitude		Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
	(S)		(E)				
L * 0	70° 27' 15"		23° 53' 22"		196	534	-338
0 ,						487	
L 1	70 27 49		23 53 24		216	561	-345
1 ,						561	
L 2	70 28 23		23 53 25		230	588	-358
2 ,						564	
L 3	70 28 56		23 53 27		237	584	-347
3 ,						575	
L 4	70 29 30		23 53 28		244	589	-345
4 ,						580	
L 5	70 30 4		23 53 30		252	615	-363
5 ,						586	
L 6	70 30 38		23 53 32		258	597	-339
6 ,						590	
L 7	70 31 12		23 53 34		265	616	-351
7 ,						606	
L 8	70 31 46		23 53 35		270	634	-364
8 ,						618	
L 9	70 32 20		23 53 37		275	633	-358
9 ,						614	
L 10	70 32 54		23 53 39		275	645	-370
10 ,						630	
L 11	70 33 28		23 53 41		280	645	-365
11 ,						636	
L 12	70 34 1		23 53 43		281	636	-355
12 ,						633	
L 13	70 34 35		23 53 45		279	614	-335
13 ,						608	
L 14	70 35 9		23 53 47		286	655	-369
14 ,						688	
L 15	70 35 43		23 53 48		286	719	-433
15 ,						726	
L 16	70 36 17		23 53 50		288	754	-466
16 ,						740	
L 17	70 36 51		23 53 52		283	782	-499
17 ,						758	
L 18	70 37 25		23 53 54		287	776	-489
18 ,						763	
L 19	70 37 59		23 53 56		285	799	-514
19 ,						757	
L 20	70 38 32		23 53 58		288	775	-487

*JMR station						
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation	
	(S)	(E)	(m)	(m)	(m)	
L 20				741		
L 21	70° 39' 6"	23° 54' 0"	292	771	-479	
L 21				743		
L 22	70 39 40	23 54 3	295	720	-425	
L 22				703		
L 23	70 40 14	23 54 4	296	747	-451	
L 23				739		
L 24	70 40 48	23 54 6	297	738	-441	
L 24				714		
L 25	70 41 22	23 54 9	300	719	-419	
L 25				701		
L 26	70 41 56	23 54 10	299	708	-409	
L 26				677		
L 27	70 42 30	23 54 12	303	686	-383	
L 27				670		
L 28	70 43 4	23 54 15	302	675	-373	
L 28				670		
L 29	70 43 38	23 54 17	310	676	-366	
L 29				670		
L 30	70 44 12	23 54 19	312	690	-378	
L 30				675		
L 31	70 44 46	23 54 21	315	694	-379	
L 31				675		
L 32	70 45 20	23 54 23	319	698	-379	
L 32				679		
L 33	70 45 54	23 54 26	323	702	-379	
L 33				688		
L 34	70 46 28	23 54 28	330	708	-378	
L 34				686		
L 35	70 47 1	23 54 31	336	709	-373	
L 35				693		
L 36	70 47 35	23 54 33	341	708	-367	
L 36				704		
L 37	70 48 9	23 54 35	347	720	-373	
L 37				721		
L 38	70 48 43	23 54 38	351	730	-379	
L 38				719		
L 39	70 49 17	23 54 40	357	737	-380	
L 39				722		
L 40	70 49 51	23 54 43	365	746	-381	

*JMR station						
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation	
	(S)	(E)	(m)	(m)	(m)	
	40			745		
L	41	70° 50' 25"	23° 54' 45"	368	748	-380
	41			745		
L	42	70 50 59	23 54 48	375	753	-378
	42			760		
L	43	70 51 33	23 54 50	383	764	-381
	43			756		
L	44	70 52 7	23 54 58	388	772	-384
	44			763		
L	45	70 52 40	23 54 56	394	780	-386
	45			781		
L	46	70 52 30	23 54 57	400	788	-388
	46			763		
L	47	70 52 50	23 54 57	409	803	-394
	* 47			794		
L	48	70 53 13	23 54 58	418	818	-400
	48			809		
L	49	70 53 46	23 54 59	423	809	-386
	49			789		
L	50	70 54 18	23 55 1	434	805	-371
	50			787		
L	51	70 54 51	23 55 2	438	812	-374
	51			801		
L	52	70 55 24	23 55 4	443	820	-377
	52			830		
L	53	70 55 57	23 55 6	452	819	-367
	53			788		
L	54	70 56 29	23 55 8	456	812	-356
	54			786		
L	55	70 57 2	23 55 10	467	832	-365
	55			807		
L	56	70 57 35	23 55 11	472	846	-374
	56			842		
L	57	70 58 8	23 55 13	480	859	-379
	57			855		
L	58	70 58 41	23 55 15	483	866	-383
	58			847		
L	59	70 59 14	23 55 17	490	873	-383
	59			847		
L	60	70 59 46	23 55 19	496	878	-382

*JMR station

Station	Latitude (S)	Longitude (E)	Elevation (m)	Ice thickness (m)	Bedrock elevation (m)
L 60				876	
L 61	71° 0' 19"	23° 55' 21"	501	876	-375
L 62	71 0 52	23 55 23	509	863	
L 63	71 1 25	23 55 24	512	877	-368
L 64	71 1 58	23 55 26	522	853	
L 65	71 2 30	23 55 28	529	867	-355
L 66	71 2 3	23 55 30	533	843	
L 67	71 3 36	23 55 32	538	864	-342
L 68	71 4 9	23 55 34	547	860	
L 69	71 4 42	23 55 37	557	889	-360
L 70	71 5 15	23 55 39	561	895	
L 71	71 5 48	23 55 41	567	910	-377
L 72	71 6 21	23 55 43	570	910	
L 73	71 6 54	23 55 45	577	901	-363
L 74	71 7 26	23 55 47	585	893	
L 75	71 7 59	23 55 49	585	896	-349
L 76	71 8 31	23 55 51	595	886	
L 77	71 9 4	23 55 53	605	949	-392
L 78	71 9 37	23 55 56	609	989	
L 79	71 10 10	23 55 58	610	995	-434
L 80	71 10 43	23 56 0	619	991	
				1026	-459
				1060	
				1054	-484
				1060	
				1051	-474
				1029	
				1049	-464
				1057	
				1002	-417
				954	
				965	-370
				945	
				1007	-402
				975	
				1042	-433
				1002	
				980	-370
				909	
				926	-307

							*JMR station
Station	Latitude	Longitude	Elevation	Ice	Bedrock		
	(S)	(E)	(m)	thickness	elevation		
				(m)	(m)		
	80				859		
L	81	71° 11' 15"	23° 56' 3"	636	845	-209	
	81				883		
L	82	71 11 48	23 56 5	643	966	-323	
	82				954		
L	83	71 12 21	23 56 8	647	979	-332	
	83				931		
L	84	71 12 54	23 56 10	654	921	-267	
	84				851		
L	85	71 13 27	23 56 12	668	972	-304	
	85				1016		
L	86	71 14 0	23 56 15	681	1023	-342	
	86				1034		
L	87	71 14 32	23 56 17	691	1099	-408	
	87				1187		
L	88	71 15 5	23 56 20	697	1255	-558	
	88				1278		
L	89	71 15 38	23 56 22	698	1282	-584	
	89				1251		
L	90	71 16 11	23 56 25	695	1245	-550	
	90				1133		
L	91	71 16 44	23 56 27	701	1002	-301	
	91				1000		
L	92	71 17 16	23 56 30	719	1040	-321	
	92				1141		
L	93	71 17 49	23 56 33	724	1215	-491	
	93				1228		
L	94	71 18 22	23 56 35	726	1179	-453	
	94				1088		
L	95	71 18 55	23 56 38	733	1219	-486	
	95				1265		
L	96	71 19 27	23 56 40	734	1326	-592	
	96				1322		
L	97	71 20 0	23 56 43	739	1323	-584	
	97				1259		
L	98	71 20 33	23 56 45	742	1234	-492	
	98				1262		
L	99	71 20 50	23 56 48	751	1289	-538	
	99				1343		
L	*100	71 21 6	23 56 48	756	1388	-632	

*JMR station						
Station	Latitude	Longitude	Elevation	Ice thickness	Bedrock elevation	
	(S)	(E)	(m)	(m)	(m)	
L 100	'			1435		
L 101	71° 21 ' 37"	23° 57 ' 22"	759	1454	-695	
L 101	'			1468		
L 102	71 22 9	23 57 56	760	1391	-631	
L 102	'			1369		
L 103	71 22 40	23 58 31	761	1346	-585	
L 103	'			1298		
L 104	71 23 11	23 59 5	767	1240	-473	
L 104	'			1196		
L 105	71 23 43	23 59 40	775	1125	-350	
L 105	'			1016		
L 106	71 24 14	24 0 14	783	928	-145	
L 106	'			1043		
L 107	71 24 45	24 0 48	785	1198	-413	
L 107	'			1160		
L 108	71 25 17	24 1 23	792	989	-197	
L 108	'			974		
L 109	71 25 48	24 1 57	797	1180	-383	
L 109	'			1232		
L 110	71 26 19	24 2 32	793	1230	-437	
L 110	'			932		
L 111	71 26 51	24 3 6	798	888	-90	
L 111	'					
L 112	71 27 23	24 3 40	811	1327	-516	
L 112	'			726		
L 113	71 27 54	24 4 15	819	589	230	
L 113	'			341		
L 114	71 28 25	24 4 50	832	406	426	
L 114	'			436		
L 115	71 28 57	24 5 24	848	477	371	
L 115	'			531		
L 116	71 29 28	24 5 59	863			
L 116	'					
L 117	71 30 0	24 6 33	871			
L 117	'					
L 118	71 30 31	24 7 8	881			
L 118	'					
L 119	71 31 2	24 7 43	902			
L 119	'					
L 120	71 31 20	24 8 17	921			
L 120	'					
L *121	71 31 34	24 8 17	931			

3. Net Accumulation of Snow along Traverse Routes between Syowa Station and Mizuho Station in 1987-88

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Akira YAMAMOTO and Takashi YAMANOUCI
JARE-29 Yuki MORINAGA and Zhang Wenjing

Net accumulation of snow was measured by the snow stake method along traverse routes between Syowa Station and Mizuho Station as shown in Table 1 and Fig. A.

1) Route S-H-Z

The snow stake height of the routes was measured three times in 1987-1988. The height differences which give the 2-7 months period and the annual net accumulation along the route are tabulated in Table 3-1. The positions of the stations are given by Naruse and Yokoyama (1975).

2) 36-stake farms along the routes

The 36-stake farms (100 m x 100 m in area) established at S16, H68, H180, S122 and Z40 were measured by JARE-28 on the way of each trip along Route S-H-Z between Mizuho Station and Syowa Station. Results are shown in Tables 3-2, 3-3, 3-4, 3-5 and 3-6 for approximately one year period.

Reference

Naruse, R. and Yokoyama, K. (1975): Position, elevation and ice thickness of stations. JARE Data Rep., 28 (Glaciol. 3), 7-47.

Table 3-1. Net accumulation along Routes S-H-Z in 1987-88.

		(cm in depth)			
Station		Jan.1987- Aug.1987	Aug.1987- Oct.1987	Oct.1987- Jan.1988	Jan.1987- Jan.1988
No.		(227days)	(65days)	(71days)	(363days)
S	16	24.0	6.0	-	-
	17	30.0	17.0	-24.0	23.0
	18	19.0	5.0	-2.0	22.0
	19	29.0	3.0	-14.0	18.0
	20	44.0	25.0	-16.0	53.0
	21	30.0	48.0	11.0	89.0
	22	50.0	2.0	-12.0	40.0
	23	40.0	100.0	-16.0	124.0
	24	31.0	89.0	-10.0	110.0
	25	37.0	114.0	-19.0	132.0
	26	62.0	-1.0	-15.0	46.0
H	27	19.0	127.0	-9.0	137.0
	28	37.0	133.0	-18.0	152.0
	29	27.0	153.0	-7.0	173.0
	30	42.0	3.0	0.0	45.0
	3	32.0	11.0	-15.0	28.0
	9	26.0	141.0	-12.0	155.0
	15	23.0	8.0	-6.0	25.0
	21	28.0	119.0	-12.0	135.0
	27	13.0	119.0	0.0	132.0
	35	38.0	144.0	-12.0	170.0
	42	23.0	85.0	-10.0	98.0
	48	34.0	134.0	-6.0	162.0
	54	31.0	104.0	-14.0	121.0
	60	26.0	136.0	-11.0	151.0
	64	26.0	106.0	-11.0	121.0
	68	13.0	-5.0	-7.0	1.0
	72	41.0	14.0	-4.0	51.0
	76	23.0	-1.0	-7.0	15.0
	80	20.0	98.0	-9.0	109.0
	84	18.0	126.0	-7.0	137.0
88	37.0	100.0	1.0	138.0	
92	18.0	5.0	-8.0	15.0	
96	32.0	114.0	-9.0	137.0	
100	13.0	87.0	-9.0	91.0	
104	7.0	2.0	-3.0	6.0	
108	1.0	3.0	-8.0	-4.0	
112	-5.0	14.0	-10.0	-1.0	
116	18.0	9.0	5.0	32.0	
120	8.0	4.0	-6.0	6.0	
124	-59.0	102.0	-17.0	26.0	
128	8.0	0.0	-7.0	1.0	

(cm in depth)

Station No.	Jan.1987- Aug.1987 (227days)	Aug.1987- Oct.1987 (65days)	Oct.1987- Jan.1988 (71days)	Jan.1987- Jan.1988 (363days)
H 132	10.0	1.0	-4.0	7.0
136	5.0	5.0	-7.0	3.0
140	13.0	3.0	-8.0	8.0
144	0.0	1.0	-7.0	-6.0
148	21.0	3.0	-4.0	20.0
152	-3.0	-1.0	-2.0	-6.0
156	8.0	7.0	-7.0	8.0
160	14.0	-3.0	-7.0	4.0
164	2.0	2.0	-2.0	2.0
168	28.0	10.0	-8.0	30.0
172	8.0	6.0	1.0	15.0
176	51.0	1.0	-10.0	42.0
180	37.0	0.0	-5.0	32.0
184	27.0	0.0	-1.0	26.0
188	18.0	0.0	-11.0	7.0
192	31.0	21.0	-2.0	50.0
196	1.0	5.0	-2.0	4.0
200	19.0	0.0	-4.0	15.0
204	17.0	-1.0	-4.0	12.0
208	-3.0	1.0	-3.0	-5.0
212	35.0	12.0	-3.0	44.0
216	2.0	2.0	-5.0	-1.0
220	32.0	1.0	-27.0	6.0
224	2.0	0.0	-2.0	0.0
228	30.0	6.0	-2.0	34.0
232	20.0	1.0	-1.0	20.0
236	3.0	10.0	-10.0	3.0
240	6.0	8.0	-10.0	4.0
244	18.0	1.0	0.0	19.0
248	27.0	0.0	1.0	28.0
252	23.0	3.0	-7.0	19.0
256	30.0	3.0	2.0	35.0
260	17.0	2.0	-5.0	14.0
264	19.0	-3.0	2.0	18.0
268	28.0	8.0	-1.0	35.0
272	19.0	3.0	-2.0	20.0
276	0.0	18.0	-7.0	11.0
280	14.0	1.0	-4.0	11.0
284	44.0	3.0	-10.0	37.0
288	28.0	1.0	-7.0	22.0
293	13.0	1.0	-4.0	10.0
297	21.0	2.0	-3.0	20.0

(cm in depth)

		Jan.1987-	Aug.1987-	Oct.1987-	Jan.1987-
	Station	Aug.1987	Oct.1987	Jan.1988	Jan.1988
	No.	(227days)	(65days)	(71days)	(363days)
H	301	27.0	5.0	0.0	32.0
S	122	-14.0	7.0	-4.0	-11.0
Z	2	3.0	0.0	-5.0	-2.0
	4	-1.0	0.0	-5.0	-6.0
	6	12.0	2.0	-7.0	7.0
	8	17.0	-1.0	-5.0	11.0
	10	-3.0	7.0	-3.0	1.0
	12	11.0	1.0	3.0	15.0
	14	45.0	2.0	7.0	54.0
	16	9.0	11.0	6.0	26.0
	18	20.0	0.0	-13.0	7.0
	20	12.0	5.0	4.0	21.0
	22	43.0	1.0	2.0	46.0
	24	4.0	4.0	1.0	9.0
	26	0.0	2.0	-5.0	-3.0
	28	24.0	1.0	-6.0	19.0
	30	13.0	0.0	-3.0	10.0
	32	3.0	9.0	-11.0	1.0
	34	-1.0	1.0	-4.0	-4.0
	36	15.0	3.0	1.0	19.0
	38	10.0	2.0	-7.0	5.0
	40	7.0	-1.0	-5.0	1.0
	42	9.0	3.0	-9.0	3.0
	46	8.0	1.0	-5.0	4.0
	50	13.0	2.0	-7.0	8.0
	54	13.0	1.0	-6.0	8.0
	58	-3.0	1.0	-6.0	-8.0
	62	17.0	0.0	-4.0	13.0
	66	3.0	1.0	-3.0	1.0
	70	0.0	1.0	-5.0	-4.0
	72	18.0	3.0	1.0	22.0
	74	10.0	-1.0	-12.0	-3.0
	76	42.0	-4.0	-7.0	31.0
	78	1.0	1.0	0.0	2.0
	80	10.0	0.0	-1.0	9.0
	82	21.0	1.0	-11.0	11.0
	84	25.0	-1.0	-5.0	19.0
	86	51.0	5.0	3.0	59.0
	88	-2.0	1.0	8.0	7.0
	90	-1.0	5.0	-6.0	-2.0
	92	-14.0	1.0	0.0	-13.0
	94	14.0	1.0	-3.0	12.0
	96	19.0	0.0	-2.0	17.0
	98	0.0	0.0	13.0	13.0
	100	46.0	0.0	-8.0	38.0
	102	4.0	0.0	24.0	28.0

Table 3-2. Net accumulation with a 36-stake farm at S16 in 1986-88.

	(cm in depth)	
	9/30.1986- 1/19.1987 (111days)	1/19.1987- 1/ 7.1988 (353days)
I-1	18.4	0.3
2	21.2	0.5
3		27.0
4	18.4	-3.0
5	20.0	-15.3
6	19.2	-11.7
II-1	23.8	6.9
2	19.8	7.3
3	17.8	-7.7
4	20.8	1.5
5	22.8	-11.0
6	22.0	-1.4
III-1	34.0	8.6
2	25.1	14.7
3	13.8	2.7
4	19.6	1.0
5	4.9	-4.5
6		
IV-1	25.0	13.5
2	12.7	6.0
3	14.1	2.7
4	16.3	-4.9
5	-2.6	9.9
6	8.4	0.7
V-1	20.0	1.2
2	29.5	3.9
3	15.5	-3.5
4	34.1	-4.8
5	27.9	-7.2
6		
VI-1	41.6	3.0
2	34.6	3.0
3	39.1	-0.7
4	31.2	1.0
5	33.3	-3.4
6	34.7	-7.8
Mean	22.3	0.8

Table 3-3. Net accumulation with a 36-stake farm at H68 in 1986-88.

	(cm in depth)	
	10/1.1986- 10/30.1987 (394days)	10/30.1987- 1/17.1988 (79days)
I-1	53.5	-17.0
2	40.1	-8.0
3	33.2	-17.0
4	21.6	-10.0
5	31.3	0.0
6	46.4	-10.0
II-1	33.2	-8.0
2	44.0	-10.0
3	46.5	-17.0
4	46.7	-5.0
5	41.4	-3.0
6	33.1	-10.0
III-1	23.7	-8.0
2	27.5	-5.0
3	28.2	-7.0
4	10.3	-8.0
5	24.8	-10.0
6	-0.4	-8.0
IV-1	15.8	-14.0
2	4.9	-2.0
3	28.1	-3.0
4	29.1	-12.0
5	19.1	-6.0
6	19.7	-6.0
V-1	32.6	-13.0
2	32.6	-12.0
3	42.2	-23.0
4	34.3	-11.0
5	29.8	-6.0
6	19.0	-15.0
VI-1	38.1	-9.0
2	40.7	-6.0
3	24.8	-17.0
4	26.8	-12.0
5	27.8	-10.0
6	30.0	-8.0
Mean	30.0	-9.6

Table 3-4. Net accumulation with a 36-stake farm at H180 in 1986-88.

(cm in depth)		
	10/2.1986- 1/12.1987 (102days)	1/12.1987- 1/ 9.1986 (362days)
I-1	15.0	32.5
2	-5.0	29.0
3	10.0	21.0
4	6.0	37.0
5	27.0	19.0
6	6.0	31.3
II-1	32.0	20.0
2	21.0	18.0
3	28.0	7.5
4	24.0	11.0
5	18.0	3.0
6	11.0	15.6
III-1	12.0	16.0
2	-6.0	18.0
3	11.0	11.0
4	5.0	12.0
5	6.0	29.0
6	11.0	23.8
IV-1	-8.0	33.0
2	6.0	24.5
3	1.0	29.4
4	0.0	18.5
5	24.0	6.0
6	12.0	21.5
V-1	-6.0	19.5
2	2.0	34.0
3	-7.0	34.5
4	-6.0	28.0
5	-6.0	24.0
6	8.0	29.4
VI-1	-4.0	12.0
2	-17.0	18.0
3	-27.0	7.0
4	6.0	20.5
5	-6.0	6.0
6	-6.0	11.2
Mean	5.5	20.3

Table 3-5. Net accumulation with a 36-stake farm at S122 in 1986-88.

(cm in depth)		
	10/2.1986- 1/18.1987 (108days)	1/18.1987- 1/16.1988 (363days)
I-1	9.3	19.0
2	5.2	12.0
3	-3.3	-7.0
4	-3.8	-7.0
5	-1.5	-7.0
6	7.0	-6.0
II-1	10.0	26.0
2	8.3	17.0
3	-1.9	9.0
4	-3.3	26.0
5	-4.7	31.0
6	-12.2	11.0
III-1	-5.5	20.0
2	15.2	12.0
3	45.6	8.0
4	39.4	7.0
5	31.0	10.0
6	12.0	38.0
IV-1	13.2	8.0
2	33.7	12.0
3	12.4	14.0
4	22.5	36.0
5	5.0	46.0
6	-3.8	48.0
V-1	-3.9	7.0
2	16.1	15.0
3	6.6	-4.0
4	2.9	-3.0
5	1.0	29.0
6	-21.6	11.0
VI-1	-5.3	22.0
2	-3.7	0.0
3	-5.6	-5.0
4	19.2	-8.0
5	-11.0	-6.0
6	4.2	-4.0
Mean	6.4	12.1

Table 3-6. Net accumulation with a 36-stake farm at Z40 in 1986-88.

	(cm in depth)	
	10/3.1986- 1/13.1987 (102days)	1/13.1987- 1/15.1988 (367days)
I-1	15.0	21.0
2	13.0	11.0
3	-2.0	18.0
4	-3.0	8.0
5	-1.0	0.0
6	22.0	-6.0
II-1	-5.0	9.0
2	-3.0	-2.0
3	3.0	1.0
4	-3.0	8.0
5	-6.0	-7.0
6	2.0	-1.0
III-1	-4.0	11.0
2	-3.0	20.0
3	-4.0	-2.0
4	-5.0	7.0
5	-2.0	14.0
6	-4.0	9.0
IV-1	18.0	5.0
2	-3.0	1.0
3	3.0	-2.0
4	41.0	-13.0
5	2.0	-1.0
6	13.0	3.0
V-1	-2.0	10.0
2	-5.0	0.0
3	-1.0	-6.0
4	3.0	24.0
5	-3.0	0.0
6	-4.0	1.0
VI-1	4.0	10.0
2	6.0	15.0
3	-3.0	25.0
4	-5.0	-3.0
5	2.0	15.0
6	-3.0	17.0
Mean	2.0	6.1

4. Net Accumulation of Snow around Asuka Camp in 1987

Observers: JARE-28 Ryoki Sakai, Masaru Ayukawa
and Kazuo Shibuya

Net Accumulation of snow was measured by the snow stake method along traverse Route L and at Asuka Station as shown in Tables 4-1, 4-2, 4-3 and Fig. A.

1) Route L

The snow stake height of the route was measured in 1987-1988, for approximately one year period, with the results shown in Table 4-1. The positions of the stations are given in Table 2-5.

2) 36 and 16-stake farms at Asuka Camp

The 36-stake farm (100 m x 100 m in area) established at Asuka Camp in 1985, was measured in the period of approximately every one month by JARE-28, and the 16-stake farm (30 m x 30 m in area) established in June 1987 was measured every week, as tabulated in Tables 4-2 and 4-3.

References

- Ageta, Y., Kikuchi, T., Kamiyama, K. and Okuhira, F. (1987):
Position, elevation and ice thickness of stations. JARE
Data Rep., 125 (Glaciol. 14), 5-29.
- Nakawo, M., Narita, H. and Isobe, T. (1984): Position, elevation
and ice thickness of stations. JARE Data Rep., 96 (Glaciol.
11), 4-38.
- Naruse, R. and Yokoyama, K. (1975): Position, elevation and ice
thickness of stations. JARE Data Rep., 28 (Glaciol. 3),
7-47.
- Nishio, F., Ohmae, H. and Ishikawa, M. (1986): Glaciological
research program in East Queen Maud Land, East Antarctica,
Part 3, 1982. JARE Data Rep., 110 (Glaciol. 12), 36p.

Table 4-1. Net accumulation along Route L
in 1987.

		(cm in depth)			
Station No.	Feb.1987- 12/6.1987 (309 days)	Station No.	Feb.1987- 12/6.1987 (309 days)		
L	0	53.0	L	62	50.5
	2	55.5		64	44.0
	4	46.0		66	38.5
	6	40.0		68	46.5
	8	43.0		70	62.5
	10	79.0		72	53.0
	12	76.0		74	23.0
	14	56.0		76	8.0
	16	73.0		78	44.5
	18	87.5		80	46.0
	20	85.5		82	-8.0
	22	62.0		84	83.0
	24	73.0		86	11.0
	26	71.5		88	-0.5
	28	70.0		90	31.0
	30	85.0		92	-7.0
	32	89.5		94	2.0
	34	71.0		96	45.0
	36	58.5		98	22.0
	38	73.0		100	-23.0
	40	62.0		102	33.0
	42	68.0		104	71.5
	44	48.0		106	42.0
	46	41.0		108	44.0
	48	11.0		110	20.5
	50	39.0		112	42.5
	52	48.5		114	27.5
	54	48.0		116	44.5
	56	48.0		118	12.5
	58	50.0		120	12.5
	60	34.0			

Table 4-2. Net accumulation with a 36-stake farm at Asuka Camp
in 1987.

No.	(cm in depth)					
	1/25- 2/18 (24days)	2/18- 3/20 (30days)	3/20- 4/22 (33days)	4/22- 5/20 (28days)	5/20- 6/18 (29days)	6/18- 7/17 (29days)
I-1	-6.0	-8.0	7.0	12.5	10.0	-1.5
2	-8.0	-4.5	13.0	-2.0	16.5	-1.0
3	-7.5	-5.5	12.0	-6.0	36.5	-1.5
4	-6.0	-4.0	-9.0	5.5	40.0	-1.0
5	1.0	-14.5	20.0	1.0	-0.5	0.0
6	-3.5	-5.0	7.0	0.5	0.0	-1.0
II-1	-3.0	-15.5	6.0	22.5	-3.0	-0.5
2	-2.0	-2.0	-1.0	0.0	17.5	-1.0
3	-10.0	-7.0	20.0	-3.0	26.0	-2.5
4	-5.5	0.0	-7.0	-0.5	51.0	-2.0
5	-6.0	-12.5	16.5	24.5	-1.0	
6	-8.5	-14.5	3.5	22.5	-0.5	-0.5
III-1	-3.0	-2.0	4.0	13.5	0.5	-1.0
2	-4.0	-7.0	8.5	-1.0	8.0	-0.5
3	-2.5	-3.5	12.5	0.5	25.0	-0.5
4	-3.5	-4.0	-9.0	8.5	33.0	-1.0
5	-7.0	-3.5	16.0	2.5	10.5	-7.5
6	-5.5	-5.0	8.0	-2.5	5.0	-0.5
IV-1	-7.0	-3.0	1.0	12.0	22.0	-23.0
2	-5.0	-0.5	-6.0	3.0	24.5	-3.5
3	-4.0	-1.5	-1.5	3.5	29.0	-4.5
4	-4.0	-6.5	-5.0	0.5	36.5	-1.0
5		-5.5	9.0	-1.5	26.5	-0.5
6	-5.5	-6.5	8.0	-5.0	17.5	13.5
V-1	-5.5	-7.5	-1.0	6.5	16.5	-1.0
2	-2.0	-8.0	20.0	-0.5	21.0	-4.0
3	-18.5	-9.0	2.5	32.0	3.5	-0.5
4	3.5	-5.5	-8.0	1.5	30.0	-1.0
5	-6.5	-11.5	9.0	0.0	34.0	-1.5
6	-5.0	-3.5	-2.5	0.5	19.5	-2.5
VI-1	-7.5	-4.5	10.5	1.0	22.0	-20.5
2	-6.0	-7.0	-2.0	0.5	24.0	-6.0
3	-10.0	-2.0	5.5	14.5	3.5	6.0
4	-4.0	-12.5	10.5	1.0	21.5	-7.0
5		-12.0	7.5	-3.0	20.0	4.0
6	-4.5	-6.0	-0.5	-0.5	27.0	18.0
Mean	-5.4	-6.4	5.1	4.6	18.7	-1.7

(cm in depth)						
No.	7/17- 8/21 (35days)	8/21- 9/21 (31days)	9/21- 10/19 (28days)	10/19- 11/21 (33days)	11/21- 12/20 (29days)	1/29 '86 12/20 '87 (325days)
I-1	-5.0	0.0	-1.5	-2.0	8.5	14.0
2	-1.5	-0.5	-2.0	13.0	-5.0	20.0
3	-2.5	-2.5	-1.5	-2.0	-8.5	14.0
4	-2.0	-0.5	-2.0	-1.0	-4.0	20.0
5	-1.0	-0.5	-1.0	-1.0	-5.0	3.5
6	-0.5	-0.5	-1.0	-1.0	-5.0	-4.0
II-1	-5.0	-0.5	-3.5	35.0	-10.0	22.5
2	-1.5	0.0	-3.0	-1.0	-7.5	0.5
3	-2.5	-0.5	-1.5	-0.5	-6.5	15.0
4	-10.0	5.0	-3.5	-2.0	-6.0	23.5
5	-0.5	-0.5	-3.5	-1.5	-4.5	16.0
6	-1.5	-0.5	-0.5	-1.5	-4.5	-0.5
III-1	-2.0		-2.5	19.0	-7.0	19.5
2	-2.0	0.5	-2.0	-1.5	-4.0	-3.0
3	-1.5	-0.5	-2.0	-1.0	-7.0	22.5
4	-2.0	-0.5	-2.5	-1.5	-8.0	13.5
5	-5.0	0.0	-1.0	-0.5	3.0	12.5
6	-2.0	1.0	-2.5	-1.0	-3.0	-2.0
IV-1	19.5	-2.0	-2.0	-1.5	-5.0	11.0
2	0.0	-0.5	-2.5	-0.5	-5.0	6.0
3	0.5	-0.5	-1.0	-2.5	-4.5	16.0
4	-4.5	0.0	1.0	16.0	-13.5	23.5
5	-4.0	0.0	-4.5	-2.5	-7.0	15.0
6	-25.5	0.0	7.0	-2.0	-7.5	0.0
V-1	-1.5	-0.5	-2.0	-1.0	-5.5	-2.5
2	-2.0	-3.0	1.0	-2.0	-5.5	17.0
3	-1.0	-0.5	-1.5	-1.5	-2.5	6.0
4	-7.5	-0.5	-1.0	30.0	-8.0	37.5
5	-5.0	-1.0	-0.5	-2.0	-6.0	14.0
6	-1.0	0.0	-0.5	-1.0	3.0	13.0
VI-1	18.5	-3.5	0.5	-6.5	-27.5	-17.5
2	2.5	-1.0	-1.5	-1.5	4.0	8.0
3	-8.5	-2.5	1.0	-1.0	12.0	21.5
4	-3.5	1.5	-1.5	12.0	-5.5	16.5
5	-7.5	-2.5	0.0	0.0	-7.0	4.5
6	-22.0	-0.5	-1.5	6.5	-10.0	12.0
Mean	-2.8	-0.5	-1.3	2.4	-5.1	11.4

Table 4-3. Net accumulation with a 16-stake farm at Asuka Camp in 1987.

		(cm in depth)				
No.		6/11-6/18 (7 days)	6/18-6/26 (8 days)	6/26-7/ 3 (7 days)	7/ 3-7/10 (7 days)	7/10-7/17 (7 days)
I	-1	31.5	-1.0	0.0	-0.5	-0.5
	2	7.5	-0.5	-1.0	0.5	-0.5
	3	-1.0	-0.5	-1.0	-1.0	-1.0
	4	-1.5	-1.5	-0.5	0.0	-1.0
II	-1	6.5	-6.0	-0.5	-1.0	0.5
	2	-0.5	0.0	-0.5	-1.0	1.0
	3	1.0	-3.0	0.0	-1.5	-0.5
	4	1.5	-1.5	-1.0	0.5	0.0
III	-1	10.5	-3.5	-1.0	-1.5	0.5
	2	0.0	0.0	0.0	-1.5	1.5
	3	20.0	2.5	-4.0	-2.5	1.0
	4	0.5	-1.0	-0.5	-1.5	0.5
IV	-1	-1.0	0.5	1.5	-2.0	0.0
	2	0.5	-1.0	0.0	-1.0	0.5
	3	5.0	-3.5	0.0	-2.0	1.5
	4	-1.5	0.0	0.5	-0.5	-0.5
Mean		4.9	-1.3	-0.5	-1.0	0.2

		(cm in depth)				
No.		7/17-7/25 (8 days)	7/25-8/ 1 (7 days)	8/ 1-8/ 8 (7 days)	8/ 8-8/20 (12 days)	8/20-8/30 (10 days)
I	-1	-0.5	-0.5	0.0	-1.5	-0.5
	2	-2.5	-0.5	-1.0	0.0	-2.5
	3	-1.0	-1.0	-3.0	-1.5	-0.5
	4	0.0	0.0	-2.0	0.5	-0.5
II	-1	-2.0	0.0	-1.5	0.0	0.0
	2	-0.5	-1.0	-1.0	0.5	-0.5
	3	0.0	-2.0	-1.5	-0.5	0.0
	4	-0.5	0.0	-2.0	0.5	-3.0
III	-1	-0.5	-1.0	-1.0	0.5	0.0
	2	-1.5	-1.0	-0.5	-1.0	-1.5
	3	-1.0	0.0	-1.5	-0.5	-1.0
	4	-1.5	0.0	-1.0	-1.0	-0.5
IV	-1	-1.0	-0.5	-0.5	0.0	-0.5
	2	-0.5	-1.0	-1.0	0.0	-0.5
	3	-0.5	0.0	-1.5	-1.0	0.0
	4	-1.0	-0.5	0.0	0.0	-1.0
Mean		-0.9	-0.6	-1.2	-0.3	-0.8

(cm in depth)						
No.	8/30-9/ 7 (8 days)	9/ 7-9/14 (7 days)	9/14-9/24 (10 days)	9/24-10/ 9 (15 days)	10/9-10/17 (8 days)	
I	-1	-0.5	0.0	-0.5	-2.0	0.5
	2	0.5	-0.5	1.0	-1.5	-0.5
	3	-0.5	0.0	1.0	-2.0	-0.5
	4	0.0	0.0	-3.5	3.5	-0.5
II	-1	-1.0	0.5	2.5	-3.0	-0.5
	2	-1.0	0.5	0.5	-0.5	-0.5
	3	1.5	-1.5	1.5	3.5	-1.0
	4	0.0	-0.5	4.0	-2.0	-1.0
III	-1	0.0	-0.5	2.0	-4.0	0.5
	2	1.5	-0.5	3.0	-4.5	0.0
	3	1.0	-2.0	-2.5	1.5	0.0
	4	-1.0	0.5	1.0	-1.0	-1.0
IV	-1	-0.5	0.0	0.0	0.0	-1.0
	2	-0.5	0.5	1.5	-1.5	-0.5
	3	-0.5	0.5	1.5	-3.0	0.5
	4	0.5	0.0	-2.5	1.5	-0.5
Mean	0.0	-0.2	0.7	-0.9	-0.4	

(cm in depth)						
No.	10/17-10/29 (12 days)	10/29-11/6 (8 days)	11/6-11/14 (8 days)	11/14-11/20 (6 days)	11/20-11/29 (9 days)	
I	-1	-0.5	-3.5	3.0	-0.5	0.0
	2	0.5	1.5	-1.5	-2.0	7.0
	3	-2.0	2.0	3.0	-1.5	16.0
	4	-1.5	0.0	-0.5	-5.5	
II	-1	0.5	3.5	0.0	-4.5	0.0
	2	0.5	-0.5	-0.5	-2.5	1.5
	3	0.0	11.5	-11.0	-1.5	7.5
	4	-0.5	0.5	0.5	-3.5	1.5
III	-1	-1.5	7.5	-0.5	-2.0	-1.0
	2	1.0	0.5	0.0	-2.5	1.5
	3	-1.5	2.5	-1.0	-1.0	-0.5
	4	-1.0	2.0	-1.0	-0.5	0.0
IV	-1	0.5	3.5	-4.0	-2.0	0.5
	2	-0.5	0.5	-0.5	0.0	-1.0
	3	-1.5	0.5	-1.5	-0.5	-1.0
	4	-2.5	3.0	-1.5	-1.5	-1.5
Mean	-0.6	2.2	-1.1	-2.0	2.0	

		(cm in depth)				
		11/29-12/4	12/4-12/11	12/11-12/18	12/18-12/25	6/11-12/25,
No.		(5 days)	(7 days)	(7 days)	(7 days)	1987 (197 days)
I	-1	-1.0	-1.5	-1.0	0.0	19.0
	2	-5.0	-2.5	-1.5	-0.5	-5.5
	3	-2.0	-2.0	-3.0	0.0	-3.0
	4	-2.5	-3.0	-2.0	-1.0	-23.0
II	-1	-2.0	-2.0	-2.0	0.5	-11.5
	2	-2.5	-3.0	-1.0	1.5	-11.0
	3	-2.5	-5.0	-2.5	-1.0	-8.5
	4	-1.5	-2.0	-2.0	1.0	-11.0
III	-1	-2.0	-4.0	-0.5	-0.5	-3.5
	2	-2.0	-2.5	-1.5	1.5	-10.0
	3	-0.5	-1.5	-1.5	0.0	6.0
	4	-0.5	-3.5	-1.5	0.5	-13.0
IV	-1	-1.5	-3.0	-2.0	-2.0	-15.0
	2	-1.5	-4.0	-0.5	0.5	-11.5
	3	-1.0	-2.5	-2.0	-1.0	-13.5
	4	-1.5	-2.0	-2.5	-2.0	-17.5
Mean		-1.8	-2.8	-1.7	-0.2	-8.2

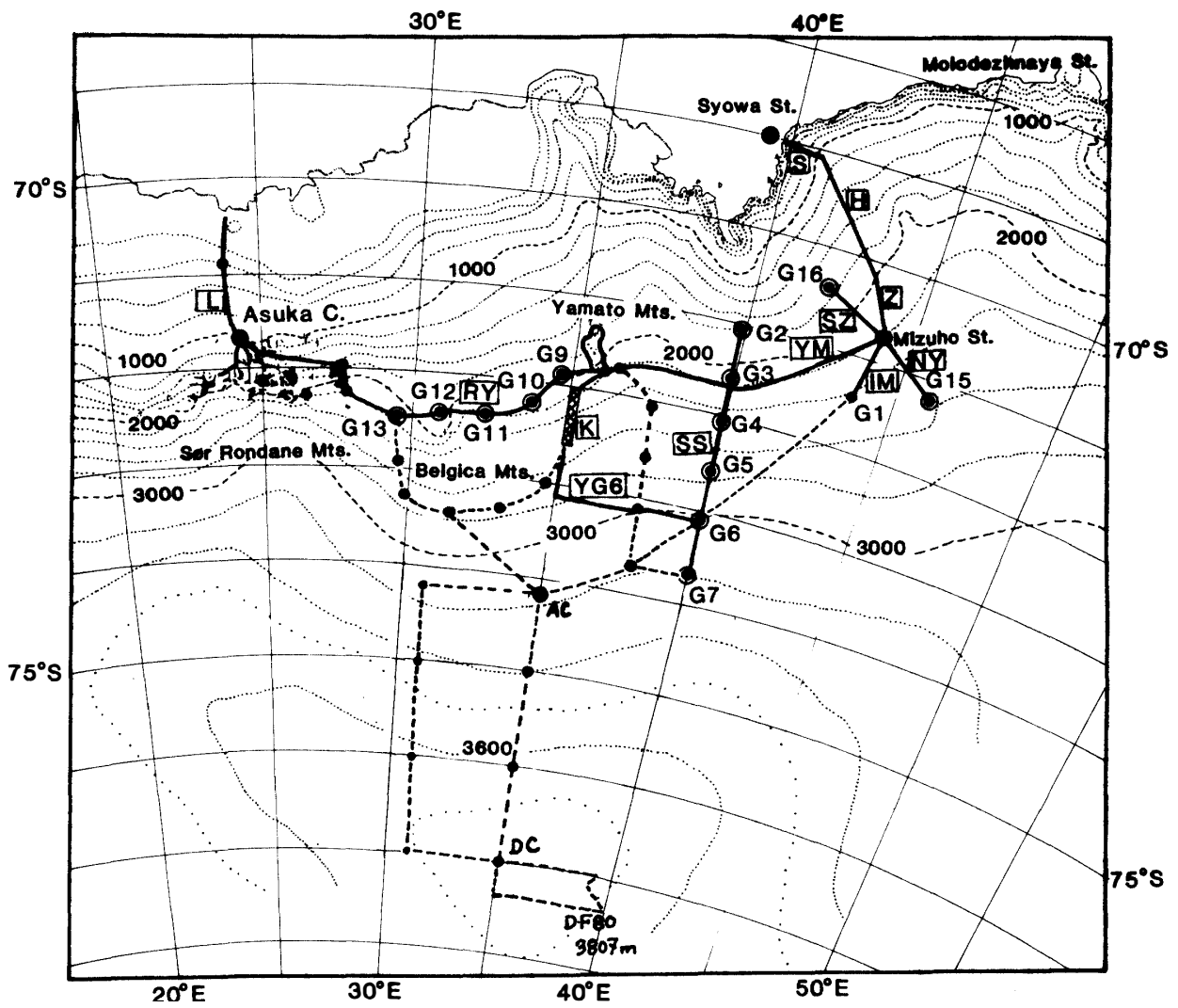


Fig. A. A map of the routes of oversnow traverses in the Mizuho Plateau - East Queen Maud Land by JARE-27 and -28 in 1986 - 1988. AC: Advance Camp, DC: Dome Camp.