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U.S. Tundra Biome Data Report 74-19

SUMMARY OF DATA ON SOME ASPECTS OF WATER RELATIONS AND MICROCLIMATE OF TUNDRA PLANTS

P.C. Miller, W.A. Stoner
and J. Ehleringer

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U.S. TUNDRA BIOME

Ecosystem Analysis Studies
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This report summarizes data on aspects of water relations of plants from Niwot Ridge, Colorado, and Point Barrow, Alaska. Measurements were made in the summer of 1972 at Niwot Ridge and the summers of 1972 and 1973 at Point Barrow. For comparison, we have compiled some data on crop and non-arctic natural species. In addition, microclimate data taken in 1972 at Barrow, Alaska, are summarized. Fuller discussions can be found in:

Ehleringer, J. (1973) Water relations in the alpine tundra, Niwot Ridge, Colorado. Unpublished M.S. Thesis, San Diego State University (SDSU) Library).

Ehleringer, J. and P.C. Miller, Water relations of selected plant species in the alpine tundra of Colorado. *Ecology*.

Miller, P.C., E. Ng., B. Lawrence, J. Hom and W.A. Stoner (1974) Final report on the study of potential effects of air cushioned vehicles on wet meadow tundra near Barrow, Alaska. U.S. Army Cold Regions Research and Engineering Laboratory (USA CRREL), Hanover, New Hampshire.

Stoner, W.A. (1974) Water relations in the wet coastal tundra around Barrow, Alaska. Unpublished M.S. Thesis, SDSU Library.

Stoner, W.A. and P.C. Miller, A simple simulation model for water relations of species in the wet coastal tundra at Point Barrow, Alaska. Submitted to *Arctic and Alpine Research*.

Rapid changes in leaf water potential due to changes in environmental conditions is indicated in experiments with an air cushioned vehicle simulator conducted at Barrow, Alaska. When air temperatures over the plants were increased by placing the simulator over the plant leaf water potentials of *Eriophorum* changed less than those of *Carex*. *Eriophorum* changed -2 bars and *Carex* about -16 bars. The change in leaf water potential to new steady state occurred within 10 minutes with *Eriophorum* and within 6 minutes with *Carex*. Recovery to ambient water potentials after the simulator was turned off occurred with 2 to 6 minutes. Evaporation rates increased with air temperature with the same time lag. When the simulator was pre-warmed and placed on the plot, air temperatures rose abruptly, rising to 63% of their final value in after about 0.6 minutes. The temperatures of small leaves follow air temperatures closely; hence, leaf temperatures probably rose rapidly along with air temperature. As leaf temperatures rose, transpiration would increase and leaf water potentials would decrease. Leaf water potentials respond to changes in air temperature and may show large changes to air temperature fluctuations on the order of 1 to 2 minutes. The variation in the 1972 data is possible due to this responsiveness. Minor changes in air temperature, because of variation in topography and wind should be reflected in leaf water potentials. The high leaf resistances of evergreen shrubs and the water storage capacity of woody plants in general may cause the leaf water potentials of these plants to be less responsive to changes in the environment.

PREFACE

This document contains project data summaries and appropriate text. The report, in its current form, is intended for internal Biome circulation so that relevant data are easily available to other Biome investigators. It is not intended to be a citable reference as editing, style control and other formatting has not been rigorously performed. If an individual chooses to reference or quote data or interpretations contained in this report, the form in the back of this report should be completed and appropriate approval obtained. Additional forms are available from J. Brown, USA CRREL, P.O. Box 282, Hanover, New Hampshire 03755.

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Tentative conclusions from 1972 Barrow water potential measurements:

1. Leaf water potentials (Ψ_ℓ) were lower than Dennis reported for 1964 and 1965.

2. (Ψ_ℓ) is negatively correlated with solar radiation and air temperature. *Carex* is more sensitive to solar and temperature than *Dupontia*.

3. On the polygon ridge *Carex* shows lower (Ψ_ℓ) than *Poa*. In the trough *Carex* shows lower (Ψ_ℓ) than *Dupontia*. In the drier meadow *Carex* shows higher (Ψ_ℓ) than *Dupontia*.

4. Water potentials are correlated with microhabitat air temperatures.

Tentative conclusions from the 1973 Barrow water potentials measurements associated with the ACV experiments:

1. Leaf water potentials vary rapidly with changes in environmental conditions.

2. From 1973 data on water relations we conclude that water potentials in 1972 were rarely below critical levels for complete stomatal closure; however, water potentials in both 1972 and 1973 were low enough to increase leaf resistances above the minimum values.

3. Root resistances seem to vary widely with rates of transpiration.

TABLE I. Summary of species parameters related to plant water relations.

	Cuticular Leaf Resistance (sec cm^{-1})	Minimum Leaf Resistance (sec cm^{-1})	Turgid Leaf Weight (mg cm^{-2})	at Which Stomatal Closure Begins
Barrow				
Arctophila fulva	38.7		24.5	-4
Carex aquatilis	22.4	.5	17.0	-12
Dupontia fischeri	29.4	.46	19.0	-4
Eriophorum angustifolium	7.7*	.58	22.1	-6
Potentilla hyparctica	37.0		19.8	-8
Salix pulchra	15.6		22.1	-14
Niwot				
Bistorta bistortoides		1.0		-17
Caltha leptosepela		1.0		-16
Non-Tundra				
Pinus treda (Loblally pine)				-4
Lycopersicon esculentum (tomato)				-7
Helianthus annuus (sunflower)				-8
Glycine max (soybean)				-10
Gossypium hirsutum (cotton)				-12

*estimated

Table II. Summary of leaf water potentials (Ψ), air temperatures at 10 cm (T_A), soil temperatures at 5 cm (T_{soil}) and solar radiation flux at different sites on different dates.

		Carex Ridge Ψ	10 cm TA	-5 cm T Soil	Solar	Carex Trough Ψ	10 cm TA	-5 cm T Soil	Carex Center Ψ	10 cm TA	-5 cm T Soil	Carex Sward	10 cm TA	-5 cm T Soil	Dup Trough Ψ	10 cm TA	-5 cm T Soil	Dup Sward	10 cm TA	-5 cm T Soil	Poa Ridge Ψ	10 cm TA	-5 cm T Soil	Dup Side
June 30	0700	6.9	6.3	2.8	.35	13.6	7.3	3.8	2.7	---	---				2.8	7.3	3.8				4.4	6.3	2.8	3.
	1130	10.9	9.6	---	.82	12.0	9.1	---	4.9	---	---				5.2	9.1					9.8	9.6		8.
July 1	0500	9.3	---	---	.09	6.4	---	---	10.0	---	---				8.4						13.2			11.
	1130	9.5	---	---	.93	13.0	---	6.5	6.7	---	4.5				10.7		6.8				7.3			12.
	1400	6.8	---	---	.89	15.4	---	8.5	5.0	---	4.8				8.7		8.5				6.3			9.
	1700	8.9	---	---	---	----	---	---	5.6	---	---				8.6						8.2			4.
	2100	13.6	---	---	.29	7.2	---	9.5	7.4	---	4.5				9.2		9.6				7.8			4.
July 2	0130	3.8	---	---	.28	3.3	---	5.5	4.4	---	---				3.2		5.5				4.0			2.
	0800	8.0	---	---	---	10.6	---	---	6.6	---	1.8				10.6						7.4			7.
July 6	0900	6.4	---	---	---	7.1	---	---	---	---	---				10.0						9.2			10.
	1330	7.0	---	---	---	10.4	---	---	---	---	---				12.5						10.0			7.
	1630	6.2	---	---	---	7.4	---	---	---	---	---				10.0						8.2			9.
July 7	1230	9.6	16.5	---	.95	6.2	18.4	---	---	14.0	---				13.6	18.4					6.8	16.5		7.
	1530	5.5	12.9	---	.78	6.8	14.7	---	---	10.3	---				13.0	14.7					8.9	12.9		10.
	1330	5.4	---	---	---	7.0	---	---	---	---	---				9.2						5.8			7.
	2030	8.4	9.0	---	.34	4.5	10.9	---	---	10.0	---				9.0	10.9					5.0	9.0		6.
	2330	5.6	3.3	---	.06	1.8	3.0	---	---	3.5	---				2.0	3.0					4.6	3.3		0.
July 8	0300	3.8	5.3	---	.14	0.6	5.3	---	---	4.6	---				1.4	5.3					3.6	5.3		2.
	0600	4.4	14.1	---	.44	5.8	15.4	---	---	14.4	---				11.8	15.4					4.0	14.1		8.
	0900	11.1	20.5	---	.75	13.8	21.7	---	---	20.5	---				16.6	21.9					10.7	20.5		21.
	1430	10.9	---	---	---	8.0	---	---	---	---	---				9.2						11.4			11.
	1700	6.9	---	---	---	8.4	---	---	---	---	---				6.7						5.9			12.
July 12	0800	9.0	15.9	---	.59	8.6	17.1	---	5.3	15.8	---	12.6			8.0	17.1		6.2			10.9	15.9		
	1100	18.6	14.4	4.8	.89	11.1	16.3	6.8	14.4	14.4	5.8	20.0			13.1	16.3	6.8	5.9			6.9	14.4	4.8	
	1330	8.3	15.2	6.3	.88	10.3	16.9	9.3	9.7	15.1	7.5	12.5			8.0	16.9	9.3	8.8			8.4	15.2	6.3	
	1700	9.7				11.8			8.3			9.6			11.6			9.2			4.4			
	2030	5.9	5.9		.17	5.2	6.8		3.3	5.2		4.8			4.8	6.8		5.8			3.8	5.9		
	2300	1.9	3.0	4.0	.05	2.4	2.9	6.0	2.8	2.0	5.0	1.7			2.6	2.9	6.0	2.9			3.0	3.0	4.0	
July 13	0200	1.0	2.9		.04	2.0	2.7		2.7	2.3		2.7			2.0	2.7		3.6			2.0	2.9		
	0500	2.2	0.7		.28	2.2	5.5		2.4	3.9		2.0			4.0	5.5		3.7			4.0	2.7		
July 14	0430	2.1	7.9		.32	1.3	9.8		2.0	9.5		4.4			4.1	9.8		1.7			11.3	7.9		
	0900	10.1	10.1	3.0	.59	12.4	11.4	5.5	5.8	9.4	4.8	14.0			14.1	11.4	5.5	8.9			11.5	10.1	3.8	
	1130	7.7	14.4	4.8	.77	11.2	16.0	7.3	6.2	14.4	5.5	7.3			7.8	16.0	7.3	8.8			6.5	14.4	4.8	
	1430	7.3	19.1	4.5	.82	8.8	21.2	7.0	5.6	18.8	5.5	7.6			10.8	21.2	7.0	6.4			5.8	19.1	4.5	
	1630	7.2		4.8				8.8	4.7		5.5	7.3			7.3		6.8	10.3					4.8	

		Carex Ridge Ψ	10 cm TA	-5 cm T Soil	Solar	Carex Trough Ψ	10 cm TA	-5 cm T Soil	Carex Center Ψ	10 cm TA	-5 cm T Soil	Carex Sward Ψ	10 cm TA	-5 cm T Soil	Dup Trough Ψ	10 cm TA	-5 cm T Soil	Dup Sward Ψ	10 cm TA	-5 cm T Soil	Poa Ridge Ψ	10 cm TA	-5 cm T Soil	Dup Side Ψ
July 15	1100	8.8		3.5		9.2		4.5	8.4		4.3	13.8			13.6		4.5	13.8			10.8		3.5	
	1430	12.9		6.3		13.7		8.3	26.3		6.8	17.8			25.0		8.3	25.0			6.9		6.3	
	1700	7.6				8.8			10.8			9.0			6.0			9.0			8.3			
	2000	6.0				3.2			6.3			4.5						4.0			3.3			
July 17	0800	16.4				9.0						19.3			5.8			7.0			8.9			
	1200	8.7				10.0						12.4			7.3			8.0			5.8			
	1430	11.0	11.1		.57	12.6	13.4			11.7		9.9			6.0	13.4		8.7			9.8	11.1		
	1930	5.0				2.6						4.8			0.5			3.1			4.0			
July 23	2130	3.8	-2.5	1.8	.02	2.6	0	4.0	2.8	0.4	2.5	2.2			1.0	0	4.0	1.2			2.4	-2.5	1.8	
July 24	0130	0.8				1.3			1.6			0.8			1.4			0.6			2.0			
	0400	4.4	1.6	0	.16	4.0	1.9	2.0	3.2	1.6	1.3	4.6			3.4	1.9	2.0	6.4			5.4	1.6	0	
	0830	7.8	5.8	1.3	.77	12.0	7.4	3.0	7.0	6.6	2.0	7.6			4.0	7.4	3.0	9.8			5.0	5.8	1.3	
	1100	10.2	5.5		.09	10.1	8.3		10.0	6.8		7.6			6.6	8.3		7.0			5.4	5.5		
	1330	7.7	5.8		.88	12.1	7.5		10.5	7.0		10.0			10.8	7.5		7.2			5.4	5.8		
	1830	6.2	3.3		.31	9.0	4.4		10.2	5.0		5.6			5.6	4.4		6.6			4.0	3.3		
	2130	2.0	-1.1		.03	2.4	-1.1		2.8	0	1.2	1.2			2.0	-1.1		2.0			3.0	-1.1		
July 25	0130	2.6	-0.5		.02	1.2	-0.4		1.6	-0.3		1.0			1.0	-0.4		1.6			1.0	-0.5		
	0600	3.3	0.9		.18	2.2	1.1		1.6	1.2		.6			2.4	1.1		1.6			3.6	0.9		
	1030	10.0	4.1		.84	5.8	5.8		6.6	6.9		.6			4.0	5.8		5.4			6.6	4.1		
	1330	7.3	4.7		.88	5.6	7.3		5.0	6.7		.2			4.2	7.3		5.6			4.4	4.7		
	1630	4.8				6.0			5.0			.0			3.4			5.2			4.0			
	2130	2.7	0.6	1.5	.06	3.2	0.4	3.0	3.0	1.0	2.3	.0			4.8	0.4	3.0	3.4			2.4	0.6	1.5	
July 26	0030	1.2	0	0.5	.01	3.0	0	2.0	2.3	0.3	1.3	.0			1.0	0	2.0	2.0			2.4	0	0.5	
	0330	2.0	0.4	0	.05	2.0	0.5	2.0	2.2	0.6	0.5	.8			2.0	0.5	2.0	1.6			2.0	0.4	0	
	0630	2.0	0.6	-0.4	.28	1.6	0.6	1.0	2.6	0.5	0.5	.6			2.6	0.6	1.0	4.4			2.0	0.6	-0.4	
	0930	3.5	2.3		.49	8.6	3.5		4.0	3.0		.6			4.0	3.5		3.2			4.2	2.3		
	1200	5.7	2.9		.49	3.6	2.8		3.0	2.5		.4			3.2	2.8		7.2			6.0	2.9		
	1430	3.6	1.9		.21	3.2	1.6		3.6	1.5		.6			4.4	1.6		5.0			2.7	1.9		
Aug. 2	0630	6.8				7.4			13.2			.3			6.3			8.4			4.6			
	0830	14.8	16.2		.63	12.4	17.2		15.7	15.4		.2			7.5	17.2		6.8			10.0	16.2		
	1330	10.0	18.6	8.3	.78	13.0	18.2	9.3	13.5	16.7	9.3	.8			7.0	18.2	9.3	9.6			8.8	18.6	8.3	
	1530	8.2	15.5	8.8	.61	12.2	15.6	9.0	13.6	13.3	9.3	.7			7.7	15.6	9.8	9.2			7.2	15.5	8.8	
	2000	4.3	9.7	8.0	.17	6.5	8.4	8.5	9.0	7.1	8.8	.4			4.0	8.4	8.5	3.5			3.3	9.7	8.0	
	2230	7.2	2.8	5.5	.01	2.8	1.2	3.8	2.8	0.8	6.5	.2			1.8	1.2	3.8	2.8			2.7	2.8	5.5	
Aug. 3	0130	2.8				2.6			2.2			.0			1.5			2.9			2.0			
	0430	5.0				5.5			6.0			1.5			4.0			4.3			3.7			

Table II (cont'd).

	Carex Ridge °F	TA	T Soil -2	T Soil -5	Carex Trough °F	TA	T Soil -2	T Soil -5	Solar	Carex Center °F	TA	T Soil -2	T Soil -5	Dup Trough °F	ΔT C-D	Carex Head	Dup Head	C-D
July 24 2130	2.8	-2.5	7.8	1.8	2.5	0.0	3.3	4.0	.02	2.7	0.4	2.3	2.5	1.0	1.5	2.2	1.2	1.0
0130	0.8	+0.2			1.3	0.2			.08	1.5	0.5			1.3	0.0	0.8	0.6	0.2
0400	4.5	2.0	0.0	0.0	4.0	2.2	0.3	2.0	.20	3.3	1.5	0.3	1.3	3.3	0.7	4.6	6.3	-1.7
0830	7.0	5.6	2.5	1.3	8.0	7.3	6.5	3.0	.75	7.0	6.6	4.5	2.0	4.0/	4.0/	7.5	9.8	-2.3
1100	10.2/	5.5			12.9/	7.6			.90	10.0/	7.7			3.5	4.5			
	9.5				10.1					4.3				6.5	6.4	7.5	7.0	+0.5
1300	7.7	5.8	6.9	1.4	12.1	7.5	14.0	4.7	.88	10.5	7.8	5.0	5.0	10.9	1.2	10.1	7.2	2.9
1830	6.2	3.3	3.7	2.4	9.1	4.4		6.3	.31	10.3	5.0	5.0		5.6	3.5	5.5	6.6	-1.1
July 25 2130	2.0	-1.1			2.5	-1.1			.03	2.9	0.0			2.0	0.5	1.2	2.0	-0.8
0130	1.5	-0.5			1.3	-0.4			.02	1.7	-0.3			1.0	0.3	0.9	1.5	-0.6
0600	3.3	-0.4			2.3	-0.4			.18	1.6	1.2			2.4	-0.1	1.6	1.6	0.0
1030	0.0	4.1			5.9	6.8			.87	6.6	6.8			3.9	2.8	10.6	5.3	5.3
1300	7.4	5.5	3.3	1.8	5.7	6.3	13.8	4.5	.90	4.9	8.4	5.3	3.0	4.1	1.6	9.2	5.5	3.7
1630	4.8	4.4	4.2	3.2	6.0	6.4	12.0	5.8	.70	5.0	7.0	5.5	3.8	3.4	2.1	5.1	5.2	-0.1
July 26 2130	2.8	0.6	1.5	1.5	3.2	0.4	3.0	3.8	.06	3.0	1.0	2.5	2.3	4.8	-1.6	4.9	3.4	1.5
0030	1.3	0.1	0.3	0.5	3.0	0.0	1.3	2.8	.01	2.5	0.3	0.5	1.3	1.0	2.0	1.9	2.0	-0.1
0330	2.0	0.4	0.0	0.0	2.0	0.5	1.0	2.0	.05	2.2	0.6	0.3	0.5	2.0	0.0	0.8	1.6	-0.8
0630	2.3	0.6	-0.3	-0.4	1.7	0.6	1.3	1.0	.20	2.6	0.5	0.8	0.5	1.5	0.2	2.6	4.3	-1.7
0930	3.5	2.3	2.7	0.7	8.7	3.5	4.2	1.7	.49	4.0	3.0	2.4	0.9	4.0	4.3	4.5	3.2	+1.3
1200	5.7	2.8	1.8	0.8	3.7	2.6	5.3	2.3	.48	3.0	2.6	3.4	1.6	3.3	0.4	5.3	7.2	-1.9
1430	3.6	1.9	1.6	0.8	3.2	1.6	4.9	2.7	.21	3.7	1.5	3.4	1.7	4.4	-1.2	4.6	5.0	-0.4

	Carex Ridge °F	10 cm TA	-5 cm T Soil	Solar	Carex Trough °F	10 cm TA	-5 cm T Soil	Carex Center °F	10 cm TA	-5 cm T Soil	Carex Sward °F	10 cm TA	-5 cm T Soil	Dup Trough °F	10 cm TA	-5 cm T Soil	Dup Sward °F	10 cm TA	-5 cm T Soil	Poo Ridge °F	10 cm TA	-5 cm T Soil	Dup Side °F
Aug. 3 0730	19.0	13.4	3.5	.55	8.8	13.1	4.5	10.3	9.8	5.0	11.7			6.8	13.1	4.5	7.5			8.0	13.4	3.5	
0930	12.6	15.8	6.5	.77	14.0	16.1	6.0	15.0	15.1	5.0	15.6			9.5	16.6	6.0	9.0			10.0	15.8	6.5	
1130	11.8	15.7	7.3	.84	10.8	14.9	7.8	9.7	13.9	5.8	9.8			8.7	14.9	7.8	10.8			10.3	15.7	7.3	
1330	10.2	16.4	7.5	.79	13.5	10.3	10.3	13.4	9.3	14.0	14.0			9.8	13.5	10.3	9.0			9.8	16.4	7.5	
1530	8.0	14.5		.65	12.8	12.5		10.6	13.1		14.5			6.3	12.5		7.0			10.0	14.5		
2100	3.9	4.8	5.8	.09	2.8	3.0	7.0	3.4	3.2	6.3	3.0			2.7	3.0	7.0	3.5				4.8	5.8	
2400	1.0	1.8	3.5	.002	2.5	0.3	5.3	1.2	0.8	5.0	11.0			1.6	0.3	5.3	1.2				1.8	3.5	
Aug. 4 0330	1.0				2.5			1.4			1.0			1.6			1.3						
0600	1.3				2.2			2.0			0.8			1.4			1.7			1.8			
0930	12.2				12.8			11.3			12.0			10.2			9.8			12.0			
1230	13.3				15.5			10.8			14.8			8.5			8.5			10.0			
1500	8.5				5.3			12.4			14.6			7.8			7.0			6.0			
Aug. 16 0730	1.2				2.0			1.4			1.5			2.0			1.2			1.4			
0930	6.0				5.0			4.5			7.5			6.0			4.6			5.2			
1230	9.2				6.3			5.5			6.7			7.6			8.7			7.8			
1500	6.0				9.7			8.1			7.8			4.7			6.7			8.8			
1830	3.8				4.2			3.0			2.6			3.4			3.0			2.5			
Aug. 17 0730	1.0				1.0			1.0			0.5			0.8			1.3			0.5			
1030	4.8				3.5			3.5			5.0			4.8			2.7			7.2			
1230	5.8				5.3			6.0			6.5			6.5			5.7			10.4			
1500	3.0				5.6			4.2			7.8			2.8			5.1			6.5			
2030	2.0				2.0			2.0			2.0			1.0			3.0			4.0			
		TA	T Soil	Solar	TA	T Soil	Solar	TA	T Soil	Solar			Solar	TA	T Soil	Solar			Solar	TA	T Soil	Solar	
Correlation Coef.		0.73	0.49	0.73	0.73	0.55	0.77	0.78	0.53	0.68			0.81	0.84	.49	0.73			0.80	0.79	0.56	0.72	
Slope		0.45	0.80	8.69	0.49	1.01	10.56	0.56	1.12	8.27			12.48	0.50	.99	8.62			6.82	0.37	0.62	6.82	
Y-intercept		3.05	3.57	2.69	2.90	2.22	2.26	2.38	1.94	2.45			1.80	1.71	1.00	2.07			2.52	2.74	3.49	2.59	
N		71	41	56	71	45	56	61	44	48			42	51	31	55			44	51	25	56	

TABLE III. Summary of microclimatic data for different sites on different dates.

July 2, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	.09	.03					.03	.06	.02	-.02	.03	-.03	.10	.02	.08	.06			-.06	.03	.02	.02		
$ total	.21	.28					.66	.82	.89	.91	.94	.93	.87	.89	.84	.77			.61	.46	.41	.29		
$ diff.	.04	.09					.55	.73	.79	.86	.96	.93	.92	.89	.83	.73			.45	.33	.23	.13		
$ ref.																								
IR sky	.35	.25					.09	-.03	-.13	-.16	-.10	-.06	-.07	-.08	-.04	-.01			.02	.13	.14	.22		
IR grd.																								
Trough																								
50																								
20																								
10																								
5																								
2																								
0																								
- 2		7.0												17.8								12.0		
- 5		5.5										6.5		8.5								9.5		
-10		2.9										2.5		3.4								4.3		
Ridge																								
50																								
20																								
10																								
5																								
2																								
0																								
- 2																								
- 5																								
-10																								
Low to Center Poly.																								
50																								
20																								
10																								
5																								
2																								
0																								
- 2		3.2										11.3		11.3										
- 5		1.8										4.5		4.8										
-10		0.3										1.0		0.8										

July 7, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net										.51	.53	.57	.59	.56	.51	.45				.11			-.06	-.06
$ total										.89	.92	.96	.95	.93	.86	.78				.34			.08	.06
$ diff.										.15	.15	.14	.15	.14	.15	.14				.10			.03	.02
$ ref.																								
IR sky										.40	.38	.39	.41	.41	.39	.37				.36			.34	.35
IR grd.										.78	.77	.77	.78	.78	.74	.71				.59			.49	.47
Trough																								
50										17.7	15.3	15.3	16.3	15.9	14.6	12.4				12.0			3.9	3.5
20										18.4	16.1	16.6	16.6	16.5	15.0	13.5				10.8			3.4	3.0
10										19.4	18.0	18.4	18.4	18.4	16.9	14.7				10.9			3.4	3.0
5										20.1	18.1	18.6	19.1	21.9	17.9	15.9				11.3			3.3	2.9
2										18.6	18.0	19.4	20.0	20.4	17.2	15.4				9.4			3.2	2.0
0																								
- 2																								
- 5																								
-10																								
Ridge																								
50										15.9	13.8	14.3	16.0	16.3	14.5	13.3				10.8			4.3	3.9
20										17.0	15.3	15.8	16.2	17.0	15.5	13.3				10.5			4.0	3.8
10										18.0	16.3	16.6	16.5	16.7	15.3	12.9				9.8			3.6	3.3
5										18.4	16.8	17.5	17.1	17.5	15.6	13.3				9.5			3.6	3.4
2										21.3	16.3	16.8	16.0	16.5	14.4	12.5				9.3			3.4	2.9
0																								
- 2																								
- 5																								
-10																								
Low to Center Poly.																								
50																								
20										18.0	15.1	14.6	17.3	17.3	15.1	10.5				11.2			4.4	3.6
10										16.6	14.3	13.9	14.0	14.3	11.6	10.3				10.1			4.0	3.5
5										17.9	15.0	15.4	15.4	16.9	13.0	10.8				10.0			4.0	3.5
2										18.8	18.2	18.2	18.4	18.7	15.6	12.8				9.9			4.6	4.2
0										16.6	17.2	17.9	18.0	18.4	15.1	12.8				9.8			5.0	4.3
- 2																								
- 5																								
-10																								

July 8, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	-.06	-.04	-.01	.03	.10	.17	.23	.31	.87															
S total	.06	.08	.14	.21	.33	.41	.54	.65	.75															
S diff.	.03	.03	.05	.06	.09	.10	.12	.13	.14															
S ref.																								
IR sky	.35	.34	.35	.35	.35	.36	.35	.36	.35															
IR grd.	.47	.48	.50	.53	.59	.63	.67	.70	.73															
Trough																								
50	3.0	3.3	4.6	6.8	9.5	13.1	15.0	17.8	19.6															
20	2.7	3.4	4.8	7.3	10.4	14.1	16.2	18.0	20.7															
10	2.3	2.8	5.3	8.1	11.0	15.4	17.6	20.3	21.9															
5	2.1	2.9	5.2	7.8	10.9	15.6	17.5	20.5	21.8															
2	2.4	3.1	3.9	6.5	9.3	15.2	15.7	19.1	21.8															
0																								
- 2																								
- 5																								
-10																								
Ridge																								
50	3.4	3.9	5.1	7.4	9.6	13.1	14.2	16.3	18.0															
20	3.5	4.0	5.2	7.5	10.0	13.2	15.4	16.9	18.8															
10	2.8	3.7	5.3	8.0	10.4	14.1	16.0	18.4	20.5															
5	2.7	3.7	5.2	8.3	10.9	14.8	17.1	19.3	21.3															
2	2.3	2.8	4.1	8.3	12.3	18.3	18.6	21.4	23.0															
0																								
- 2																								
- 5																								
-10																								
Low to Center Poly.																								
50	2.9	3.5	4.3	6.6	9.4	14.3	16.9	20.0	21.8															
20	2.8	3.5	4.6	7.1	10.3	13.9	15.5	18.2	19.5															
10	2.7	3.3	4.6	7.0	10.4	14.4	16.0	19.1	20.5															
5	2.7	4.2	5.4	7.6	9.5	12.8	14.5	18.0	19.2															
2	3.1	4.7	6.8	8.8	10.6	13.8	16.0	18.0	18.5															
0																								
- 2																								
- 5																								
-10																								

July 12, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net							.17	.26	.47	.46	.52	.54	.56	.54	.57	.42			.19	.09	-.002	-.09	.08	.07
S total							.38	.59	.72	.83	.89	.90	.90	.88	.89	.69			.38	.28	.17	.15	.06	.04
S diff.							.16	.12	.12	.13	.16	.18	.19	.18	.23	.26			.14	.09	.07	.06	.04	.03
S ref.																								
IR sky							.39	.36	.38	.40	.40	.41	.41	.42	.41	.41			.43	.39	.37	.28	.11	.39
IR grd.							.59	.69	.63	.77	.77	.78	.75	.77	.74	.69			.62	.58	.54	.52	.49	.48
Trough																								
50							8.3	14.0	13.6	17.8														
20							9.3	15.5	14.3	18.7	15.6	19.3	16.0	16.8	5.4	2.7			9.7	8.0	6.3	5.1	2.8	3.2
10							10.6	17.1	16.6	20.3	16.3	18.8	16.3	16.9	5.5	3.6			10.9	9.1	6.8	5.6	2.9	3.1
5							10.8	17.5	17.1	20.5	19.1	21.9	19.1	20.2	8.0	5.1			11.9	9.1	6.0	4.9	3.0	2.9
2							10.5	16.2	18.7	20.6	21.1	24.2	21.6	22.2	8.9	5.5			10.9	8.5	5.7	4.8	2.9	2.9
0									10.8	14.0	15.6	17.1	15.0	15.9	9.1	5.8			11.0	8.8	6.6	5.0	2.8	3.1
- 2									4.8	5.8	16.8	18.5	18.5	18.8	17.5	15.8				10.0			6.0	3.8
- 5									3.5	4.3	6.8	7.8	8.0	9.3	9.3	9.5				7.8			6.0	4.5
-10											3.8	4.5	4.3	4.8	5.0	5.5				4.8			4.5	3.3
Ridge																								
50							8.0	13.8	11.7	16.1														
20							8.6	14.4	13.0	17.1	14.2	16.0	13.0	14.0	13.0	11.9			8.8	7.4	5.4	4.9	3.8	3.2
10							10.4	15.9	17.1	18.9	14.4	16.8	13.7	15.2	12.9	11.7			9.4	7.6	5.9	5.2	3.0	3.2
5							10.2	15.9	17.0	19.0	15.5	17.2	14.5	15.5	14.1	11.9			9.1	7.5	5.6	5.1	2.9	3.1
2							8.8	14.0	13.7	17.8	15.7	18.0	14.6	15.9	14.8	12.7			9.3	7.3	5.3	4.8	2.8	2.9
0									5.5	7.3	16.2	16.3	14.6	16.9	16.8	13.0			9.1	7.1	5.2	4.7	2.6	2.8
- 2									3.3	4.5	7.5	8.8	9.3	9.8	9.5	7.3				7.5			4.8	3.3
- 5									3.0	3.8	4.8	5.8	5.8	6.3	6.0	6.0				5.3			4.0	2.8
-10											4.0	4.5	5.0	5.3	5.3	5.3				5.0			4.0	2.5
Low to Center Poly.																								
50							10.3	16.3	15.8	18.6														
20							8.8	15.5	13.5	16.9	13.0	15.6	13.2	14.9	12.5	11.7			8.5	6.6	4.6	4.0	2.9	2.4
10							9.5	15.8	14.4	18.3	14.4	17.0	13.2	15.4	13.0	12.1			9.1	7.4	5.2	4.6	2.0	7.4
5							10.5	14.3	14.7	20.3	14.5	18.7	15.2	16.6	13.5	13.5			9.1	6.9	4.8	4.3	2.1	2.3
2							10.8	16.1	13.7	18.4	14.0	18.7	18.1	17.9	16.8	15.5			11.0	7.1	4.8	4.2	2.0	2.1
0									8.8	10.3	16.2	20.9	20.6	21.6	14.1	14.2			10.0	7.4	4.6		1.9	2.1
- 2									11.5	5.3	10.5	11.8	11.3	11.3	11.0	10.8				8.5			5.2	3.5
- 5									2.8	3.3	5.8	6.5	6.8	7.5	7.0	7.0				6.0			5.0	3.8
-10											3.3	3.7	3.8	4.3	4.0	4.3				4.0			4.0	3.0

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	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	-.08	.08	-.02	-.01	.10				.38	.47	.53	.54	.59		.50	.44		.43	.18	.06	.03	-.08	-.03	-.03
S total	.03	.04	.06	.07	.28				.73	.84	.91	.93	.95		.81	.72		.51	.38	.22	.13	.05	.04	.03
S diff.	.02	.02	.04	.05	.10				.13	.14	.17	.16	.17		.15	.14		.19	.12	.08	.09	.04	.03	.02
S ref.																								
IR sky	.36	.51	.39	.37	.37				.34	.32	.30	.31	.31		.41	.40		.57	.41	.41	.44	.35	.42	.42
IR grd.	.47	.48	.47	.45	.54				.69	.70	.69	.70	.67		.72	.69		.65	.61	.57	.54	.48	.48	.48
Trough																								
50	3.0	2.9	3.0	3.0	5.4				6.6	9.5	6.8	8.2	6.3		14.3	13.1		8.8	8.8	7.6	7.6	4.2	3.9	3.7
20	3.0	2.7	2.9	2.9	5.5				7.4	10.0	6.9	8.1	6.4		14.3	13.6		9.9	9.8	9.0	7.8	4.1	3.9	3.7
10	2.8	2.6	2.9	2.9	5.7				9.4	13.8	10.8	11.0	9.5		16.7	15.8		10.9	10.6	8.8	7.8	4.0	3.9	3.7
5	2.7	2.6	2.8	2.9	5.6				8.8	13.6	16.1	11.5	11.4		16.6	15.7		9.9	9.2	8.3	7.8	3.9	3.8	3.6
2	3.0	2.8	3.0	3.0	5.5				10.3	18.6	16.3	15.7	14.3		17.4	15.9		9.5	9.1	7.8	7.7	4.0	3.8	3.6
0	3.0			3.0					10.5	12.3	15.0	16.0	17.5		15.5	14.3		10.0	8.0	5.3				
- 2	4.0			3.5					5.3	5.3	6.0	6.5	7.5		8.5	8.0		7.5	6.8	5.0				
- 5	3.5			3.0					3.8	3.5	3.5	3.5	4.5		4.8	4.8		4.8	5.0	3.8				
-10																								
Ridge																								
50	3.1	2.9	2.9	2.8	2.7				11.8	11.9	11.3	13.6	12.0		11.6	11.3		7.5	8.0	8.0	7.3	4.1	3.8	3.7
20	2.9	2.9	2.9	2.8	2.7				12.4	13.0	11.9	13.8	11.6		12.1	11.7		8.0	8.7	8.1	7.6	4.1	3.9	3.7
10	2.9	2.9	2.9	2.8	4.2				12.9	12.9	12.9	14.3	12.9		13.1	12.9		8.1	8.3	8.1	7.5	4.1	3.9	3.7
5	2.8	2.8	2.9	2.8	4.0				12.8	13.0	12.5	14.6	13.3		13.2	12.8		8.2	8.2	8.0	7.5	4.0	3.8	3.7
2	2.6	2.5	2.6	2.6	4.0				14.3	15.6	14.4	13.6	12.9		13.1	12.5		7.6	8.0	7.9	7.8	3.9	3.8	3.6
0	2.5			2.0					5.3	6.0	7.0	7.0	8.5		8.8	8.3		7.3	6.0	5.3				
- 2	2.5			1.5					3.3	3.8	5.0	4.3	5.3		5.8	5.5		5.0	5.0	3.8				
- 5	2.5			1.5					2.8	3.3	4.0	3.8	4.8		5.0	5.0		4.8	5.0	3.5				
-10																								
Low to Center Poly.																								
50	2.4	2.5	2.3	2.3	4.0				8.0	8.3	5.4	7.3	3.8		12.3	12.4		8.1	8.7	8.3	7.5	4.1	3.9	3.9
20	2.3	2.3	2.2	2.2	3.9				8.6	9.1	6.6	7.4	3.5		12.3	12.5		8.7	9.1	8.4	7.7	4.3	3.9	3.9
10	2.3	2.4	2.3	2.2	4.4				8.4	9.1	6.1	8.1	4.1		13.0	12.4		8.4	8.6	8.3	7.6	4.3	3.9	3.9
5	2.0	1.9	2.0	2.0	3.2				10.7	10.6	7.1	8.0	8.1		16.7	16.9		10.5	10.6	7.8	7.4	4.3	4.0	3.7
2	2.1	2.0	2.2	2.2	4.5				14.2	10.7	7.0	9.3	6.3		14.5	14.2		9.5	9.6	8.5	7.5	4.1	3.8	3.7
0	3.8			3.3					8.3	9.0	10.0	10.3	10.8		10.3	9.8		8.3	7.8	5.3				
- 2	3.5			3.3					4.3	4.8	5.5	5.8	6.3		6.8	6.0		5.5	5.5	4.5				
- 5	3.0			3.0					3.0	3.3	3.5	3.8			4.0	3.8		3.8	3.8	3.3				
-10																								

July 14, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	-.04	-.01	-.02	.04	.12			.26	.29	.51	.49	.43			.49	.43			.07					
S total	.04	.06	.07	.13	.32			.66	.59	.87	.88	.77			.82	.73			.28					
S diff.	.02	.04	.05	.11	.13			.19	.41	.12	.20	.23			.14	.14			.10					
S ref.																								
IR sky	.41	.41	.39	.42	.37			.33	.37	.36	.32	.39			.44	.44			.38					
IR grd.	.48	.48	.49	.51	.58			.73	.67	.74	.71	.73			.72	.74			.58					
Trough																								
50																								
20	3.8	3.3	4.1	5.8	9.5			15.5	11.3	14.6	14.7	16.3			21.2	19.6			10.5					
10	3.8	3.1	4.1	5.8	9.8			16.9	11.4	14.1	14.7	16.0			21.2	19.9			11.1					
5	3.6	3.1	4.0	5.9	9.1			19.1	11.5	16.3	15.3	13.7			22.7	21.2			11.1					
2	3.6	3.1	3.8	5.9	9.4			19.1	14.5	18.0	17.8	19.8			18.3	22.1			11.2					
0	3.6	3.2	3.7	5.8	8.3			20.4	20.4	20.7	21.6	21.4			25.5	23.0			12.1					
- 2		2.5		2.5					10.3	10.5		13.0			12.0	11.8	11.5							
- 5		3.3		2.5					5.5	5.5		7.3			7.0	7.0	6.8							
-10		2.8		2.3					4.5	3.8		4.3			4.5	5.0	4.3							
Ridge																								
50																								
20	3.9	3.2	3.9	5.5	7.8			13.4	9.5	12.8	13.4	15.2			18.9	17.7			9.1					
10	4.0	3.0	4.0	5.6	7.9			14.9	10.1	12.5	14.1	14.1			19.1	18.7			10.9					
5	3.9	3.0	3.9	5.6	7.9			15.6	11.1	13.7	14.1	15.5			19.0	18.8			10.9					
2	3.8	3.0	3.9	5.4	7.8			16.4	14.4	13.6	14.0	15.6			20.2	19.3			11.1					
0	3.6	3.0	3.7	5.4	7.4			18.3	17.6	17.4	14.4	15.6			20.3	18.5			13.9					
- 2		2.5		2.0					6.3	5.8		6.3			6.0	6.3	5.8							
- 5		2.0		1.5					3.8	3.5		4.8			4.5	5.0	4.8							
-10		1.5		1.0					3.5	3.3		4.0			4.0	4.3	3.8							
Low to Center Poly.																								
50																								
20	4.0	3.2	4.1	5.8	9.4			13.5	8.6	11.9	13.3	14.5			19.1	18.3			8.7					
10	3.9	3.2	4.1	5.8	9.5			15.1	9.4	13.1	14.6	14.4			18.8	18.5			9.4					
5	3.9	3.1	4.1	5.8	10.0			14.5	9.5	12.3	15.3	15.0			20.7	19.8			8.6					
2	3.6	3.1	3.7	5.5	7.0			15.5	12.0	14.2	16.5	18.3			23.5	22.3			10.5					
0	3.7	3.1	3.9	5.7	9.5			16.9	11.9	14.8	15.6	17.4			23.3	21.6			10.5					
- 2		3.3		3.3					9.0	9.0		8.5			8.3	8.0	7.5							
- 5		3.3		2.5					4.8	5.0		5.5			5.5	6.3	5.5							
-10		2.5		2.3					3.5	3.5		3.3			3.8	4.0	3.8							

July 15, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net																								
S total																								
S diff.																								
S ref.																								
IR sky																								
IR grd.																								
Trough																								
50																								
20																								
10																								
5																								
2																								
0																								
- 2									5.8	9.5	13.3	16.0	16.8		19.0	18.3								
- 5									1.3	3.5	4.5	5.5	6.3		8.3	8.3								
-10									0.7	2.0	2.3	2.5	3.3		4.3	4.5								
Ridge																								
50																								
20																								
10																								
5																								
2																								
0																								
- 2									2.8	4.8	6.3	6.8	7.8		10.5	10.8								
- 5									0.8	2.3	3.5	3.8	4.8		6.3	6.8								
-10									0.5	1.8	2.8	3.0	3.8		5.0	6.0								
Low to Center Poly.																								
50																								
20																								
10																								
5																								
2																								
0																								
- 2									6.5	7.8	9.3	9.5	10.3		12.0	12.3								
- 5									2.3	3.8	4.3	4.5	5.5		6.8	7.3								
-10									1.8	2.3	2.3	2.5	3.3		3.3	4.0								

July 17, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net											.14			.38	.36				.11					
S total											.41			.63	.57				.21					
S diff.											.19			.41	.39				.17					
S ref.																								
IR sky											.32			.39	.45				.45					
IR grd.											.59			.64	.66				.56					
Trough																								
50															13.5				9.3					
20															13.4				9.4					
10															14.0				9.8					
5															16.1				10.2					
2															22.0				11.0					
0																								
- 2																								
- 5																								
-10																								
Ridge																								
50																								
20															10.0				9.3					
10															11.1				9.1					
5															12.1				9.5					
2															15.1				9.7					
0															16.1				9.8					
- 2																								
- 5																								
-10																								
Low to Center Poly.																								
50																								
20															11.5				6.8					
10															11.7				6.5					
5															12.5				6.5					
2															16.0				7.7					
0															15.8				7.8					
- 2																								
- 5																								
-10																								

July 23, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net																						.003	-.03	
$ total																						.02	.02	
$ diff.																						.03	.03	
$ ref.																						.004	.005	
IR sky																						.44	.41	
IR grd.																						.46	.45	
Trough																								
50																						-0.1	-0.3	
20																						0	-0.3	
10																						0.1	-0.3	
5																						0.2	-0.2	
2																						0.3	-0.2	
0																						3.3		
- 2																						4.0		
- 5																						3.5		
-10																								
Ridge																								
50																						-2.5	-2.5	
20																						-2.5	-2.5	
10																						-2.5	-2.5	
5																						-2.4	-2.5	
2																						-2.1	-2.3	
0																						1.8		
- 2																						1.8		
- 5																						2.0		
-10																								
Low to Center Poly.																								
50																						0.4	0	
20																						0.4	0	
10																						0.4	0	
5																						0.9	0.3	
2																						0.6	0.4	
0																						2.3		
- 2																						2.5		
- 5																						2.2		
-10																								

July 24, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net		-.04	.01	.06	.15	.24	.30	.42	.47	.53	.41	.57	.55	.52	.44			.16				-.05	-.03	
$ total		.08	1.6	.25	.39	.49	.62	.77	.82	.89	.92	.91	.88	.81	.70			.31				.03	.02	
$ diff.		.03	.04	.05	.05	.05	.06	.07	.07	.08	.07	.08	.08	.08	.08			.06				.02	.01	
$ ref.		.03	.05	.07	.10	.13	.15	.17	.18	.19	.20	.19	.19	.18	.16			.10				.005	.004	
IR sky		.35	.34	.32	.30	.31	.29	.31	.32	.33	.20	.35	.36	.37	.37			.38				.39	.41	
IR grd.		.44	.44	.45	.44	.47	.46	.49	.49	.50	.51	.50	.49	.48	.47			.44				.44	.45	
Trough																								
50																								
20		0.9	1.9	2.5	3.9	4.8	5.8	7.1	7.1	9.0	7.7	8.4	8.2	7.0	6.0			3.4				-1.2	-0.5	
10		0.2	1.9	2.7	4.3	5.0	6.6	7.4	7.1	8.4	7.0	8.1	7.5	6.6	6.4			4.4				-1.1	-0.5	
5		-0.1	1.4	2.5	4.0	5.5	7.4	8.6	8.7	9.9	8.9	9.8	9.5	8.0	7.6			4.6				-1.3	-0.6	
2		-0.3	1.3	2.4	4.1	5.1	6.9	9.0	9.0	10.2	10.9	11.1	11.1	9.3	8.6			3.9				-2.2	-0.7	
0		-0.7	0.4	1.6	3.8	6.5	7.4	10.5	12.0	13.0	14.3	14.3	12.5	11.9	10.1			3.8				-2.4	-0.5	
- 2			0.3			0.3		6.5				14.5												
- 5			2.0			2.3		3.0				4.8												
-10			2.3			2.0		2.0				2.3												
Ridge																								
50																								
20		0	1.4	2.1	2.5	4.0	3.9	5.4	5.3	6.6	6.1	5.7	5.4	4.4	4.6			2.4				-1.1	-0.6	
10		0.2	1.6	2.5	2.5	4.1	4.8	5.8	5.5	5.5	5.6	5.5	5.8	5.0	5.1			3.3				-1.1	-0.5	
5		0.2	1.6	2.4	2.7	2.8	4.3	5.6	5.5	6.0	6.4	5.8	5.9	6.0	4.7			3.0				-1.3	-0.5	
2		-0.1	1.2	2.2	2.5	2.9	5.0	5.2	5.6	8.0	6.0	7.1	6.1	6.4	5.6			2.8				-1.3	-0.6	
0		-0.5	0.6	1.7	1.9	2.2	5.8	7.3	7.0	7.8	6.1	6.5	7.9	6.1	4.6			2.1				-1.3	-0.5	
- 2			0			0.5		2.5				7.0			3.8									
- 5			0			0.5		1.3				1.5			2.5									
-10			0			0.5		1.0				1.3			2.3									
Low to Center Poly.																								
50																								
20		1.1	2.2	2.7	3.9	4.5	5.0	5.5	6.5	7.9	8.2	9.0	8.4	7.5	6.1			4.0				0	0.1	
10		0.5	1.6	4.1	5.3	5.6	5.4	6.6	6.6	6.8	7.8	8.0	7.8	7.8	7.9			5.0				0	0.1	
5		0.6	1.8	3.0	4.3	5.4	5.9	7.0	7.3	6.9	7.8	8.3	8.5	7.5	7.3			4.4				0	0.1	
2		-0.3	0.7	1.6	2.9	6.3	7.9	9.6	9.6	8.1	12.0	11.6	12.8	12.1	12.5			4.4				-0.1	0.1	
0		0	1.5	3.3	5.0	5.9	7.1	8.0	8.6	8.1	10.8	9.0	10.9	10.7	9.9			5.5				-0.1	0.2	
- 2			0.3			3.0		4.5				5.0			5.5									
- 5			1.3			1.3		2.0				5.5												
-10			1.5			1.3		1.8				1.3			2.0									

July 25, 1972

	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	-.001	.01	.12	.14	.49	.55	.58	.56	.50	.45									-.15	-.03	-.01
S total	.02	.04	.18	.27	.84	.90	.91	.88	.81	.73									.06	.03	.01
S diff.	.02	.03	.14	.19	.07	.07	.08	.09	.08	.08									.03	.01	.01
S ref.	.01	.01	.05	.06	.19	.19	.20	.19	.18	.17									.04	.03	.01
IR sky	.44	.43	.44	.42	.38	.32	.34	.36	.34	.36									.25	.40	.42
IR grd.	.45	.45	.46	.49	.48	.47	.48	.49	.48	.47									.43	.43	.43
Trough																					
50																					
20	-0.5	-0.4	1.1	1.4	5.0	6.9	6.7	6.9	7.8	6.0									0.4	-0.1	-0.5
10	-0.4	-0.4	1.1	1.6	5.8	6.3	6.2	7.3	7.7	6.5									0.4	-0.2	-0.5
5	-0.4	-0.2	1.5	2.1	8.0	2.3	8.1	9.1	9.1	7.1									0	-0.3	-0.6
2	-0.4	-0.2	2.0	2.3	8.1	8.3	10.0	11.0	10.2	8.7									-0.2	-0.5	-0.9
0	-0.4	-0.1	2.6	3.2	12.0	11.8	12.5	13.3	12.6	11.1									-0.4	-0.5	-2.4
- 2							13.2			12.3									3.0		
- 5							4.5			6.0									3.8		
-10							2.3			3.0									3.0		
Ridge																					
50																					
20	-0.6	-0.5	0.9	1.0	5.3	4.4	5.4	4.9	3.9	4.3									0.6	0.3	-0.1
10	-0.5	-0.4	0.9	1.4	4.1	4.1	5.6	4.7	5.4	4.5									0.6	0.2	-0.3
5	-0.5	-0.4	1.3	1.4	4.0	4.4	6.0	5.3	6.0	5.0									0.4	0.2	-0.3
2	-0.5	-0.4	1.3	1.4	4.5	4.8	6.4	5.6	6.4	6.3									0.4	0.1	-0.5
0	-0.5	-0.4	0.8	1.4	5.4	6.0	5.9	6.1	7.9	5.6									0.3	0	-.05
- 2							3.3			4.3									1.5		
- 5							1.8			3.3									1.5		
-10							1.3			2.8									1.8		
Low to Center Poly.																					
50																					
20	-0.4	-0.3	1.3	1.9	6.0	5.6	7.4	7.4	9.3	9.9									1.2	0.8	0.3
10	-0.3	-0.1	1.2	1.9	6.9	6.7	5.4	6.7	11.3	11.4									1.0	0.6	-0.1
5	-0.3	-0.3	1.4	1.9	6.9	6.2	7.9	7.2	7.3	7.5									0.7	0.4	-0.2
2	0	0.1	2.3	3.0	7.4	7.8	11.4	12.4	6.8	7.0									0.3	-1.3	-0.5
0	-0.2	-0.1	1.9	2.3	7.6	7.9	8.8	10.1	8.1	6.4									0.4	0	-0.5
- 2							5.3			5.5									2.5		
- 5							3.0			3.8									2.3		
-10							1.8			2.5									1.8		

July 26, 1972

	0230	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	.02	0	.01	.03	.05		.13	.20	.25	.36	.30	.36	.33	.20	.14	.24								
S total	.01	.01	.02	.05	.11		.20	.29	.40	.49	.45	.49	.49	.29	.21	.35								
S diff.	.01	.01	.02	.05	.07		.17	.24	.27	.36	.33	.39	.36	.25	.19	.30								
S ref.	.01	0	.01	.01	.03		.04	.06	.08	.12	.09	.11	.10	.06	.05	.08								
IR sky	.46	.44	.44	.44	.41		.43	.42	.39	.44	.40	.44	.41	.43	.44	.43								
IR grd.	.45	.45	.45	.45	.45		.45	.45	.47	.46	.46	.46	.47	.46	.46	.46								
Trough																								
50																								
20	0	0	0.1	0.4	0.8		0.4	1.6	1.5	3.3	1.9	3.0	2.4	1.4	1.4	2.5								
10	0	0	-0.1	0.5	0.8		0.6	1.4	1.7	3.5	2.0	2.8	2.5	1.6	1.6	2.5								
5	-0.2	-0.1	-0.1	0.5	0.9		0.8	1.9	2.3	4.4	2.7	4.4	3.3	2.1	2.0	3.4								
2	-0.2	-0.1	0	0.6	1.0		1.0	2.3	3.3	5.2	3.5	5.6	4.8	2.6	2.5	4.3								
0	-0.2	-0.1	0.1	0.7	1.1		1.7	2.9	4.4	6.4	5.5	7.0	6.5	3.6	3.5	5.4								
- 2	1.3			1.0			1.3				4.3		5.3			4.8								
- 5	2.8			2.0			1.0				1.8		2.3			2.8								
-10	2.3			1.8			1.0				0.8		1.3			1.3								
Ridge																								
50																								
20	0.1	-0.1	0	0.5	0.9		0.8	1.5	1.0	2.4	1.5	2.0	2.8	1.7	2.0	3.2								
10	0	0	0	0.4	0.8		0.6	1.3	1.3	2.3	1.4	2.9	2.8	1.9	1.9	3.4								
5	0	0	0	0.4	0.8		0.6	1.6	1.3	2.7	2.0	3.5	3.0	2.0	1.8	3.3								
2	0	0	0	0.4	0.8		0.8	1.9	2.1	3.5	2.8	3.4	4.0	2.5	2.1	3.6								
0	0.1	0	0.1	0.4	0.8		1.1	2.0	2.5	4.2	3.3	4.4	4.0	2.7	2.6	4.0								
- 2	0.3			0			-0.3				2.8		1.8			1.5								
- 5	0.5			0							0.8		0.8			0.8								
-10	0.8			0			-0.5						-0.5			0.8								
Low to Center Poly.																								
50																								
20	0.5	0.1	0.1	0.7	1.0		0.5	1.4	0.2	2.5	1.7	2.6	2.5	1.3	1.3	2.0								
10	0.3	0.1	0.1	0.6	1.0		0.5	1.2	1.7	3.0	1.9	2.5	2.7	1.4	1.5	2.2								
5	0.2	0.1	0.1	0.6	1.0		0.5	1.4	1.9	3.0	1.8	2.3	3.2	1.5	1.6	2.4								
2	0.2	0.3	0.4	1.0	1.3		1.9	2.9	4.3	5.7	4.1	5.1	5.3	3.1	2.6	4.0								
0	0.2	0.3	0.3	0.9	1.2		1.3	2.4	3.4	4.5	3.0	4.0	4.3	2.5	2.0	3.1								
- 2	0.5			0.3			0.8				2.8		3.5			3.3								
- 5	1.3			0.5			0.5				1.0		1.6			1.8								
-10	1.5			0.8			0.5				0.8		0.8			1.3								

July 27, 1972

	0830	0930	1030	1130	1230	1330
% net	.19	.24	.27	.35	.29	
% total	.28	.37	.40	.53	.45	
% diff.	.24	.31	.30	.46	.39	
% ref.	.06	.08	.09	.12	.10	
IR sky	.42	.41	.41	.44	.44	
IR grd.	.45	.46	.46	.50	.50	
Trough						
50						
20	1.6	1.9	3.3	5.0	7.2	
10	1.8	1.9	3.3	5.0	8.4	
5	2.2	2.5	4.1	6.0	5.8	
2	2.9	3.4	4.8	7.0	9.8	
0	3.9	5.0	5.6	9.3	9.2	
- 2						
- 5						
-10						
Ridge						
50						
20	2.5	2.6	3.4	5.0	4.4	
10	2.5	3.0	4.3	5.3	5.0	
5	2.8	3.0	4.3	5.5	5.0	
2	3.2	3.4	4.3	6.0	5.2	
0	3.6	4.0	5.1	7.4	6.3	
- 2						
- 5						
-10						
Low to Center Poly.						
50						
20	0.9	0.7	1.1	5.5	5.2	
10	1.1	0.5	1.1	5.5	5.3	
5	1.1	0.7	1.2	6.1	5.6	
2	3.0	3.1	3.6	9.4	8.8	
0	1.8	1.9	2.2	8.3	7.7	
- 2						
- 5						
-10						

July 28, 1972

	0830	0930	1030	1130	1230	1330	1430	1530	2030	2130	2230
% net	.16	.25	.15	.35	.68	.48	.31		.01	.001	.01
% total	.28	.43	.27	.58	.99	.81	.51		.03	.02	.01
% diff.	.23	.36	.22	.51	.25	.12	.29		.03	.01	.06
% ref.	.06	.09	.06	.12	.23	.18	.12		.004	.004	0
IR sky	.43	.39	.43	.39	.45	.36	.40		.45	.45	.44
IR grd.	.48	.48	.49	.50	.54	.51	.49		.47	.46	.46
Trough											
50											
20	3.6	5.4	4.1	6.4	11.7	12.8	8.3		-0.5	-0.1	0
10	3.7	5.6	5.0	6.7	11.4	11.9	8.7		0.4	0	0
5	4.3	6.6	6.1	7.8	13.8	11.6	7.6		-0.4	0	0.1
2	5.1	7.3	7.1	9.1	15.1	11.5	7.3		-0.3	0.1	0.1
0	6.8	9.4	8.9	12.6	19.3	16.3	10.3		0	0.2	0.3
- 2											
- 5											
-10											
Ridge											
50											
20	2.9	3.6	4.0	4.4	8.6	5.4	3.9		0.8	0.6	0
10	2.8	4.0	4.5	5.8	10.1	6.8	6.2		1.0	0.6	0.4
5	2.7	4.2	4.5	5.3	12.6	8.2	6.0		1.0	0.7	0.4
2	3.3	5.4	4.7	7.2	12.5	8.5	5.9		1.1	0.7	0.4
0	3.5	7.0	5.4	7.8	12.0	9.3	7.5		1.4	0.7	0.5
- 2											
- 5											
-10											
Low to Center Poly.											
50											
20	3.5	4.4	4.3	5.3	6.9	9.0	5.7		1.3	1.0	0.6
10	3.6	4.6	4.5	4.7	7.4	8.8	6.9		1.2	1.0	0.6
5	3.7	4.6	4.9	5.4	8.5	7.5	6.6		2.1	1.6	1.3
2	2.9	7.9	6.0	9.1	15.1	12.6	9.4		2.1	1.6	1.3
0	4.4	6.8	6.0	7.7	12.4	10.5	8.1		1.8	1.3	0.9
- 2											
- 5											
-10											

July 29, 1972

	0930	1030	1130	1230	1330	1430	1530
R net	.06	.12	.24	.53	.22	.44	
$ total	.09	.17	.35	.86	.40	.73	
$ diff.	.07	.13	.24	.11	.19	.09	
$ ref.	.02	.03	.07	.19	.08	.16	
IR sky	.46	.46	.44	.37	.41	.39	
IR grd.	.48	.47	.49	.52	.51	.52	
Trough							
50							
20	3.5	4.0	5.5	11.6	8.0	12.9	
10	3.5	4.0	5.5	11.1	7.8	12.6	
5	3.7	4.2	6.0	13.5	8.8	13.5	
2	3.8	4.5	6.5	15.8	9.5	14.7	
0	4.0	4.9	7.5	19.4	11.1	16.8	
- 2	1.8	3.3	3.5	15.3	13.8	14.8	15.3
- 5	1.5	2.0	1.8	4.5	4.5	5.5	6.3
-10	1.3	1.8	1.3	2.5	2.0	2.8	3.5
Ridge							
50							
20	3.4	3.8	5.4	9.8	6.8	11.0	
10	3.4	3.7	4.9	10.1	7.0	10.3	
5	3.5	3.9	5.2	10.1	7.2	10.9	
2	3.5	3.9	4.9	11.8	7.3	11.4	
0	3.5	4.1	5.1	8.5	7.3	11.7	
- 2	1.3	1.8	2.0	6.5	6.0	7.0	8.5
- 5	0.8	1.0	1.0	3.5	3.3	4.5	5.0
-10	0.8	0.8	0.8	2.8	2.3	3.8	4.5
Low to Center Poly.							
50							
20	3.5	4.0	5.7	11.8	8.0	11.8	
10	3.5	3.8	5.5	10.5	7.7	11.9	
5	3.5	4.0	5.5	12.2	8.1	12.2	
2	4.1	4.9	6.5	16.6	10.8	15.6	
0	3.9	4.5	5.8	11.2	9.8	14.3	
- 2	2.3	2.8	2.8	7.8	7.8	8.8	9.3
- 5	1.5	1.8	1.8	3.3	4.0	5.0	5.5
-10	1.3	1.3	1.3	2.0	2.0	2.8	3.3

July 31, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net													.37	.38	.43	.39								
$ total													.61	.70	.73	.75								
$ diff.													.41	.26	.17	.13								
$ ref.													.15	.17	.20	.20								
IR sky													.40	.36	.40	.35								
IR grd.													.49	.51	.50	.50								
Trough																								
50																								
20													7.3	9.4	13.3	12.3								
10													7.5	9.3	12.1	12.8								
5													8.3	10.9	12.6	15.0								
2													9.8	12.0	14.6	16.1								
0													14.5	15.8	19.8	19.5								
- 2																								
- 5																								
-10																								
Ridge																								
50																								
20													2.5	4.6	8.3	7.5								
10													3.9	6.3	9.3	10.3								
5													5.4	6.6	12.6	12.4								
2													9.4	9.2	16.4	13.4								
0													10.4	8.5	14.2	14.2								
- 2																								
- 5																								
-10																								
Low to Center Poly.																								
50																								
20													8.8	9.3	10.8	11.3								
10													9.1	10.7	10.9	12.0								
5													10.4	11.1	13.3	13.2								
2													14.6	17.5	17.1	20.7								
0													13.3	15.3	16.6	19.4								
- 2																								
- 5																								
-10																								

August 1, 1972

	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	.24	.33	.28		.30	.20	.18	.13					-.04	-.05	-.04	-.02
$ total	.45	.60	.50		.48	.31	.29	.21					.04	.02	.01	.001
$ diff.	.25	.31	.35		.34	.21	.21	.15					.03	.03	.01	.001
$ ref.	.11	.14	.12		.11	.07	.07	.05					.01	.008	0	-.002
IR sky	.43	.42	.44		.47	.48	.48	.48					.41	.41	.43	.44
IR grd.	.53	.55	.55		.54	.52	.52	.51					.49	.47	.47	.47
Trough																
50																
20	14.9	15.7	16.5		16.8	13.0	13.1	11.9					8.4	6.1	5.9	5.5
10	15.0	16.3	17.1		17.0	13.1	13.2	12.1					8.4	6.1	5.8	5.5
5	15.8	17.2	18.4		17.4	11.2	13.9	12.5					8.4	6.0	5.7	5.3
2	15.3	17.8	19.0		18.0	14.4	14.2	12.8					8.3	6.0	5.7	5.3
0	17.8	22.1	22.3		20.9	16.2	15.5	13.6					8.0	5.6	5.4	5.1
- 2																
- 5																
-10																
Ridge																
50																
20	12.3	14.6	13.8		14.0	11.3	11.9	10.6					8.1	6.1	5.5	5.1
10	12.4	14.1	14.7		14.9	11.9	12.1	10.6					8.3	6.1	5.5	5.1
5	13.0	14.5	13.9		15.4	11.8	12.1	10.8					8.1	6.0	5.6	4.9
2	13.4	14.0	15.5		15.3	11.9	12.4	10.8					8.0	5.8	5.4	4.9
0	13.7	15.1	15.9		15.0	11.9	12.0	10.9					7.9	5.8	5.3	4.9
- 2																
- 5																
-10																
Low to Center Poly.																
50																
20	12.1	13.1	14.2		11.8	9.1	9.4	8.3					5.8	3.9	3.6	3.4
10	12.5	13.5	14.4		12.0	9.1	9.3	8.3					5.8	3.9	3.5	3.3
5	13.1	13.5	14.5		12.5	9.3	9.5	8.5					5.8	3.8	3.5	3.3
2	13.7	15.8	16.1		14.3	11.1	10.7	9.1					5.1	3.4	3.5	3.0
0	13.5	15.1	15.5		13.5	10.7	10.5	8.9					5.8	3.6	3.4	3.2
- 2																
- 5																
-10																

August 2, 1972

	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	-.03	.003	.01	.02		.32	.36	.40	.33	.46	.47	.45	.41	.34				.03	.14	-.07	-.05	-.03
$ total	.003	.01	.04	.07		.64	.63	.75	.62	.82	.81	.78	.71	.61				.17	.07	.02	.01	0
$ diff.	.002	.01	.03	.05		.18	.25	.18	.17	.07	.07	.07	.07	.06				.04	.02	.01	.004	0
$ ref.	0	.004	.01	.02		.16	.15	.16	.14	.18	.17	.17	.15	.13				.14	.12	.01	.001	0
IR sky	.43	.45	.45	.43		.36	.42	.39	.42	.41	.43	.43	.44	.43				.41	.59	.39	.40	.44
IR grd.	.46	.46	.47	.47		.53	.56	.59	.58	.60	.60	.59	.58	.57				.51	.49	.48	.46	.46
Trough																						
50																						
20	5.4	5.0	6.4	7.3		13.5	16.7	17.9	17.2	11.3	19.1	19.0	18.0	15.6				7.7	4.1	3.0	1.3	1.2
10	5.4	5.0	6.3	7.3		14.2	17.2	18.3	16.5	18.5	18.8	18.2	17.9	15.6				8.4	4.7	2.9	1.2	1.1
5	5.3	4.8	6.3	7.3		15.5	18.8	19.5	17.9	20.6	20.4	20.3	19.4	16.5				8.2	4.1	2.7	1.1	1.0
2	5.3	4.7	6.3	7.1		16.0	18.1	18.7	17.8	21.4	22.5	21.6	20.0	16.9				7.4	4.0	2.5	0.8	0.8
0	5.0	4.3	6.1	7.0		18.5	21.7	23.2	22.0	25.0	25.0	24.1	21.0	17.4				6.6	3.6	2.2	0.4	0.5
- 2						10.8		12.3	14.0	17.3	18.8	19.8	20.0	17.3				9.8	8.5	6.3	4.8	4.0
- 5						6.0		6.3	6.8	7.3	8.3	9.3	9.5	9.8				8.5	8.0	6.8	3.8	5.8
-10						5.0		4.5	4.8	4.8	5.3	5.8	5.8	5.8				6.0	6.3	5.8	5.0	4.8
Ridge																						
50																						
20	4.8	4.4	4.0	5.3		12.4	16.0	17.3	16.3	18.8	20.3	18.9	16.9	17.1				9.3	6.4	5.0	2.9	2.8
10	4.5	4.3	4.9	5.3		15.5	16.2	18.4	17.8	18.5	19.2	18.6	17.4	15.5				9.7	6.6	5.0	2.8	2.8
5	4.4	3.9	4.8	5.3		14.9	16.9	18.8	18.4	20.3	19.7	18.6	18.0	16.7				9.2	6.3	4.9	2.7	2.6
2	4.3	3.8	4.8	5.3		15.5	17.0	18.1	18.4	21.1	21.0	18.4	17.9	17.1				8.9	6.2	4.7	2.7	2.6
0	4.3	3.6	4.8	5.3		15.5	18.0	19.0	18.5	21.1	20.5	18.9	17.5	17.4				10.0	6.9	5.3	2.6	2.5
- 2						7.4		8.5	9.5	10.5	11.3	11.6	12.0	12.0				10.5	8.3	7.3	5.8	4.8
- 5						5.5		6.0	6.3	7.3	7.8	8.3	8.8	8.8				8.0	7.0	6.3	5.5	4.5
-10						5.0		5.3	5.8	6.5	7.0	7.8	8.0	8.3				8.3	7.0	6.0	5.5	4.8
Low to Center Poly.																						
50																						
20	3.5	3.1	4.4	5.2		13.6	15.1	16.5	16.4	18.3	18.6	17.1	15.5	12.9				6.2	3.8	2.8	0.9	1.1
10	3.5	3.1	4.4	5.2		14.1	15.1	16.9	16.0	16.9	17.3	16.7	15.3	13.3				7.1	3.9	2.6	0.8	1.1
5	3.5	3.0	4.4	5.1		14.7	16.8	17.9	16.8	18.7	16.4	16.5	16.0	13.8				7.3	4.0	2.5	0.8	1.0
2	3.0	2.6	4.1	4.7		17.5	18.5	18.3	16.1	20.9	20.9	21.1	19.2	17.3				5.8	3.4	2.3	1.3	1.0
0	3.2	2.7	4.2	5.1		16.4	17.6	17.7	16.4	18.5	19.1	19.4	17.4	16.3				6.5	3.4	2.1	0.8	0.8
- 2						10.3		11.8	12.0	13.0	13.5	14.0	13.5	13.0				10.3	8.5	7.8	5.8	4.8
- 5						6.3		6.8	7.3	8.3	8.8	9.3	9.5	9.3				8.8	7.8		6.5	5.8
-10						5.3		5.3	5.5	5.8	6.3	6.5	6.5	6.3				6.3	6.3	5.8	5.3	5.3

August 3, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	-.02							.21	.31	.38	.42	.46	.49	.43	.42	.35					-.07	-.01	-.02	-.01
S total	.004							.55	.71	.77	.81	.84	.83	.79	.73	.65					.09	.03	.01	.002
S diff.	.001							.14	.13	.14	.15	.15	.15	.15	.14	.13					.13	.01	.001	0
S ref.																								
IR sky	.44							.32	.33	.35	.36	.37	.39	.40	.40	.39					.34	.44	.44	.45
IR grd.	.46							.52	.59	.59	.60	.60	.58	.59	.57	.56					.47	.47	.46	.47
Trough																								
50																								
20	0.7							12.4	16.6	16.1	15.1	15.3	13.3	14.2	12.0	12.8					2.9	1.0	0.3	0.3
10	0.6							13.1	17.2	16.6	16.7	14.9	12.9	13.5	11.6	12.5					3.0	1.0	0.3	0.3
5	0.3							13.8	18.3	17.7	18.3	17.3	15.6	15.9	12.9	13.2					2.5	1.0	0.3	0.3
2	0							12.2	17.0	17.6	18.5	18.5	17.2	17.2	14.2	14.7					2.3	1.1	0.3	0.3
0	0.4							13.5	20.5	22.6	24.3	24.3	21.8	19.1	16.8	15.5					2.0	1.3	0.3	0.5
- 2				2.5				7.3	9.3	12.8		19.0		21.3	18.3						6.8	5.8	4.8	3.8
- 5				4.0				4.5	5.5	6.0		7.8		10.3	9.8						7.0	6.5	5.5	5.3
-10				4.0				4.3	4.8	4.8		4.8		6.5	5.8						5.5	5.5	4.8	4.8
Ridge																								
50																								
20	2.2							12.9	15.1	15.8	14.9	15.7	14.9	16.0	10.4	13.9					4.6	2.8	2.0	1.8
10	2.1							13.4	16.8	15.8	17.6	15.7	13.4	16.4	11.2	14.5					4.8	2.8	2.0	1.8
5	2.0							13.7	17.8	15.8	17.1	16.6	13.0	16.9	14.3	14.9					4.4	2.8	2.0	1.8
2	2.0							14.2	17.5	16.2	17.3	17.9	16.9	15.2	14.4	15.8					4.5	2.8	2.0	1.8
0	2.0							14.6	17.7	17.5	12.0	15.8	14.6	14.8	14.4	15.8					4.5	2.9	2.0	1.9
- 2				1.8				4.8	6.8	10.8		11.8		25.5	10.0						6.5	5.3	4.3	3.3
- 5				2.5				3.5	4.0	6.5		7.3		7.5	7.0						5.8	5.0	4.5	3.5
-10				2.8				3.3	3.8	5.0		5.0		6.8	6.5						5.8	5.0	4.3	3.5
Low to Center Poly.																								
50																								
20	0.9							8.9	14.7	14.3	14.9	14.4	12.8	13.2	10.5	12.2					3.1	1.2	0.7	0.8
10	0.9							9.8	15.8	15.1	14.1	13.9	12.2	13.4	10.4	13.1					3.2	1.2	0.7	0.8
5	0.6							9.9	16.9	16.7	15.2	15.6	11.5	13.6	11.0	13.7					3.4	1.2	0.7	0.8
2	0.8							8.9	18.6	15.0	15.0	18.8	17.8	18.2	16.4	17.3					2.7	1.9	1.2	1.0
0	0.4							10.4	17.2	16.3	16.4	16.6	15.0	16.5	14.9	16.4					2.8	1.5	0.9	1.6
- 2				3.5				7.8	9.0	7.5		8.3		12.8	11.5						6.5	5.8	5.0	4.3
- 5				4.8				5.0	4.8	5.0		5.8		9.3	8.5						6.3	6.0	5.8	5.0
-10				4.8				4.5	4.0	4.8		5.0		6.3	5.8						5.8	5.0	4.8	4.3

August 4, 1972

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
R net	-.01	.004	.021	.03		.18	.19	.25	.26	.40	.42	.42	.40	.38	.31									
S total	0	.004	.04	.06		.29	.35	.45	.61	.81	.82	.82	.78	.72	.63									
S diff.	.001	.01	.03	.05		.23	.34	.29	.22	.08	.08	.08	.09	.08	.07									
S ref.	0	.002	.01	.01		.06	.07	.09	.11	.15	.15	.15	.15	.14	.13									
IR sky	.45	.46	.46	.46		.45	.41	.39	.30	.29	.30	.33	.34	.34	.34									
IR grd.	.46	.47	.47	.48		.51	.51	.54	.54	.55	.55	.58	.57	.55	.53									
Trough																								
50																								
20	0.3	0.8	2.1	2.2		4.2	6.9	6.7	9.7	8.9	9.1	9.4	9.4	10.0	9.0									
10	0.3	0.8	2.1	2.2		5.1	7.3	7.1	10.2	9.3	9.1	9.1	9.1	9.8	9.3									
5	0.3	0.8	2.2	2.3		5.6	8.0	8.2	12.1	12.2	12.0	12.1	11.8	12.2	10.3									
2	0.3	0.8	2.3	2.4		6.6	8.1	9.1	12.6	13.3	13.6	14.4	14.1	13.6	12.8									
0	0.4	0.9	2.6	2.9		8.6	10.1	13.1	17.6	21.8	20.6	20.1	18.4	18.3	14.6									
- 2	3.3			2.8			6.5	7.8	9.3	13.5		19.8	19.3		18.3									
- 5	4.8			3.3			3.8	4.3	5.0	5.8		8.0	7.8		9.8									
-10	4.3			2.3			3.3	3.8	3.8	4.8		4.8	4.3		5.3									
Ridge																								
50																								
20	1.6	2.0	3.0	3.2		4.1	6.0	7.0	7.5	8.0	10.2	9.3	11.0	9.0	9.6									
10	1.6	2.0	3.0	3.2		4.8	6.3	7.3	8.8	9.8	9.6	10.8	10.8	11.5	11.8									
5	1.6	2.0	3.1	3.2		4.8	6.4	7.9	10.2	9.9	11.1	11.3	11.8	12.5	12.1									
2	1.6	2.0	3.1	3.2		5.8	6.9	8.0	13.0	11.0	12.6	13.2	13.2	13.5	12.5									
0	1.6	2.0	3.1	3.2		5.5	7.5	7.7	11.8	11.6	13.3	11.9	10.8	10.1	14.0									
- 2	3.0		2.0	1.8			3.8	4.3	5.3	6.8		3.3	7.8		9.8									
- 5	4.0		2.0	2.0			2.8	2.8	3.8	4.5		5.5	5.3		6.8									
-10	3.0		2.0	1.8			2.8	2.8	3.5	4.5		5.0	4.8		6.3									
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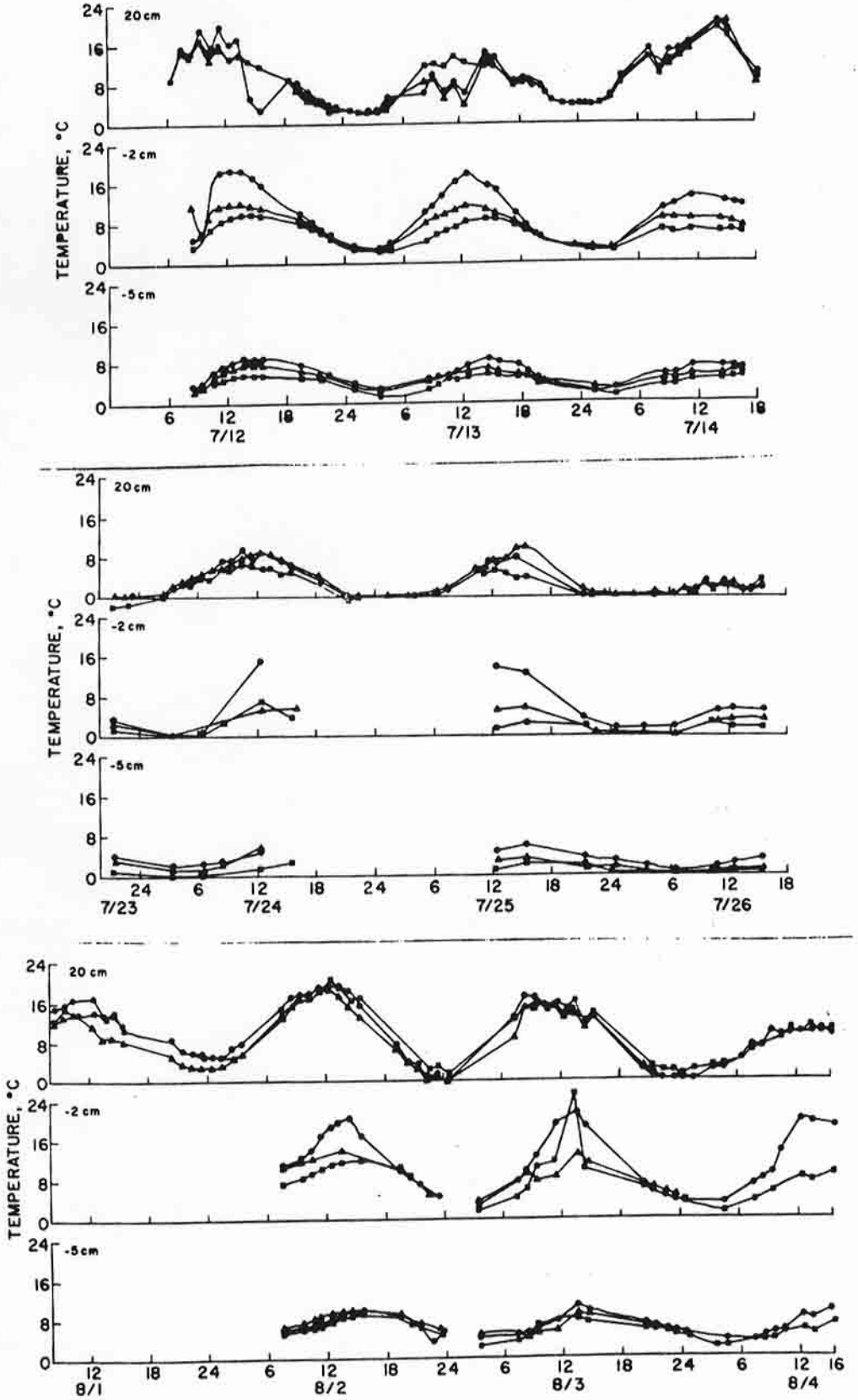

Figure 1. Daily course of air temperatures at 20 cm, and soil temperatures at -2 and -5 cm on different dates at the polygon trough (□), polygon ridge (△), and polygon center (●), Barrow, 1972.

U.S. TUNDRA BIOME

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From:

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