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NASA CR-101760

Page 44

NASA REMOTE SENSING PROJECT

Technical Letter # 10



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Mackay School of Mines
University of Nevada
Reno, Nevada

05-101D

MACKAY SCHOOL OF MINES

UNIVERSITY OF NEVADA

RENO, NEVADA

Ground Truth Flight Data

Missions 55 & 56

Site 56 Mt. Lassen
Site 19 Sonora Pass
Site 3 Mono Craters

by

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Prepared for the
National Aeronautical and Space Administration

TECHNICAL LETTER 10

Contract NAS 9-7044
October 1967

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Introduction

The information embodied in this report was generated from data collected in the field during Missions #55 and #56 using the NASA #926 and #927 aircraft.

The overflight at Mt. Lassen Test Site #56 was flown at 1300 on August 17th followed by a 0400 flight on August 18th. The variation in some of the daytime temperature measurements from station to station was a direct result of cloud cover which developed during the daytime overflight and partially covered the entire flight line. The night mission was completely free of cloud cover.

The ground data was collected primarily to support the microwave and the infrared airborne sensors aboard NASA #926 and efforts to correlate airborne sensor data with ground data will commence as soon as both are available.

During Mission #57, three overflights were flown using the NASA #927 aircraft which were monitored from the ground in direct support of the Infrared Spectrometer experiment. All three flights were flown in the daytime beginning at Sonora Pass Test Site #19 on August 6th. On August 8th, Mono Lake Test #3 was flown and on August 9th, Sonora Pass Test Site was reflown due to aircraft equipment failure during the first flight of August 6th.

Additional ground data collected prior to the Mt. Lassen overflight has already been presented in University of Nevada Technical Letter #8. In the case of Mono Lake and Sonora Pass the work has not been completed for Mission #57. There is, however, extensive ground data already published on Sonora Pass Test Site #19.

Preface to Radiosonde Weather Information

The computation of grams of water per cubic meter of air is rather complex. This particular computer program corrects for air density change due to temperature but not for changes due to pressure. The pressures used are those for the ground at the weather station to the nearest inch of mercury for which weather tables are published. The water content in grams per cubic meter is that listed opposite the altitude. The cumulative water in grams per meter square air column are not those for the altitudes listed but that for a point between the given altitude and the next highest altitude. This rather inconvenient portion of the program will be removed on future runs for which aircraft data is available and more detailed data is taken in the first 500 feet.

Because of the modifying effect of the ground, the cumulative water content from the ground is used for altitudes no greater than 50 feet or half of the next balloon sounding, whichever is smaller.

Mt. Lassen -- Site #56
Cinder Cone
August 17, 1967

<u>Radiometer Targets</u>						<u>Weather Data</u>	
<u>Time</u>	<u>Flight Number</u>	<u>Altered Cinder Cone</u>	<u>Cinder</u>	<u>Dunes</u>	<u>Lava</u>	<u>Wind</u>	<u>Cloud Cover</u>
10:50	-	50	50	50	65 ⁰ C.	Gust 14	Clear
11:00	-	50	50	50	65	10	"
11:05	-	50	50	50	65	10	"
11:10	-	51	50	51	65	12	"
11:15	-	51	50	51	65	10	"
11:20	-	51	50	51	65	10	"
11:25	-	51	50	51	65	6	"
11:30	-	51	50	51	65	12	"
11:35	-	51	50	52	65	10	"
12:30	-	46	46	46	44	20	Spotty
12:40	-	44	44	43	40	10	"
12:45	-	43	43	42	40	12	"
12:50	-	41	41	40	40	12	"
12:55	-	40	39	38	36	10	"
12:57	-	40	38	39	36	10	"
13:00	-	39	38	38	36	10	"
13:05	-	38	38	37	35	13	"
13:06	1	37	38	36	35	10	"
13:10	-	37	39	36	35	12	"
13:17	2	45	42	42	37	12	"
13:20	-	48	49	46	44	15	"
13:25	-	46	45	46	44	15	"
13:28	-	49	45	46	44	15	"
13:30	3	49	45	46	44	15	"
13:35	-	46	45	46	44	17	"
13:40	4	49	45	45	43	17	"
13:45	-	49	45	43	42	-	-

Mt. Lassen -- Site #56
 Painted Dunes
 August 17, 1967

<u>Time</u>	<u>Temperature</u>	<u>Description</u>	<u>Digatic</u>		
			<u>1/4"</u>	<u>8"</u>	<u>14"</u>
10:57	53 °C	Black Cinder Weather Station	-	-	-
11:01	52.8	"	-	-	-
11:02	34	Cone West Side	-	-	-
11:09	53.2	Cinder Weather Station	-	-	-
11:09	37	West Side Cone	-	-	-
11:09	42	Rock Base Cone	-	-	-
11:15	64	Lava	-	-	-
11:18	47	South Side Cone	-	-	-
12:48	44.7	Red Cinder	-	-	-
12:48	42.0	Gray Cinder	-	-	-
12:52	44.0	Lava Patch	-	-	-
12:54	42.0	Red Lava	-	-	-
12:54	41.0	Cinder	-	-	-
12:55	42.0	Cinder	-	-	-
12:56	40.0	Lava	-	-	-
12:56	38.0	Cinder	-	-	-
13:08	-	-	41.1	23.5	21.0
13:13	48.0	Cinder	-	-	-
13:17	46.5	Cinder	-	-	-
13:17	48.7	South Side Cone	-	-	-
13:23	46.3	Lava Base Cone	-	-	-
13:23	49.0	Cinder	-	-	-
13:25	49.9	Cinder	-	-	-
13:25	47.0	Lava	-	-	-
13:28	41.5	Lava	-	-	-
13:28	45.5	Cinder	-	-	-
13:30	43.0	Cinder	-	-	-
13:35	45.2	Cinder	52.9	23.5	21.0

Mt. Lassen -- Site #56
Butte Lake
August 17, 1967

Digitec Targets

Weather Data

<u>Time</u>	<u>Black Body</u>	<u>Basalt Rock Surface</u>	<u>Basalt Rock Crevice</u>	<u>Air Temperature</u>	<u>Relative Humidity</u>	<u>Wind</u>	<u>Cloud</u>
11:08	40.3°C *	53.1	20.6°C	-	-	2	0
11:20	51.3	55.6	20.8	80	20%	2	0
11:28	52.1	56.0	21.5	-	-	2	0
11:33	51.8	55.3	21.3	75.5	20%	3	0
11:47	53.4	57.2	21.8	-	-	6-7 N	-
11:53	53.2	58.7	22.2	-	-	5-6 E	-
12:00	54.7	57.0	22.1	78	17%	4 NE	1% Cum.
12:15	48.3	56.5	22.8	-	-	7-9 N	2%
12:30	47.0	57.1	22.9	76.5	24%	7-9 N	2% Cum. + Cir.?
12:35	44.6	55.2	23.2	-	-	4-6 N	5% "
12:40	48.5	58.1	23.4	-	-	4 N	5% "
12:45	52.5	63.6	23.7	-	-	-	-
12:52	51.3	56.6	23.9	79.5	18%	-	5% Cum.
13:01	Aircraft over Butte Lake	59.8	24.6	-	-	4-6 N	5% "
13:04	49.9	-	-	78.5	18%	-	-
13:10	-	-	-	-	-	-	-
13:12	Aircraft over Butte Lake	-	-	-	-	-	-
13:15	49.3	58.0	24.9	-	-	-	-
13:20	50.1	57.5	24.6	78.0	23%	7-9 NW	-
13:24	Aircraft over Butte Lake	-	-	-	-	-	-
13:27	50.7	62.4	24.9	-	-	-	-
13:30	51.4	60.2	25.0	-	-	2	5%
13:34	-	-	-	80	19%	-	-
13:36	Aircraft overhead	-	-	-	-	-	-

* Not equilibrium yet.

Mt. Lassen -- Site #56
 Butte Lake
 August 17, 1967

Radiometer Targets

<u>Time</u>	<u>Flight Number</u>	<u>Basalt Sunlit Slope</u>	<u>Basalt Shadow Slope</u>	<u>Water Near Shore</u>	<u>Water In Channel</u>	<u>Vegetation</u>	<u>Basalt Normal Slope</u>	<u>Lake Water Probe OC.</u>
11:04	-	102	72° F.	70° F.	54° F.	74° F.	110+	-
11:08	-	100	72	70	58	74	110+	19
11:12	-	102	74	72	56	74	110+	19.5
11:16	-	96	70	73	56	72	110+	19
11:20	-	100	70	72	54	74	110+	19
11:24	-	98	72	72	56	74	110+	19
11:28	-	96	73	71	56	72	110+	19
11:32	-	96	70	72	56	72	110+	19.5
11:36	-	96	74	70	54	74	110+	20
11:45	-	96	72	72	54	72	-	20
11:53	-	96	74	70	54	74	-	-
12:00	-	96	74	70	54	74	-	-
12:05	-	96	74	68	54	75	-	-
12:15	-	94	74	68	54	75	-	-
12:20	-	96	75	69	54	75	-	-
12:25	-	96	76	69	55	75	-	-
12:30	-	96	77	70	54	76	-	-
12:35	-	96	78	70	54	76	-	-
12:40	-	94	78	70	54	76	-	-
12:45	-	94	80	70	55	76	-	-
12:50	-	95	80	71	54	76	-	-
12:53	-	95	81	71	54	76	-	-
12:55	-	95	80	71	54	76	-	-
13:00	-	95	81	71	55*	76	-	-
13:03	1	94	80	70	55*	76	-	-
13:05	-	94	80	70	55*	76	-	-
13:10	-	94	80	71	55*	76	-	-

Mr. Lassen -- Site #56
 Butte Lake
 August 17, 1967

Radiometer Targets

<u>Time</u>	<u>Flight Number</u>	<u>Basalt Sunlit Slope</u>	<u>Basalt Shadow Slope</u>	<u>Water Near Shore</u>	<u>Water In Channel</u>	<u>Vegetation</u>	<u>Basalt Normal Slope</u>	<u>Lake Water Probe °C.</u>
13:10	-	94°F	80°F	71°F	55°F*	76°F	-	-
13:14	2	94	80	71	56	77	-	-
13:15	-	94	80	71	56	77	-	-
13:20	-	94	80	70	55	77	-	-
13:25	3	94	81	70	55	76	-	-
13:30	-	94	81	70	54	76	-	-
13:35	-	94	82	70	55	77	-	-
13:37	4	94	82	70	56	77	-	-
13:40	-	95	83	70	55	78	-	-
13:45	-	95	84	70	-	-	-	-

* When wind would blow across water the temperature would rise as high as 60°.

Mt. Lassen -- Site #56
 Snag Lake
 August 17, 1967

<u>Time</u>	<u>Flight Number</u>	<u>Air Temperature</u>	<u>Relative Humidity</u>	<u>Lake Temperature</u>	<u>Wind</u>	<u>Cloud Cover</u>
10:56				23°C	Gust 4	none
10:59		78°F	41%			
11:39		78°F	41%	23°C		
11:48		80°F	24%	23°C		
11:57		80°F	24%	24°C		
12:10		79°F	24%	24°C		
12:39		80°F	34%	24°C	3-5	1 patch
12:47	X	81°F	28%	24°C	0	1 patch
12:57	X				0	
13:02		80°F	29%		0-2	
13:08	X	82°F	30%	24.5°C	0-2	1 patch
13:13		81°F	28%			scattered
13:18	X			24.5°C	0-3	scattered
13:26		81°F	28%			
13:30	X			24.5°C	0-2	scattered
13:42		83°F	29%	24.5°C	0	scattered
13:50				24.5°C		scattered
13:54		82°F	36%	24.5°C	0	scattered

Mt. Lassen -- Site #56
 Snag Lake
 August 18, 1967

3:30				20.5°C	0-2	none
3:53		57°F	61%		0-2	none
4:09	X	56°F	67%		0	none
4:23	X	55°F	70%			
4:45		56°F	67%			

Mt. Lassen -- Site #56
 Twin Lakes
 August 17, 1967

13:00		80°F		69	Calm	none
13:30		80°F		70	Calm	none

Mt. Lassen -- Site #56
 Twin Lakes
 August 18, 1967

3:30		47°F		67	Calm	None
4:00		50°F		67	Calm	None
4:30		50°F		68	Calm	None
5:00		48°F		68	Calm	None

Mt. Lassen -- Site #56
Cinder Cone
August 18, 1967

Time	Flight Number	<u>Radiometer Targets</u>			<u>Weather Data</u>		
		<u>Altered Cinder</u>	<u>Cinder</u>	<u>Altered Cinder</u>	<u>Basalt</u>	<u>Cloud Cover</u>	<u>Wind</u>
4:00	-	47°F	47°F	48°F	54°F	Clear	2
4:05	-	48	48	50	54	"	"
4:10	-	48	48	49	54	"	"
4:15	1	48	48	49	55	"	"
4:20	-	51	49	51	55	"	"
4:25	2	52	48	51	55	"	"
4:30	-	53	48	52	55	"	7
4:35	-	53	48	49	55	"	8
4:40	-	53	49	50	54	"	10
4:45	-	53	49	52	55	"	12
4:52	3	54	50	53	57	"	10
4:57	-	54	51	54	57	"	12
5:00	-	52	51	53	55	"	

Mt. Lassen -- Site #56
Painted Dunes
August 18, 1967

<u>Time</u>	<u>Flight Number</u>	<u>Temperature</u>	<u>Description</u>	<u>Digatic</u>		
				<u>1/4"</u>	<u>8"</u>	<u>14"</u>
4:08	-	50°F	Cinder	-	-	-
4:08	-	61	Basalt	-	-	-
4:10	-	49.8	Cinder	-	-	-
4:11	-	60.5	Basalt	-	-	-
4:11	-	52	Top of Cinder Knoll	-	-	-
4:15	1	50.5	Cinder	-	-	-
4:20	-	53	Base of Cone	-	-	-
4:20	-	53.5	South Side Cone	-	-	-
4:22	1	59	Lava Near Ice Cave	-	-	-
4:27	2	60	Lava Near Ice Cave	-	-	-
4:27	2	56	South Side Cone Above Ice Cave	-	-	-
4:32	3	51	Cinder	-	-	-
4:32	3	46	Cinder Patch South Side of Cone	-	-	-
4:40	-	42	Cinder	-	-	-
5:00 *	4	-	-	6.7	20.8	21.3
5:10	4	38	Cinder	-	-	-
5:20	-	-	-	6.4	20.8	21.3

* Air -- 7.1

Mt. Lassen -- Site #56
 Butte Lake
 August 18, 1967

Digitec Targets

<u>Time</u>	<u>Black Body</u>	<u>Rock Surface</u>	<u>Lake Temperature</u>	<u>Air Temperature</u>	<u>Relative Humidity</u>	<u>Wind</u>
03:20	13.8°C	13.9°C	17.9°C	-	-	-
03:30	13.0	13.9	17.9	63	37%	2
03:40	13.0	13.8	17.9	-	-	2-4 S
03:50	12.8	13.4	17.9	-	-	-
04:00	12.2	13.0	17.8	59	47%	-
04:15	11.7	13.1	17.8	-	-	-
04:20	12.0	12.9	17.8	61	42%	-
04:25	11.9	12.7	17.8	15.2	-	-
04:32	12.1	12.8	17.8	60	43%	-
04:33	12.0	12.8	17.8	-	-	-
04:36	12.1	12.6	17.8	-	-	-
04:47	-	-	-	60	46%	-
04:50	-	-	-	-	-	-
04:53	11.8	12.6	17.8	-	-	-
04:57	11.8	12.6	17.8	-	-	-
05:04	11.8	12.4	17.7	59.5	45%	-
05:07	11.8	12.4	17.7	59.5	45%	-

Weather Data

<u>Time</u>	<u>Black Body</u>	<u>Rock Surface</u>	<u>Lake Temperature</u>	<u>Air Temperature</u>	<u>Relative Humidity</u>	<u>Wind</u>
03:20	13.8°C	13.9°C	17.9°C	-	-	-
03:30	13.0	13.9	17.9	63	37%	2
03:40	13.0	13.8	17.9	-	-	2-4 S
03:50	12.8	13.4	17.9	-	-	-
04:00	12.2	13.0	17.8	59	47%	-
04:15	11.7	13.1	17.8	-	-	-
04:20	12.0	12.9	17.8	61	42%	-
04:25	11.9	12.7	17.8	15.2	-	-
04:32	12.1	12.8	17.8	60	43%	-
04:33	12.0	12.8	17.8	-	-	-
04:36	12.1	12.6	17.8	-	-	-
04:47	-	-	-	60	46%	-
04:50	-	-	-	-	-	-
04:53	11.8	12.6	17.8	-	-	-
04:57	11.8	12.6	17.8	-	-	-
05:04	11.8	12.4	17.7	59.5	45%	-
05:07	11.8	12.4	17.7	59.5	45%	-

Mt. Lassen -- Site #56
 Butte Lake
 August 18, 1967

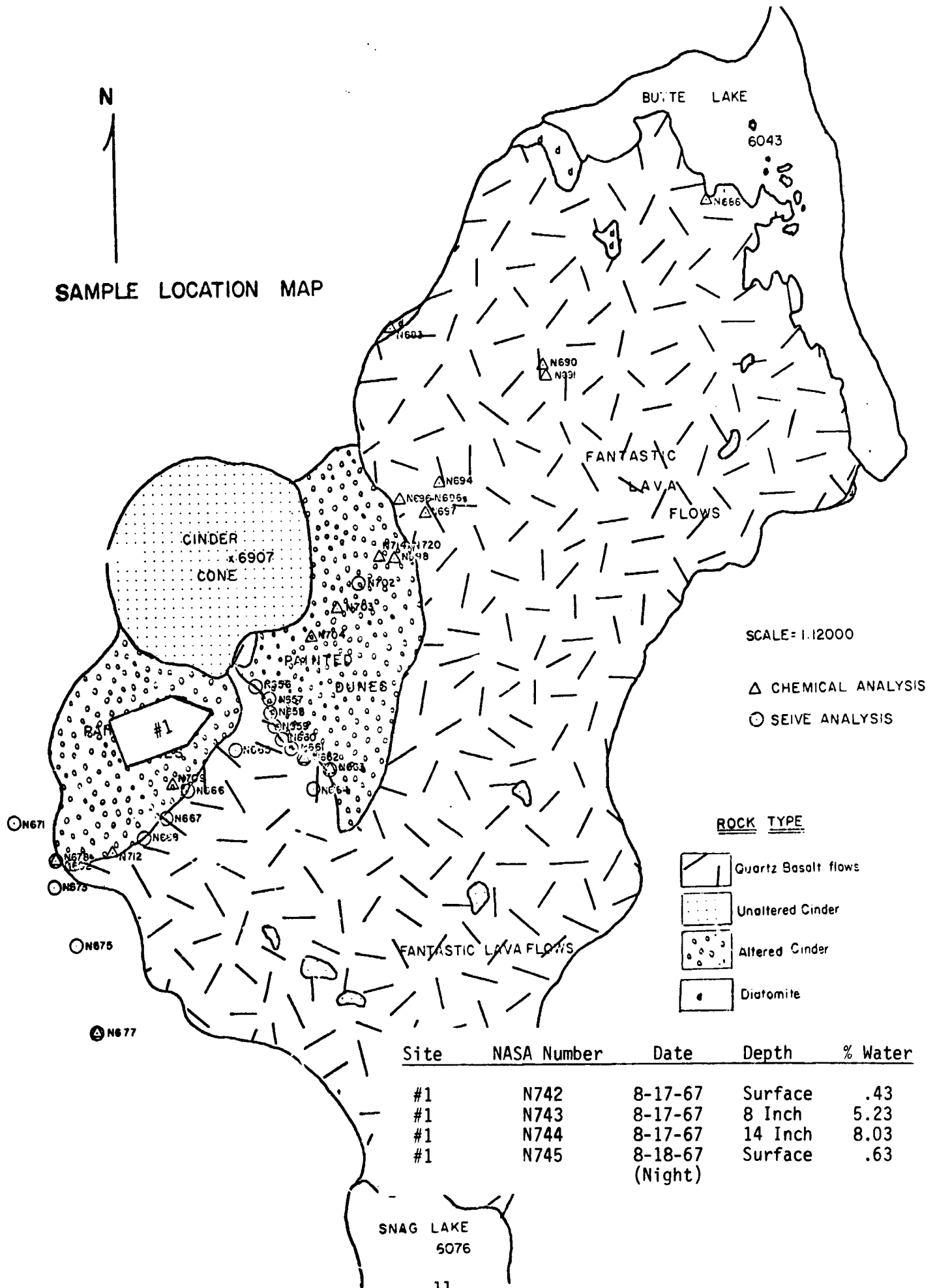
Radiometer Targets

<u>Time</u>	<u>Flight Number</u>	<u>Basalt Sunlit Slope</u>	<u>Basalt Shadow Slope</u>	<u>Water</u>	<u>Vegetation</u>
03:00	-	58° F.	68° F.	68° F.	60° F.
03:15	-	60	68	68	60
03:30	-	58	66	68	58
03:35	-	60	66	68	60
03:40	-	58	66	68	62
03:45	-	62	68	68	60
03:50	-	58	66	68	60
03:55	-	58	64	68	58
04:00	-	60	64	68	58
04:05	-	60	60	68	58
04:15	-	58	58	66	54
04:20	1	56	56	66	56
04:25	-	58	60	66	58
04:30	-	58	60	66	58
04:35	2	56	60	64	56
04:50	3	54	57	62	54
04:55	*	*	*	*	*
05:00	*	*	*	*	*
05:05	4	*	*	*	*

* Lost power.

N

SAMPLE LOCATION MAP







SCALE= 1:12000

△ CHEMICAL ANALYSIS

○ SEIVE ANALYSIS

ROCK TYPE

-  Quartz Basalt flows
-  Unaltered Cinder
-  Altered Cinder
-  Diatomite

Site	NASA Number	Date	Depth	% Water
#1	N742	8-17-67	Surface	.43
#1	N743	8-17-67	8 Inch	5.23
#1	N744	8-17-67	14 Inch	8.03
#1	N745	8-18-67	Surface	.63
		(Night)		

SNAG LAKE
5076

Mt. Lassen -- Site #56
 Base Weather Station
 August 17, 1967

Time	Air Temperature		Relative Humidity	Mixing Ratio (gm/kilogram)	Clouds
	°F	°C			
10:25	76.6	25.9	22%	5.8	None
10:50	79.8	26.4	22%	6.0	None
11:10	77.2	25.1	22%	6.0	None
11:40	81.2	26.2	22%	5.9	Few ACSL
12:10	80.0	26.5	21%	6.8	Few ACSL
12:30	82.4	28.0	21%	6.4	Few ACSL - Few Cu
12:45	78.0	25.4	30%	7.8	1 ACSL Few Cu
13:10	80.4	27.0	22%	6.1	Few ACSL 1 Cu
13:35	79.8	26.4	21%	7.2	Cu penetrating ACSL
13:45	83.0	27.2	25%	7.0	2 Cu ACSL around tops
14:35	83.6	28.8	23%	7.4	2 Cu
14:35	Barometer 24.158 inches - 818.0 Mb				Cu and ACSL dissipating slowly.

Mt. Lassen -- Site #56
 Base Weather Station
 August 18, 1967

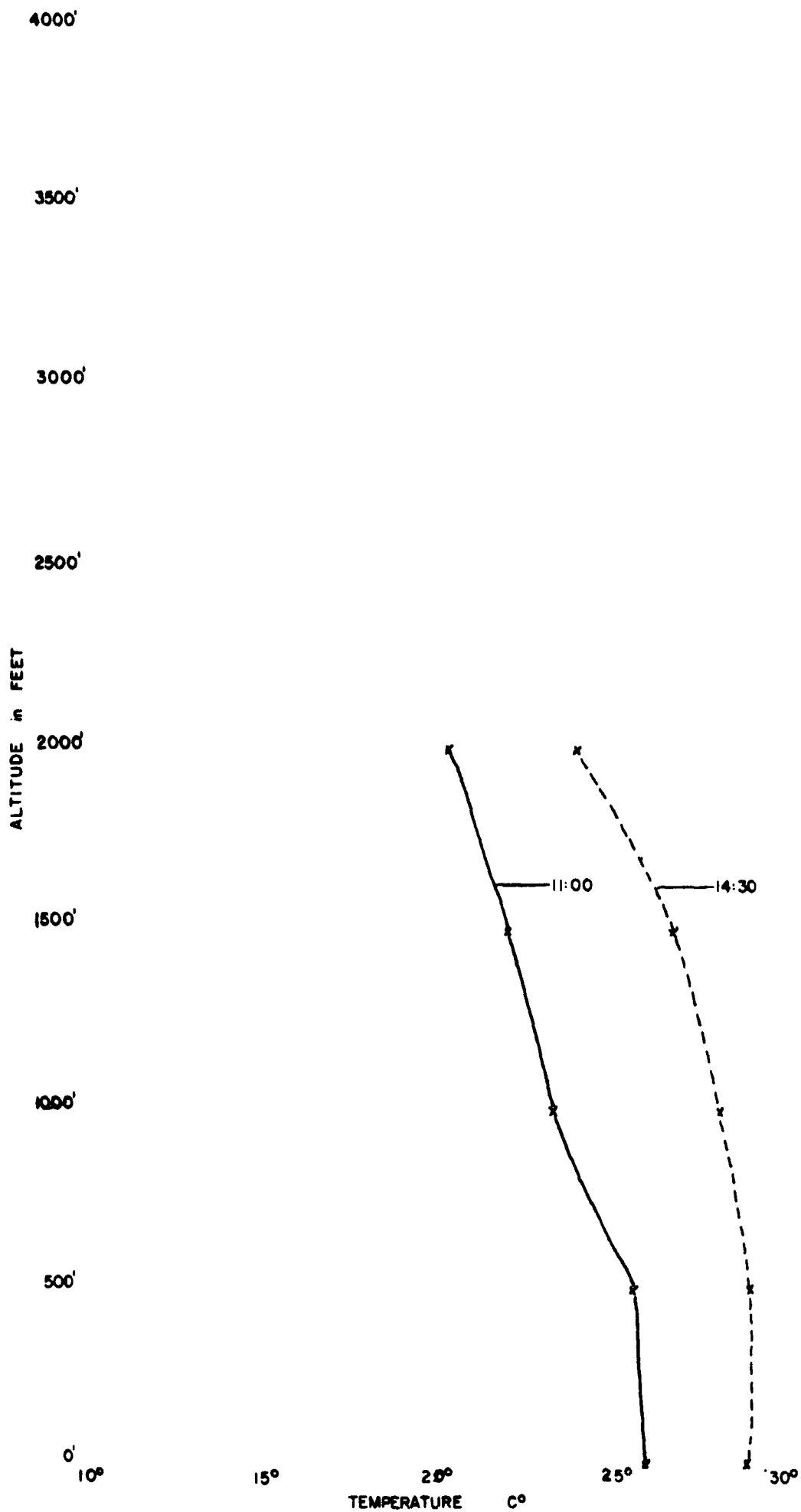
Time	Air Temperature		Relative Humidity	Mixing Ratio (gm/kilogram)	Clouds
	°F	°C			
02:45	48.6	9.2	59%	5.3	Few AC
03:45	48.0	9.0	60%	5.3	Few AC
03:45	Barometer 24.150 inches - 817.9 Mb				
04:25	45.7	7.5	75%	6.0	None
04:50	45.3	7.3	76%	6.0	None
05:20	45.0	7.1	72%	5.6	None

VERTICAL
TEMPERATURE PROFILE

Mt. Lassen - Site 56

August 17, 1967

Base Elevation 6300'



SITE 56 DATE 17 67 TIME 10.00 ALTITUDE 6300 FEET BAROMETER 26.00 IN. HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	78.6	25.9	6.30	96.12
500.	152.	77.9	25.5	3.81	910.78
1000.	304.	73.5	23.1	3.25	1406.46
1500.	457.	71.2	21.8	3.41	1926.54
2000.	609.	68.1	20.1	2.98	2153.72

SITE 56 DATE 17 67 TIME 14.30 ALTITUDE 6300 FEET BAROMETER 26.00 IN. HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	83.8	28.8	5.09	77.60
500.	152.	83.8	28.8	4.80	1102.06
1000.	304.	82.2	27.9	4.81	1835.66
1500.	457.	79.5	26.4	4.39	2505.40
2000.	609.	74.6	23.7	4.28	2831.55

Sonora Pass -- Site #19
 Blackhawk Mtn.
 September 6, 1967

Time	Flight Number	Radiometer Targets						Weather Data			
		Andesite	Granite North	Granite South	Granite East	Granite West	Snow	Air Temperature	Relative Humidity	Wind	Cloud Cover
10:50		76°F			60		42°F	32°F	54%	Gust 20	Alto-cum.
10:56		70		52			40				
10:59		72			67		23				
11:05	X	66	64				40				
11:10	X	72		51			34				
11:14	X	74			52		28				
11:18	X							54°F	51%		
11:20											
11:22	X	77		54			29				
11:27	X	62				55	32				
11:31	X	70	66				29				
11:35	X	76				55	30				
11:38	X	70				68	30				
11:40	X	74	66				37				
11:43	X	80			54		29				
11:46	X	76		52		57	30				
11:49	X	72					32				
11:51	X	74	60				30				
11:54	X	75			68		30				
11:55	X	78		65			30				
11:57								52°F	59%		
13:07	X	72						52°F	59%		
13:09		74				52	30				
13:10	X	75	63				32				
13:12	X	85			67		32				
13:15	X	74		55			32				
13:17		78									
13:19		73				68	30				

Sonora Pass -- Site #19
Brown Bear Pass
September 6, 1967

Time	Flight Number	Radiometer Targets				Almor		Weather Data				
		Basalt Brown	Basalt Gray	Snow	Sky	Cloud	Air Temp.	Relative Humidity	Basalt Brown	Basalt Gray	Wind	Cloud Cover
<u>Water-Snow Site:</u>												
10:47				27°F	<10°F	16°F	60°F	Snow 32°F	53°F		0.5 South	30%
10:55		69.5°F		27	<10	10.5					0.5 South	30%
10:57		69.5		Water 54°	<10	26.0	62°	Water 57.5	77.0	80.0	0.5 South	30%
11:10		78.0									0.5 South	30%
<u>Weather Site:</u>												
<u>Granite</u>												
11:36					<10		56.0	44	73	73	5-15 South	50%
11:40		74		30	<10	26	57.0	45	77	77	5-15 South	50%
11:56	21	75		30	<10	28	-	-	77	77	5-15 South	50%
11:59	22	75		29.5	<10	28	-	-	75.5	73.5	5-15 South	60%
12:02	23	72		30	<10	26	57.0	45	-	-	5-15 South	60%
12:05	24	68		30	<10	22	-	-	-	-	5-15 South	60%
12:08	25	74		30	<10	26	-	-	76.5	75.5	10-15 South	60%
12:11	26	75		30	<10	29	-	-	78	77.5	10-15 South	60%
12:14	27	77		29	<10	22	57.0	45	-	-	10-15 South	60%
12:17	28	75		29	<10	12	-	-	-	-	10-15 South	75%
12:20	29	77		30	<10	29	-	-	81	78.5	10-15 South	75%
12:23	30	76		30	<10	22	56.5	45	76.5	74	10-15 South	75%
<u>Water-Snow Site:</u>												
12:45		87		Water 58.5	<10	12			Water 65	78.5	0-5 South	75%
12:50		87		Snow 19.0	<10	-			Snow 32	75.0	0-5 South	75%
<u>Weather Site:</u>												
13:19	51	72.5		32	<10	30	59.0	45	-	-	5-10 South	75%
13:22	52	88		32	<10	30	-	-	73	72	5-10 South	75%
13:25	53	90.5		32	<10	32	-	-	-	-	5-10 South	75%
13:28	54	94		33	<10	30	-	-	79	78	5-10 South	75%
13:30	55	95		33	<10	30	-	-	81	78	5-10 South	75%
13:40		98		35	<10	38	62.5	39.5	83.5	81	5-10 South	75%
*13:57	1	98		36	<10	42	60.0	43	82.3	78.5	5-10 South	75%
<u>Water-Snow Site:</u>												
14:08				Water 80	<10	44			Water 71.0	85.5	0-5 South	80%
14:10				Snow 40	<10	44			Snow 32.5	83.5	0-5 South	80%

*Main Flight Line

Sonora Pass -- Site #19
 Brown Bear Pass
 September 6, 1967

Time	Weather Data		Sol-A-Meter	Spectral Intensity Readings						
	Relative Humidity	Air Temperature		860	950	1050	1150	1250	1400	1550
11:30	44	56°F	1.0	42.5	29.4	30.8	13.9	24.3	1.3	21.4
11:45	45	57	1.0	38.7	25.8	29.9	13.3	22.9	1.2	20.6
12:00	45	57	1.0	48.5	28.4	32.6	13.9	23.6	1.1	20.5
12:15	45	57	1.0	34.5	21.5	27.0	11.3	19.4	0.9	17.2
12:30	45	56.5	1.0	23.7	16.5	19.5	8.0	15.5	0.7	13.4
13:10	45	59	1.0	41.5	23.8	28.3	11.5	17.0	.7	20.5
13:35	39.5	62.5	1.0	44.0	27.7	32.0	13.7	23.4	1.2	21.2
13:50	43	60	1.0						.9	21.9

Sonora Pass -- Site #19
 Grizzly Peak
 September 6, 1967

Time	Flight Number	Radiometer Targets (8u - 14u)					Weather Data			
		Andesite	Gross	Rhyolite	Lower Rhyolite	Scrub Pine	Air Temperature	Relative Humidity	Wind	Cloud Cover
11:00		71°F	62	70	64		52°F	62%	M. Gusty 20-30	Sparce
11:38		72	65	70	65		54°	77%	M. Gusty 20-30	Sparce
11:59		72	63	71	67		54°	82%	Gusty	Sparce
12:10		68	62	65	66		52°	76%	Gusty	Sparce
12:20		67	61	67	65		53°	76%	Gusty	Sparce
	71	67	61	67	65	64	54°	66%	Gusty 15-20	Cl. Shdw. 40% Cl. Shdw.
	72	66	61	65	65	63			Gusty	40% Cl. Shdw.
	73	66	60	66	65	61	53°	65%	Gusty	Sparce
	74	68	62	68	66	62			Gusty	Sparce
	75	67	59	65	65	58	54°	61%	Gusty	High Shdw.
	76	64	58	63	61	56			Gusty	60% Cl. Shdw.
	77	64	57	63	61	57	52°	65%	Gusty	Lt. Shdw.
	78	64	57	61	61	57			Gusty	Lt. Shdw.
	79	68	61	65	65	63	56°	67%	Gusty 10-15	Dull Sun
	80	68	62	67	67	64			Gusty 15-20	Dull Sun
13:17		66	60	61	65	60	52°	70%	Gusty 10-15	50% Cl. Shdw
	81	64	58	61	62	57	53°	71%	Gusty 10-15	Dull Sun
	82	63	59	61	62	57			Gusty 10-15	50% Lt. Shdw

Sonora Pass -- Site #19
 Grizzly Peak
 September 6, 1967

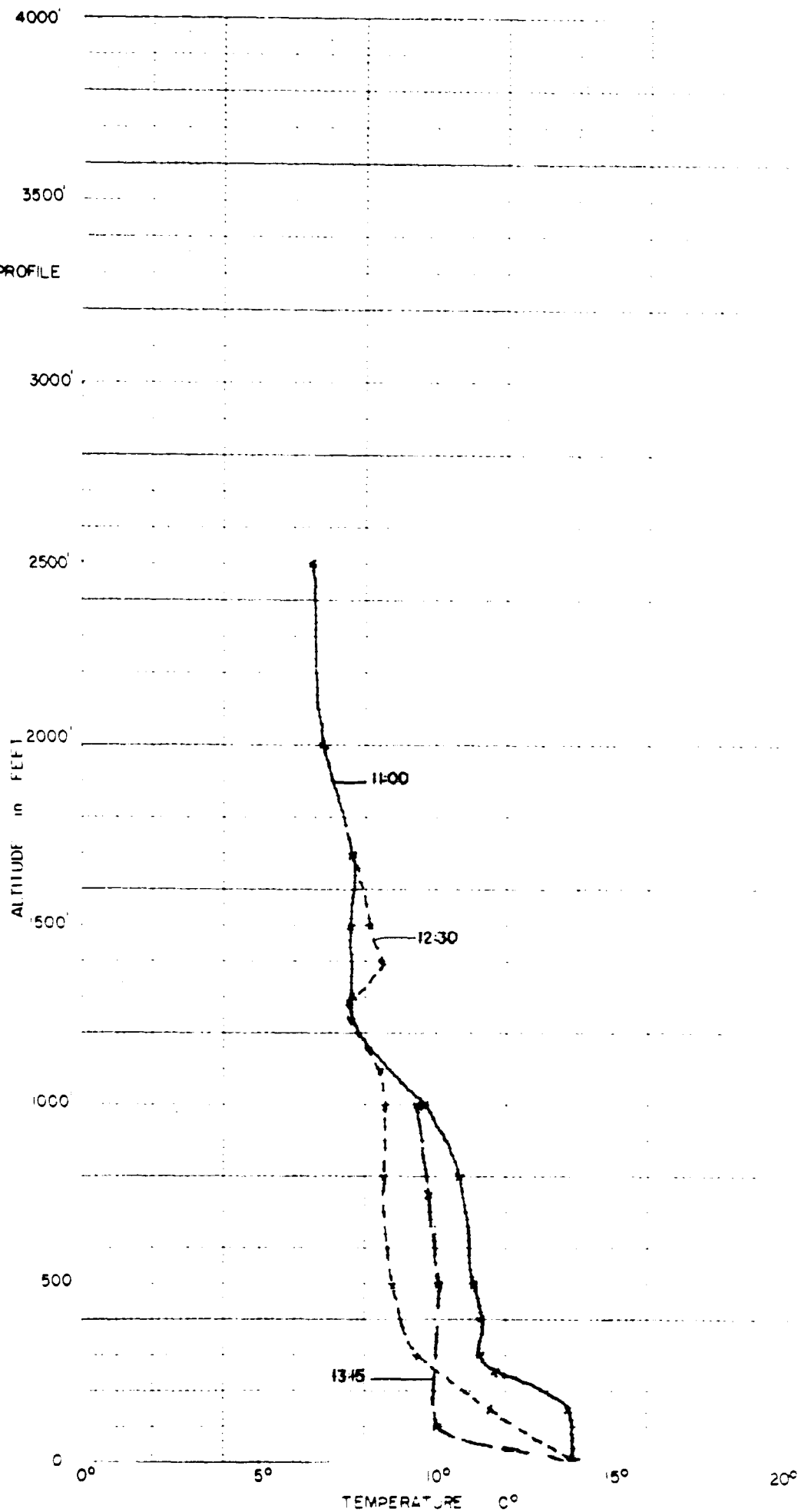
<u>Time</u>	<u>Flight Number</u>	<u>Radiometer Targets (8u - 14u)</u>					<u>Weather Data</u>			
		<u>Andesite</u>	<u>Gross</u>	<u>Rhyolite</u>	<u>Lower Rhyolite</u>	<u>Scrub Pine</u>	<u>Air Temperature</u>	<u>Relative Humidity</u>	<u>Wind</u>	<u>Cloud Cover</u>
	83	67°F	64	64	68	65	54°F	71%	Gusty 5-10	Full Sun 50% Lt. Shdw.
	84	65	63	63	67	63			Gusty 0-5	
	85	68	66	65	70	57	54°	66%	Gusty 0-10	Full Sun 50% Lt. Shdw.
13:59		65	59	63	64	59	54°	66%	Gusty 0-10	

VERTICAL TEMPERATURE PROFILE

Sonora Pass - Site 19

September 6, 1967

Base Elevation 9900'



SITE 19 DATE 9 6 67 TIME 11.00 ALTITUDE 9900 FEET BAROMETER 24.00IN.HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	57.0	13.9	5.73	87.32
150.	45.	55.7	13.2	4.34	351.98
250.	76.	53.0	11.7	4.07	445.23
300.	91.	52.3	11.3	3.94	535.37
400.	121.	52.3	11.3	3.80	651.26
500.	152.	51.9	11.1	3.66	874.60
800.	243.	51.2	10.7	3.95	1175.59
1000.	304.	49.4	9.7	4.38	1442.96
1200.	365.	46.0	7.8	3.69	1724.81
1500.	457.	45.6	7.6	3.70	2006.82
1700.	518.	45.6	7.6	4.41	2343.07
2000.	609.	44.2	6.8	3.99	2830.12
2500.	762.	43.7	6.5	4.28	3156.56

SITE 19 DATE 9 6 67 TIME 12.30 ALTITUDE 9900 FEET BAROMETER 24.00IN.HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	57.0	13.9	7.26	110.75
150.	45.	52.8	11.6	4.64	358.42
300.	91.	49.1	9.5	3.82	562.30
500.	152.	47.8	8.8	3.97	864.96
800.	243.	47.3	8.5	3.97	1167.88
1000.	304.	47.4	8.6	3.69	1336.60
1100.	335.	47.3	8.5	3.83	1511.86
1300.	396.	45.8	7.7	3.98	1694.03
1400.	426.	47.3	8.5	4.11	1819.52
1500.	457.	46.5	8.1	3.83	1994.99
1700.	518.	45.6	7.6	4.12	2120.81

SITE 19 DATE 9 6 67 TIME 13.15 ALTITUDE 9900 FEET BAROMETER 24.00IN.HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	57.3	14.1	5.44	83.01
100.	30.	50.1	10.1	4.23	406.07
500.	152.	50.1	10.1	4.38	840.04
750.	228.	49.6	9.8	4.24	1073.41
1000.	304.	49.1	9.5	4.24	1235.21

Sonora Pass -- Site #19
 Blackhawk Mtn.
 September 9, 1967

Radiometer Targets Distance 200 ft.

Weather Data

<u>Time</u>	<u>Flight Number</u>	<u>Andesite Outcrop</u>	<u>Andesite Soil</u>	<u>Granite</u>	<u>Snow</u>	<u>Sky</u>	<u>Air Temperature</u>	<u>Relative Humidity</u>	<u>Wind</u>	<u>Cloud Cover</u>
8:40							40°F	81%	Gust 15	95%
9:10							40°F	81%	Gust 15	95%
9:45	X	48°F	48°F	45°F	32°F	<10°F	42°F	78%	Gust 10	95%
9:50	X	48	48	45	32	<10			Gust 8	95%
9:55	X	50	50	47	32	<10			Gust 7	95%
10:00	X	50	51	47	32	<10			Gust 5	95%
10:05	X	50	51	48	32	<10			Gust 5	95%
10:10	X	48	53	48	32	<10	43°F	78%	0	95%
10:15	X	50	53	48	32	<10	47°F	67%	0	Sunny Patches
10:20	X	50	58	50	32	<20	45°F	66%	Gust 1-2	Sunny Patches
10:25	X	51	57	50	32	<10			Gust 1-2	Cloudy
10:30	X	50	54	49	32	<10	43°F	78%	Gust 1-2	Cloudy
10:35	X	50	55	50	32	<10	44°F	71%	Gust 1-2	Cloudy
10:40		50	55	52	32	<10	44°F	79%	Gust 1-2	Cloudy

Sonora Pass -- Site #19
 Brown Bear Pass
 September 9, 1967

Radiometer Targets										Alnor			Weather Data		
Time	Flight Number	Basalt	Andesite	Soil	Granite (near)	Snow	Clouds (low)	Clouds (high)	Granite (~10,000 ft.)	Andesite (~10,000 ft.)	Basalt	Andesite	Soil	Wind	Cloud Cover
10:09		52.5°F	54°F	52°F	50°F	30°F	26°F	<10°F	47°F	-	54.5	53.5	58.0	3 SW	99%
10:37		50	52	55	-	-	-	-	-	-	-	-	-	3 SW	95%
10:48		54.5	57	60	52	30	<10	<10	56	55	53	52	55		
11:15		57	56	60	52	32	<10	<10	56	58	60.5	58	60.5		
11:20	1	57	58	58	54	32	12	<10	52	56	60.5	59	-		
11:23	2	56	57	58	53	32	<10	<10	50	54	-	-	-		
11:26	3	56	57	58	54	32	<10	<10	50	54	59.5	59	59		
11:28	4	57	52	57	54	32	-	<10	-	-	-	-	-		
11:31	5	57	57	-	-	-	-	<10	-	-	56	57	58.5	5	90%
11:33	6	57	57	-	54	32	-	<10	50	52	56	57	58.2	2	85%
11:35	7	57	56	58	-	-	-	<10	-	-	60	58.5	57		80%
11:37	8	57	56	58	-	-	-	<10	-	-	-	-	-		
11:40	9	57	57	57	55	34	<10	<10	53	56	60.5	59.5	59		
11:42	10	57	57	57	54	34	<10	<10	54	58	60	59	58		
11:45	11	58	57	57	53	34	14	<10	54	59	60	59	58		75%
11:48	12	58	58	59	52	34	<10	<10	53	59	60	59	58		
11:51	13	59	58	60	51	34	<10	<10	53	59	60	59	57		
11:54	14	57	57	59	54	37	15	<10	60	61	62	64.5	58		Slight Su
11:57	15	57	57	59	-	-	-	<10	-	-	-	-	-	3	60%
12:02	16	62	62	57	59	34	11	<10	56	62	64	62.5	59		Slight Su
12:09	17	74	75	78	62	34	40	<10	72	72	73	74	84		Sun

*Water-Snow Site
 10:05

52.5(Water 47.5° ,Snow 32°F)

99%

Sonora Pass -- Site #19
 Brown Bear Pass
 September 9, 1967

<u>Time</u>	<u>Weather Data</u>		<u>Spectral Intensity Readings</u>							
	<u>Relative Humidity</u>	<u>Air Temperature</u>	<u>Sol-A-Meter</u>	<u>860</u>	<u>950</u>	<u>1050</u>	<u>1150</u>	<u>1250</u>	<u>1400</u>	<u>1550</u>
08:35	77.0	43.0°F	1.0	7.0	4.5	4.9	2.1	3.4	.2	2.4
08:55	74.0	44.5	1.0	10.4	6.3	7.7	2.9	4.7	.2	3.2
09:45	68.5	46.5	1.0	13.8	8.5	9.9	4.5	7.7	.5	6.4
10:00	72.0	46.0	1.0	20.5	12.5	17.6	7.4	15.3	.6	14.2
10:15	68.5	46.5	1.0	12.2	6.8	9.6	3.5	6.2	.3	4.5
10:30	61.0	49.0	1.0	15.0	8.7	10.6	4.6	7.7	.4	5.8
11:05	54.5	49.5	1.0							
11:30	48.0	49.0	1.0							

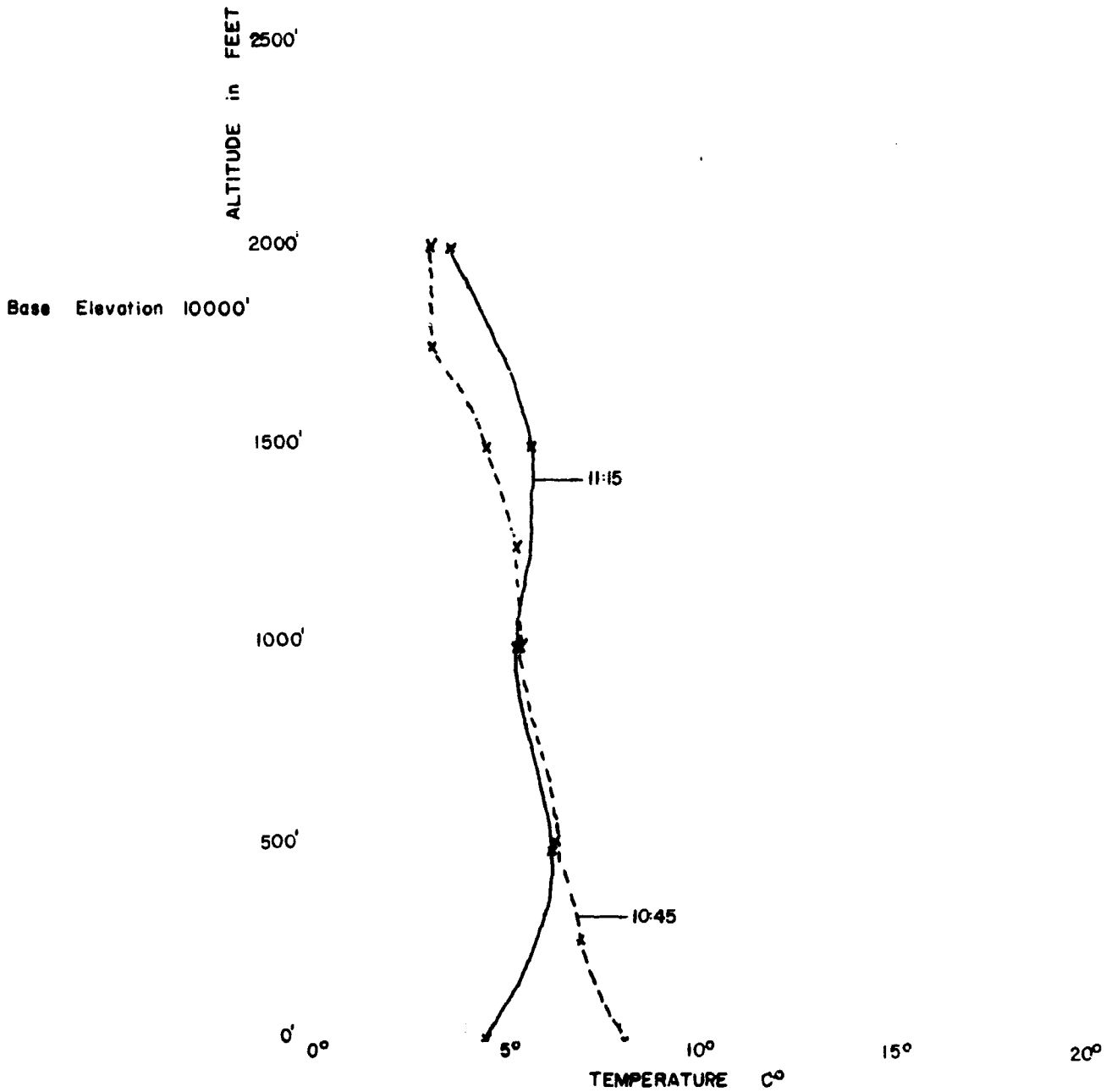
Sonora Pass -- Site #19
 Grizzly Peak
 September 9, 1967

Time	Flight Number	Radiometer Targets (8u - 14u)						Weather Data			
		Andesite	Upper Rhyolite	Gross	Lower Rhyolite	Lower Rhyolite	Scrub Pine	Air Temperature	Relative Humidity	Wind	Cloud Cover
10:15		58°F	54°F	52°F	56°F	54°F	54°F			2-5	
10:43		52	51	46	51	51	50				Hazy Sun
10:47	X	53	50	46	47	47	48			5-10 Gust 15	
10:49	3	54	51	48	51	49	51				
10:52	4	53	52	48	54	50	52				
10:54	5	55	52	49	54	52	52				
11:02	8	52	51	47	52	50	50	44°	70%		
11:04	9	53	52	48	52	49	51				
11:07	10	56	54	51	57	50	54	45°	71%	5-10	V. Hazy Sun
11:10	11	58	56	52	57	54	55				
11:13	12	62	60	55	60	57	60				
11:16	13	59	56	52	58	54	54	46°	71%		V. Hazy Sun
11:18	14	60	58	53	58	52	56				
11:21	15	59	58	54	57	55	54	46°	67%		
11:27		60	59	56	60	57	57	45°	70%		

VERTICAL
TEMPERATURE PROFILE

Sonora Pass - Site 19

September 9, 1967 3000'



SITE 19 DATE 9 9 67 TIME 10.45 ALTITUDE 10000 FEET BAROMETER 24.00IN.HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	46.5	8.1	6.82	103.97
250.	76.	44.6	7.0	5.98	697.23
500.	152.	43.3	6.3	3.85	1138.16
1000.	304.	41.7	5.4	3.15	1492.37
1250.	381.	41.5	5.3	2.43	1683.99
1500.	457.	40.1	4.5	2.15	1848.15
1750.	533.	37.5	3.1	2.59	2045.92
2000.	609.	37.5	3.1	2.59	2144.81

SITE 19 DATE 9 9 67 TIME 11.15 ALTITUDE 10000 FEET BAROMETER 24.00IN.HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	40.2	4.6	3.73	56.89
500.	152.	43.3	6.3	4.00	910.45
1000.	304.	41.7	5.4	2.72	1325.24
1500.	457.	42.0	5.6	2.57	1521.61
2000.	609.	38.6	3.7	2.59	1719.04

Mono Craters -- Site #3
 Conway Summit
 September 8, 1967

Time	Flight Number	Radiometer Targets						Weather Data				
		Andesite Distance	Andesite Close	Granite Close	Gross Close	Granite Distance	Gross and Granite Distance	Sage	Air Temp.	Relative Humidity	Wind	Cloud Cover
10:40	-	-	76°F	92°F	-	-	-	-	68° F.	53%	-	-
11:25	-	64°F	76°F	92°F	107°F	82°F	80°F	70°F	74°	33%	5	5%
11:35	-	62	76	90	104	80	80	70	-	-	-	-
11:47	-	64	78	93	108	80	78	71	-	-	-	-
11:50	-	64	80	96	110+	80	74	72	69°	31%	2-10	8%
12:05	-	65	82	94	110+	81	80	72	-	-	-	-
12:15	-	66	86	92	110+	82	80	72	-	-	-	-
12:24	-	68	84	93	110+	82	80	74	-	-	-	-
12:32	-	70	88	94	110+	80	79	73	-	-	-	-
12:37	-	70	90	94	110+	81	86	78	72°	24%	-	20% First Cl. Overhead.
13:00	-	72	95	95	110+	81	85	73	73°	24%	-	20%
13:12	X	70	95	94	110+	83	82	75	-	-	-	½ Cloud
13:16	X	71	90	90	100	80	78	70	-	-	-	¾ Cloud
13:19	2	70	88	87	94	79	76	-	-	-	-	-
13:21	3	70	86	87	91	78	75	66	-	-	-	¾ Cloud
13:26	4	71	90	90	101	87	81	72	-	-	-	1/8 Cloud
13:30	5	74	96	90	110	81	88	78	75°	22%	-	Sun
13:33	6	75	98	92	110+	82	82	80	-	-	-	1/4 Cloud
13:37	7	74	94	88	103	80	80	75	-	-	-	Sun
13:40	8	76	98	92	110+	78	76	78	-	-	-	1/2 Cloud
13:44	9	77	94	88	97	80	83	76	71°	25%	-	2/3 Cloud
13:46	-	-	-	-	-	-	-	-	-	-	-	-
13:48	10	76	92	88	94	80	79	71	-	-	-	Cloud
13:52	11	75	92	88	92	81	80	75	-	-	-	½ Cloud Cover'
13:55	12	78	98	92	96	83	82	78	-	-	-	-
13:59	13	79	92	91	96	83	85	77	-	-	-	½ Cloud Cover
14:04	14	83	98	92	102	86	90	78	71°	25%	-	½ Cloud
14:07	15	85	101	94	110	89	89	82	-	-	-	1/3 Cloud

Mono Craters -- Site #3
 Paoha Island
 September 8, 1967

Time	Flight Number	Radiometer Targets										Alnor		Wind	Cloud Cover
		Basalt	Basalt Soil	Lake	Cloud	Diatomite	Sage	Basalt	Basalt Soil						
* 10:03	-	106° F.	91° F.	58° F.	-	88° F.	-	-	-	-	93° F.	93° F.	2	5%	
10:20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11:03	-	86	108	65	-	76	-	-	-	-	91.5	91.5	-	- Sun+Cumulus	
11:20	-	93	98	64	-	95	-	-	-	-	100.5	100.5	-	- "	
11:30	-	93	106	66	34	96	76	-	-	-	104.0	104.0	7 NE	10%	
11:50	-	96	108	57	-	96	78	-	-	-	106.5	106.5	5 NE	15%	
12:00	11	100	110	54	-	-	-	-	-	-	-	-	-	10%	
12:03	12	102	114	68	36	98	-	-	-	-	-	-	-	20%	
12:06	13	98	110	70	40	-	79	-	-	-	-	-	-	20%	
12:09	14	96	109	-	-	-	78	-	-	-	-	-	7 NE	20%	
12:12	15	98	115	-	-	-	-	-	-	-	107	107	-	25%	
12:14	16	99	115	-	-	-	-	-	-	-	110.5	110.5	-	25%	
12:17	17	104	114	65	35	95	-	-	-	-	108	108	-	30%	
12:20	18	100	110	65	38	94	83	-	-	-	111.5	111.5	-	30%	
12:23	19	104	115	-	-	-	82	-	-	-	110.5	110.5	-	30%	
12:26	20	104	115	-	-	-	-	-	-	-	108.5	108.5	-	35%	
12:29	21	103	115	-	-	95	-	-	-	-	111	111	-	40%	
12:32	22	104	115	54	-	-	-	-	-	-	110.5	110.5	-	40%	
12:35	23	104	115	55	32	95	70	-	-	-	113.0	113.0	-	40%	
12:38	24	104	115	54	-	-	84	-	-	-	111.5	111.5	-	40%	
12:41	25	104	115	-	-	-	-	-	-	-	114.5	114.5	-	40%	
12:44	26	105	115	-	-	-	-	-	-	-	113.5	113.5	-	40%	
12:48	27	104	114	52	-	-	-	-	-	-	114.0	114.0	-	40%	
12:51	28	103	115	58	31	94	88	-	-	-	-	-	-	40%	
12:55	29	102	115	58	31	94	88	-	-	-	114	114	-	45%	
12:59	30	105	115	52	34	90	85	-	-	-	111.5	111.5	-	45%	
14:16	1	110	110	56	32	82	77	-	-	-	117.0	117.0	7 NW	-	

Mcno Craters -- Site #3
 Paoha Island
 September 8, 1967

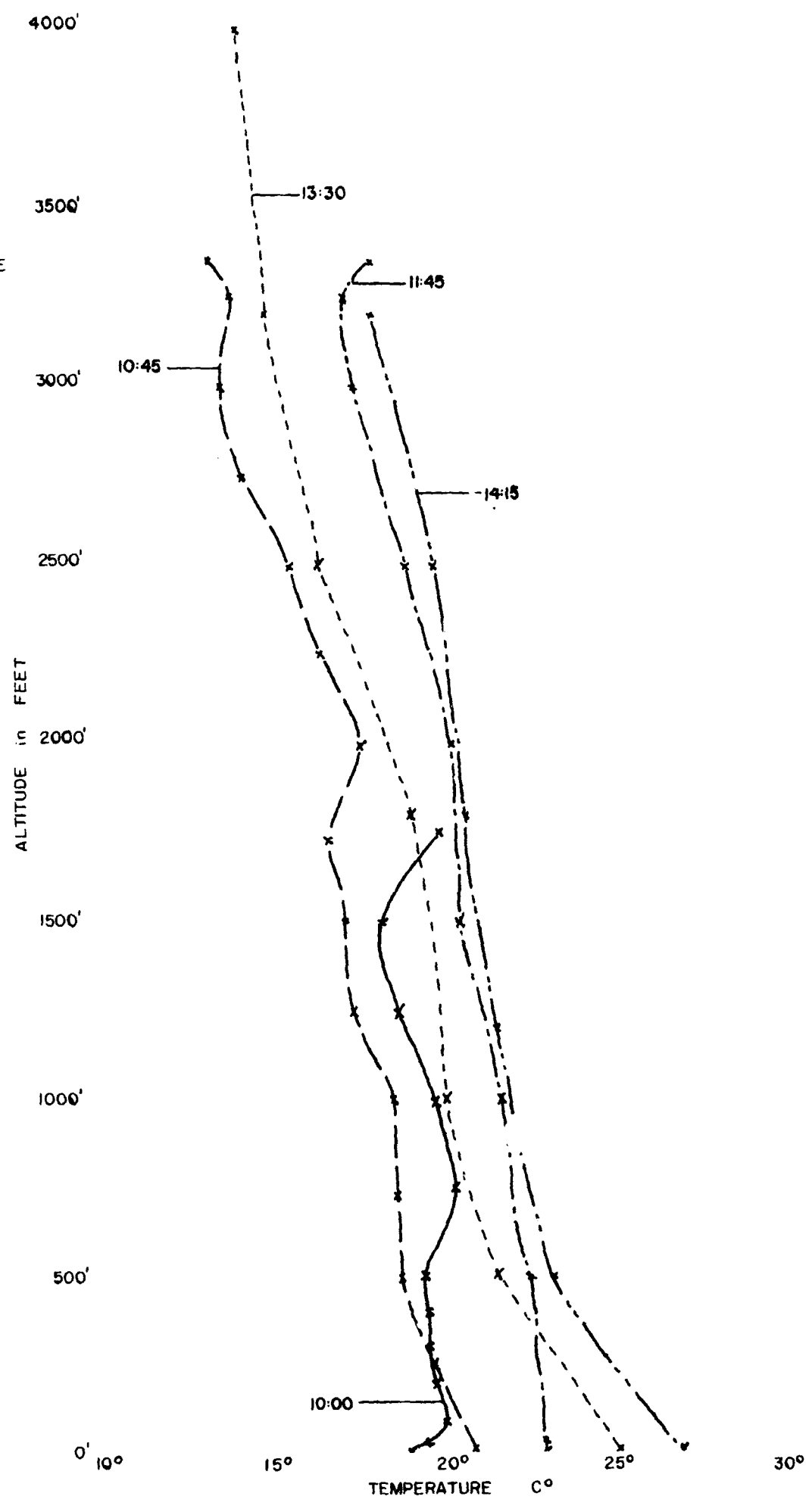
Time	Weather Data			Spectral Intensity Readings						
	Relative Humidity	Air Temperature	Sol-A-Meter	860	950	1050	1150	1250	1400	1550
11:08	34.0	74.0°F	1.0	39.0	14.4	26.9	7.9	19.3	.5	17.5
11:35	24.5	76.5	1.0	36.5	20.5	29.7	9.2	20.5	.4	18.9
11:55	26.0	77.0	1.0	38.0	20.7	29.8	9.2	20.8	.4	19.3
12:10	26.0	77.0	1.0	41.0	27.1	30.0	9.6	21.6	.5	19.7
12:30	23.0	79.0	1.0	41.5	27.7	30.7	10.1	22.0	.5	20.5
12:45	23.0	78.0	1.0	43.5	22.5	30.5	10.5	23.1	.5	20.5
13:00	27.0	75.0	1.0	41.2	23.0	30.5	10.0	21.7	.5	19.9
14:00	24.0	78.0	1.0	38.0	21.5	28.6	9.0	19.2	.5	19.0

VERTICAL
TEMPERATURE PROFILE

Mono Craters - Site 3

September 8, 1967

Base Elevation 6500'



SITE 3 DATE 9 8 67 TIME 10.00 ALTITUDE 6500 FEET BAROMETER 26.00IN.HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	65.4	18.6	11.07	50.64
30.	9.	67.1	19.5	6.71	153.04
100.	30.	68.0	20.0	6.41	319.16
200.	60.	67.2	19.6	6.12	505.70
300.	91.	67.1	19.5	6.12	692.30
400.	121.	67.1	19.5	5.52	860.70
500.	152.	66.9	19.4	5.22	1139.53
750.	228.	68.5	20.3	4.61	1491.48
1000.	304.	67.6	19.8	4.17	1809.80
1250.	381.	65.4	18.6	3.89	2106.36
1500.	457.	64.7	18.2	3.85	2403.24
1750.	533.	67.6	19.8	4.17	2562.40

SITE 3 DATE 9 8 67 TIME 10.45 ALTITUDE 6500 FEET BAROMETER 26.00IN.HG

BALLOON ALTITUDE FEET	ALTITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0.	0.	69.4	20.8	11.60	176.86
250.	76.	67.2	19.6	4.47	620.48
500.	152.	65.8	18.8	4.48	962.47
750.	228.	65.4	18.6	4.19	1281.84
1000.	304.	65.3	18.5	4.19	1601.30
1250.	381.	63.3	17.4	4.05	1910.28
1500.	457.	62.7	17.1	4.20	2230.96
1750.	533.	61.8	16.6	3.76	2517.68
2000.	609.	63.6	17.6	3.90	2815.05
2250.	685.	61.5	16.4	3.76	3101.93
2500.	762.	60.0	15.6	4.07	3412.42
2750.	838.	57.5	14.2	3.33	3666.39
3000.	914.	56.4	13.6	3.33	3920.76
3250.	990.	56.8	13.8	3.79	4209.67
3350.	1021.	55.7	13.2	3.34	4260.60

SITE 3 DATE 9 8 67 TIME 11.45 ALTITUDE 6500 FEET BAROMETER 26.00IN.HG

BALLOON FEET	ALTIITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0	0	73.0	22.8	10.35	47.35
30	9	73.0	22.8	6.65	54.00
500	152	72.3	22.4	5.70	1149.52
1000	304	70.8	21.6	3.56	1692.51
1500	457	68.7	20.4	3.57	2237.30
2000	609	68.1	20.1	3.42	2759.63
2500	762	66.0	18.9	3.58	3306.87
3000	914	63.1	17.3	3.30	3684.61
3250	990	62.7	17.1	3.30	3860.99
3350	1021	64.2	17.9	3.44	3913.56

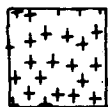
SITE 3 DATE 9 8 67 TIME 13.30 ALTITUDE 6500 FEET BAROMETER 26.00IN.HG

BALLOON FEET	ALTIITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0	0	77.0	25.0	9.41	143.43
500	152	70.7	21.5	4.45	1093.93
1000	304	68.0	20.0	4.02	1491.56
1800	548	66.2	19.0	4.18	2848.63
2500	762	61.3	16.3	3.61	3619.95
3200	975	58.6	14.8	3.93	4518.90
4000	1219	57.2	14.0	3.78	4960.99

SITE 3 DATE 9 8 67 TIME 14.15 ALTITUDE 6500 FEET BAROMETER 25.00IN.HG

BALLOON FEET	ALTIITUDE METERS	AIR TEMPERATURE F	AIR TEMPERATURE C	H2O GM/M	TOTAL CUMULATIVE H2O GM/M
0	0	80.0	26.7	8.34	127.14
500	152	73.4	23.0	3.54	854.30
1000	304	70.5	21.4	3.71	1620.09
1800	548	68.9	20.5	3.67	2503.15
2500	762	67.2	19.5	3.73	3301.37
3200	975	64.2	17.9	3.74	3701.35

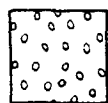
KEY TO ROCK TYPES ON SAMPLING MAPS



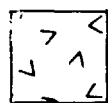
GRANITE OR QUARTZ MONZONITE



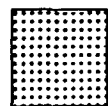
RHYOLITE



ANDESITE



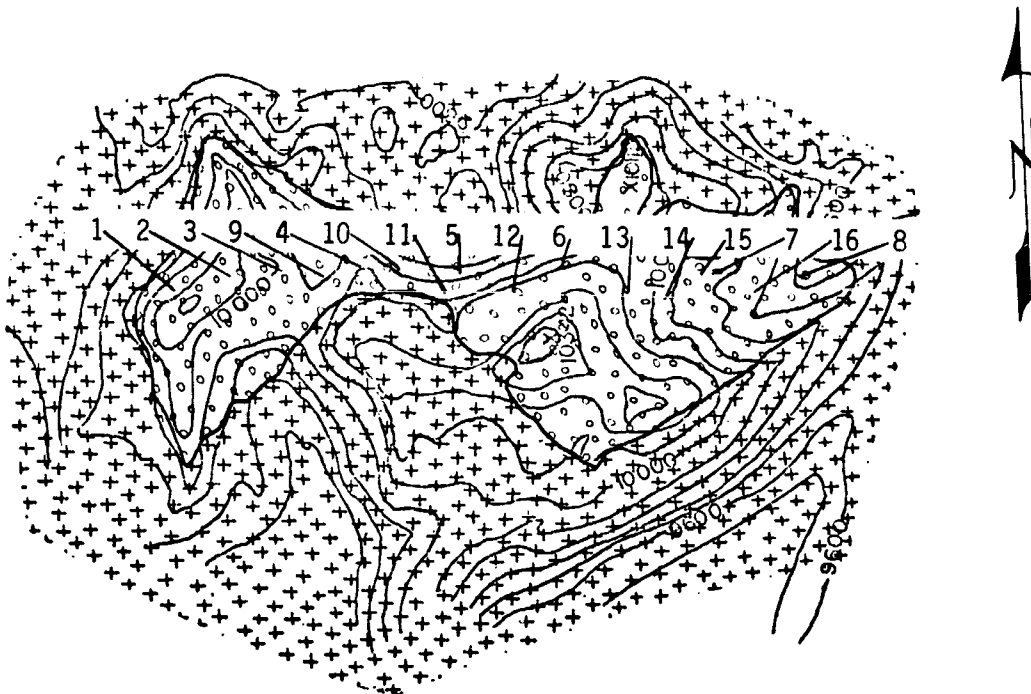
BASALT



GRUSS (DECOMPOSED GRANITE)



DIATOMITE



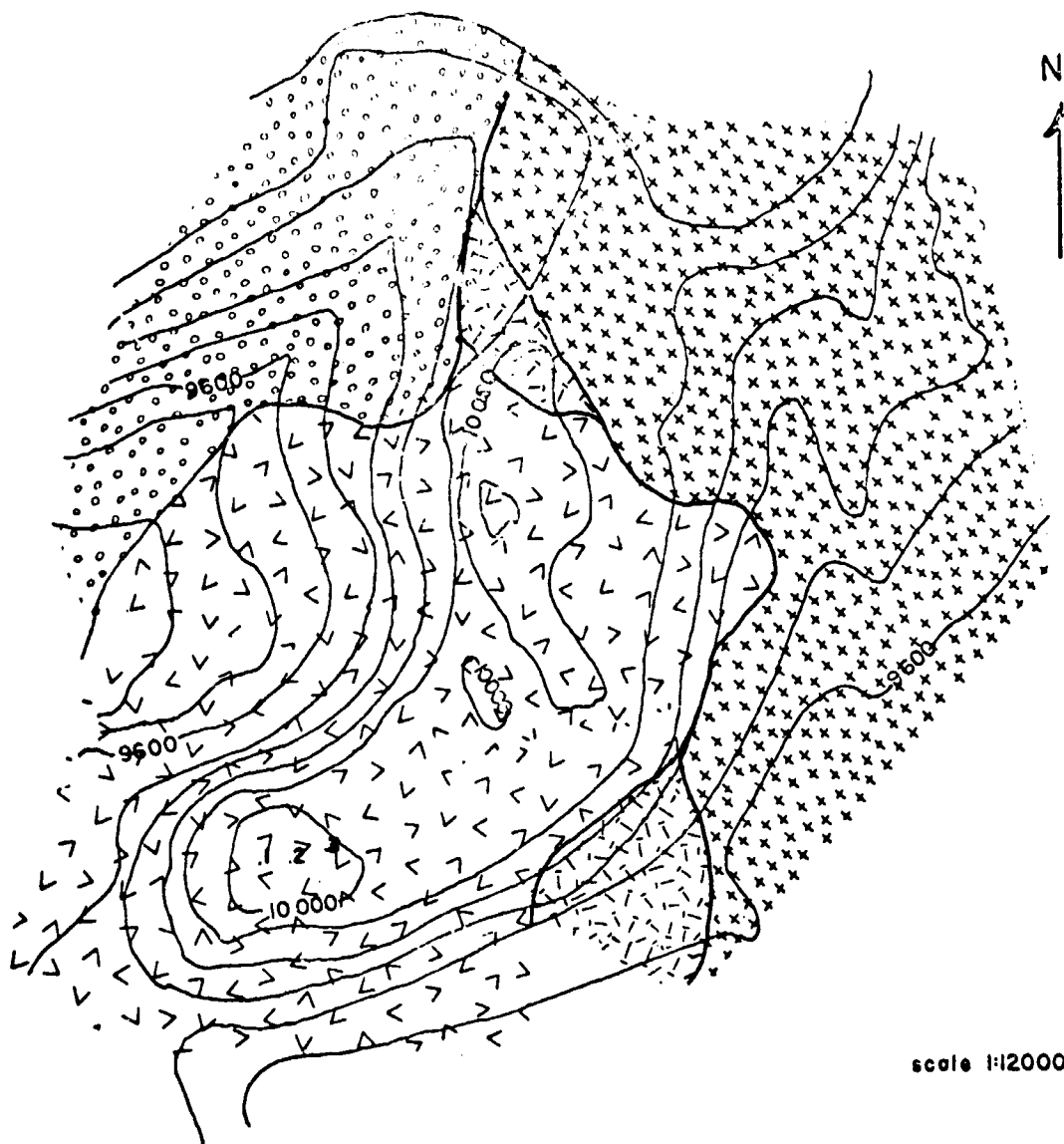
scale 1:24000

SONORA PASS SITE 19 - BLACKHAWK MTN.

MOISTURE CONTENTS*

Sept. 6, 1967			Sept. 9, 1967		
Location No.	NASA No.	%H ₂ O	Location No.	NASA No.	%H ₂ O
1	N871	2.45	9	N879	3.42
2	N872	1.10	10	N880	2.98
3	N873	5.52	11	N881	3.45
4	N874	4.69	12	N882	6.67
5	N875	6.43	13	N883	3.45
6	N876	9.99	14	N884	4.25
7	N877	10.60	15	N885	3.01
8	N878	3.97	16	N886	3.74

*Depth 0-1/2"



SONORA PASS SITE 19 — BROWN BEAR PASS

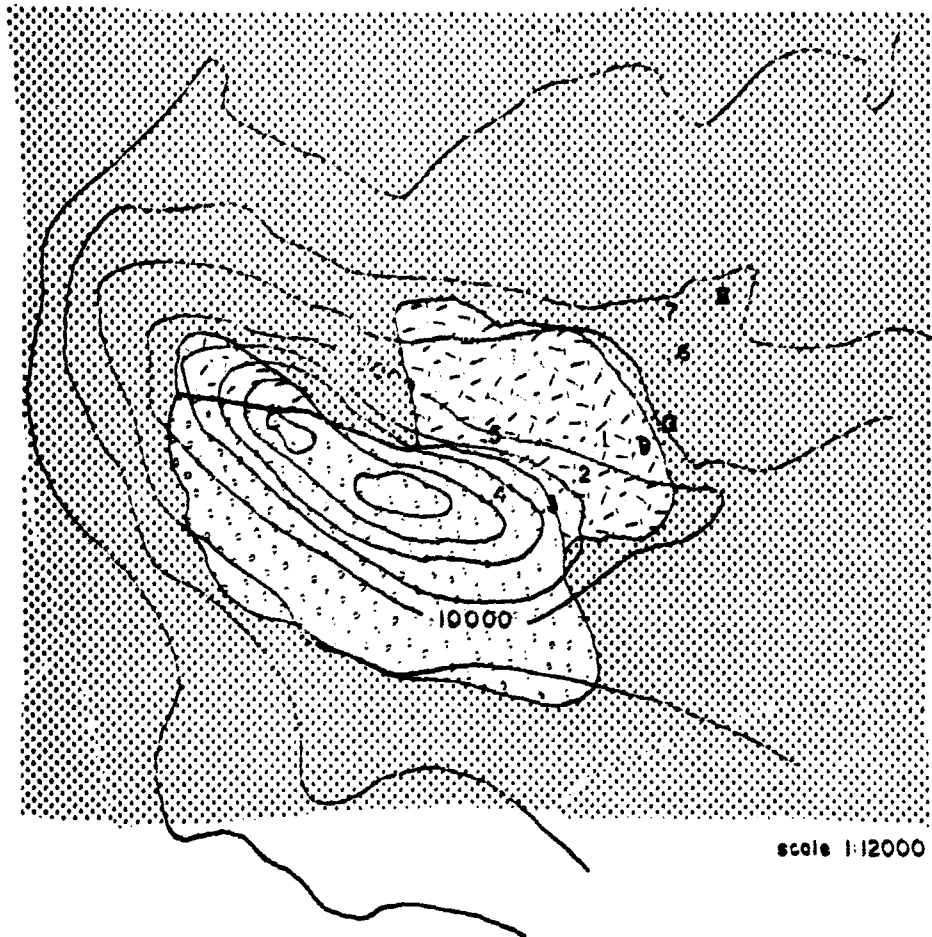
MOISTURE CONTENTS*

Sept. 6, 1967

Sept. 9, 1967

Location No.	NASA No.	%H ₂ O	Location No.	NASA No.	%H ₂ O
		2			
1	N887	10.95	1	N893	12.10
2	N888	11.85	2	N894	16.50
3	N889	13.30	3	N895	16.30
1	N890	14.96			
2	N891	17.70			
3	N892	17.02			

*Depth 0-1/2"



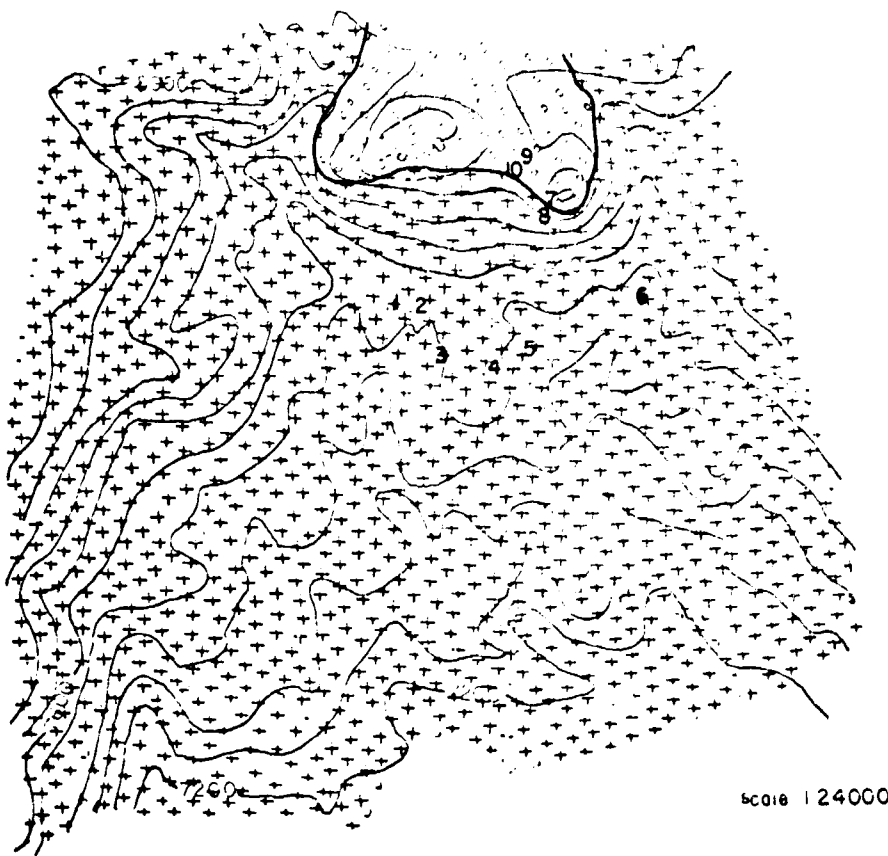
SONORA PASS SITE 19 - GRIZZLY PEAK
 MOISTURE CONTENTS*

Sept. 6, 1967

Sept. 9, 1967

Location No.	NASA No.	ZH ₀ 2	Location No.	NASA No.	ZH ₀ 2
0	N896	3.92	0	N905	4.76
1	N897	6.46	1	N906	2.85
2	N898	8.68	2	N907	6.45
3	N899	6.17	3	N908	5.05
4	N900	4.49	6	N909	1.35
5	N901	13.45	7	N910	2.15
6	N902	.47	8	N911	2.05
7	N903	1.17	9	N912	8.11
8	N904	.99			

*Depth 0-1/2"

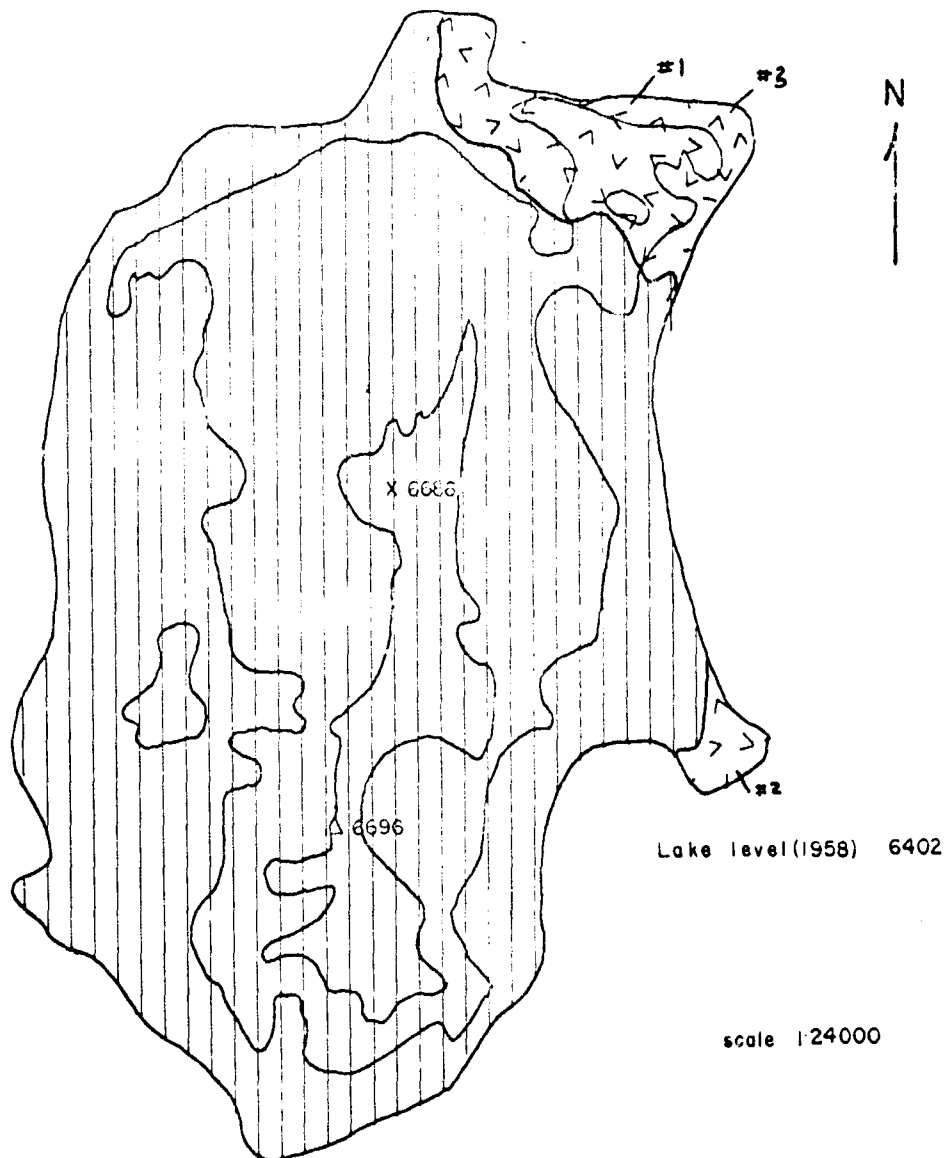


MONO CRATERS SITE 3 - CONWAY SUMMIT

MOISTURE CONTENTS*
Sept 8, 1967

Location No.	NASA No.	%H ₂ O
1	N916	0.44
2	N917	0.58
3	N918	0.06
4	N919	0.24
5	N920	0.12
6	N921	0.19
7	N922	1.63
8	N923	0.45
9	N924	1.40
10	N925	0.41

*Depth 0-1/2"



MONO CRATERS SITE 3 — PAOHA ISLAND

MOISTURE CONTENTS*
 Sept 8, 1967

Location No.	NASA No.	%H ₂ O
1	N913	1.26
2	N914	1.87
3	N915	3.56

*Depth 0-1/2"