Form No. 144 May 2, 1946 FEDERAL-STATE COOPERATIVE SNOW COVER SURVEYS FEDERAL, STATE AND PRIVATE AGENCIES SURVEY NOTES Snow Surveying is completely explained in Miscellaneous Publication No. 380, United States Department of Agriculture. Brief Directions and Suggestions for Snow Cover Sampling (1) The usefulness of snow cover surveying depends primarly on the care and honesty of the men actually doing the field work. (2) The work of the snow cover surveyor is often laborious, especially in stormy weather, and men willing to undertake such work can usually be depended upon to do their best and record the results faithfully. DIRECTIONS FOR USING THE SNOW SAMPLER A. Care of Sampler: (1) In transporting sampler, extreme care should be used to guard it against injury; it can be easily dented. (2) When sampling on steep slopes do not cling to the sampler to avoid sliding down hill; the tube is easily bent. (3) Keep the sampler covered inside and out with a thin coating of shellac or paraffin. The inside coating can be applied by pulling through a swab soaked or wet with shellac. This coating not only prevents corrosion but tends to keep moist snow from adhering to the tube. (4) Since ice and rock sound and feel alike when struck by the sampler, be careful to determine what the substance is; ice will not blunt the cutter, rocks will. (5) Keep the cutter sharp and the orifice true to its original diameter (1½ inches inside in case the Mt. Rose Steel Tube is used; and 1.485 in case the improved Utah Aluminum Tube is used).<sup>2</sup> B. Measuring for Samples: Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Note any irregular spacing between samples. Care should be used in spacing by tape measurements, so that the samples taken different years on the same course will be at the same spots. (1) Plunging the tube should be avoided. In driving, a steady downthrust is preferable to twisting, because with the latter a small amount of snow enters the slots. However, a minimum amount of twisting aids in the driving and also facilitates the quick cutting of the thinner crusts. Plunging should be entirely unnecessary. In case the sampler sticks or freezes down, a light twist will usually release it. (2) The presence of temperatures below 32 degrees F. in the snow, while the temperature of the air is above freezing, often causes the snow to adhere firmly to the orifice of the cutter after a depth of from 10 to 12 feet has been reached. This difficulty can be met in three ways. (a) Withdraw the sampler when cutter becomes clogged and clean cutter and tube thoroughly. Push the tube rapidly through the

snow without stopping until bottom is reached but do not plunge tube. Repeat until a complete core is obtained.8

(b) In case sampling is being done in the forest, keep the sampler

in the shade as much as possible to keep it cold.

(c) The best method of all is to sample when the temperature of the air is at or below freezing, or late in the season when the temperature of the deep snow has risen to 32 degrees F. At these times sampling is easy and rapid.

In some cases, where not too far from a night's lodging, time can be saved by taking the samples in the morning or evening instead of during the warm part of the day.

#### C. Weighing the Sample.

Before taking the sample, place the empty sample tube in the cradle hanging from the scales. If the Mt. Rose scale is used, turn the pointer back to zero. If the standard tubular scale is used, record the weight empty in proper column in field book. When the sample has been taken, place the sampler in the cradle and record the weight for tube and core. For the Mt. Rose scale this reading equals the water content of the snow core. For the standard tubular scale the water content is given by the difference between the reading empty and the reading for tube and core. The zero setting in the case of the Mt. Rose scale, and the "empty" reading for the standard tubular scale should be checked at frequent intervals (not more than 5 measurements).

If dirt is picked up by the cutter it should be cleaned out with knife before weighing the sample, and proper deduction made before recording length of core or depth of snow.

#### D. Recording:

The snow cover survey sheets are made in pads of two sizes, the smaller being white and the larger pink. Only the white waterproof pads are to be used for field notes. The larger pink pads are to be used to make copies from the white field sheets as soon as possible after each survey. Instructions regarding the disposition of the pink copy sheets will be issued for each State and where necessary for each drainage basin, since the needs will require some variation in this respect.

Appropriate covers are to be provided for protection of field notes. Sketch maps showing points of observation are pasted to the inside of the covers.

Use pencil only for recording field measurements. Fill in complete description of course, party, date, etc.

If the depth of core is very much less than the depth of snow, the reason should be determined and noted under "Remarks." In case of doubt regarding the core, determine the density (water content divided by depth gives density) and compare with that of other adjacent measurements about which there is no doubt. "Remarks" should include special items as to the character of snow, nature and condition of soil or other bottom reached by the cutter, whether wet, dry, frozen, etc.

Any extended remarks as to weather conditions at the time of survey or shortly before the survey, unusual difficulties encountered, etc., may be placed on the back of the sheet, as one side only is to be used in recording the snow measurements.

approximately the same throughout a course.

<sup>&</sup>lt;sup>1</sup>Or paraffin.

<sup>2</sup>If the cutter is broken or badly worn, send first tube section with cutter attached to your regional snow survey office for repair or replacement.

<sup>3</sup>A complete core is evidenced when length of core compared to snow depth is

State		al	yar	MI	And y				
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*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks	
	1	21	195	35	48	13			
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1	3	23	17,5	33	47				
0		2 June	and from Lawrence						
	11	23	20	35	50	15			
	5	23	20,5	35	50	15			
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3	6	22,5	13	35	47	12			
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	7	22	185	35	47	19			
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\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

21 175 35 46 13

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

#### COOPERATIVE SNOW SURVEYS

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Snow	Course	Soll	a, S	Min	48	#1			
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1						*			
	4	185	16	36	47	11			
		f							
	5	18	155	36	46	11			
3	1	18	14	36	46	10			
3	7	19	15	31	46	12			
3						7		450	
7	8	20	14	36	45			1-1025	
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†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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Snow Course Soda Springs 0#1
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				3.				
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	16	14	36	45	9		-0,25
	2	17	14	36	44			-0,25
6 3	3	17	14	36	4			-915
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1	4	17	15	36	46	10		-0,15
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3 4	5	18	15	36	4/5	9		-day
3						7		
6	6	18,5	173	34	45			-0.25
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E. Colonial	7	18	14	36	45	a		-0.25
2						OOD!		
2	8	17.5	13,5	36	435	75		as f
						2		

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

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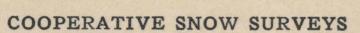
\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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COOPERATIVE SNOW SURVEYS

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*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks			
	1	13	11	35	43	8		-0,25			
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	2	13	10.5	35	43						
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	6	14	11.5	35	43,5	8.5					
		13	12,5	35	44	9		-25			
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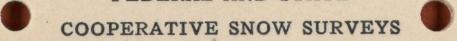
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	3	13	115	35	42	7		
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*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches		Remarks
		16	16,3	35	46	10		
	2	16	18	35	47	12		-1,0
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	905-45 8007 100 <sup>8</sup>	15	17	35	45,5	10		
6	4	17	17	35	47	12		
1								
	1	15	16	35	45.0	100	\$	-1,0
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14	6	15	15	35	45	10		
1	7	15	18	35	455	105		- 2
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\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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	1	12	13	35	45	10		-0,25		
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Party J. J. Golancen											
Date 5-3-46											
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks			
	1	75	75	35	405	5.5		-/0			
	2	200	13	100	495	7.0					
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	3	33	323	-35	525	175		-10			
	4	nu		SALA	retho	A					
	5	14%	145	- 37	44	G		-07			
	6	23	23	35	46	11		-02			
	7	115	10.7	35	4/1	6.5					
	8	38	38	35	55	20					
	9	2/3	21	35	455	10.		- 11			
	10	245	23	35	47	12		-0,7			
	11	21	20	35	45	10		-1,0			
	11)	203	3,9/	1945	1/11	109.	5/10	10/5407			
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Drainage Basin Soluth Forth Yaslea											
Snow Course Lonner Pass											
Party J. J. Johansen											
Date 5-3-46											
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks			
	1	no	A	100		7					
	2	11	105	35	41	1000		Rock			
	24	10	9,5	34	41			Monosia			
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	3	255	25	35	50						
	34	28	275	35"	51						
	4	no	- AA	eon	1						
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No. 1," or "Major Course,"

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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	age Basin	NAM		De Q	RN
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Party	20	Ran	+ Chies	Solly Solly	3My Elm
Date	00	5-2-	· Lib	O.	
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Date		***************************************		200				
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	9	24	17.5	35	47	12		
				3				
	10	18,5	19,5	35	49	14		
	11	24	10	35	48	13		
	12	9	8,5	35	41	6		
	13	21	19	25	46.5	115		me , 20 5
	134	200	2		2/1	21.0		
	17				7.	2		
		15.	4			10,1		65,6%
		100	150	8.5	44			
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		14	-5	2	44.44	9		
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\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

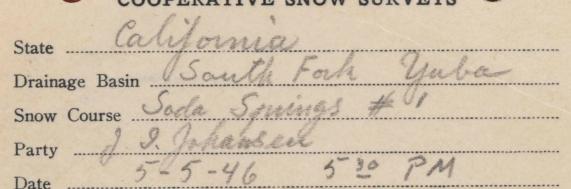
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State California
Drainage Basin Truckee River
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Party J. Johannen
5-5-46

Date								
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	40	10	con	Marin			
	2	12	115	35	4/	7		
	3	76	245	3/	49	a def		-0,2
	4	0						
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						3		
	6	19	18	35	45	10		-025
	7	0						
	8	34	33	35	53	18		1123
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*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
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		0				6		
		0	**			0		
	4	9	9	35	70	7.5		
	1	0				0		
	6	0				0		
	7	8	9	35	41	1	Ø 3	12015
	8		10	35	72	7		210
313	9	15	9,3	35	40,5	In the		dellers of
	10	11	9,5	3%	41,5	45		
	11	14	11	35	14			
	12	5,5	6	39"	39	4		-05
	13	105	10	35	425	25		•
							452	doglar
					- The second	460	1 6	7.000
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Form No. 144 May 13 1946

#### FEDERAL-STATE COOPERATIVE SNOW COVER SURVEYS

#### FEDERAL, STATE AND PRIVATE AGENCIES

#### SURVEY NOTES

Snow Surveying is completely explained in Miscellaneous Publication No. United States Department of Agriculture.

#### Brief Directions and Suggestions for Snow Cover Sampling

(1) The usefulness of snow cover surveying depends primarly on the care and honesty of the men actually doing the field work.

(2) The work of the snow cover surveyor is often laborious, especially in stormy weather, and men willing to undertake such work can usually be depended upon to do their best and record the results faithfully.

#### DIRECTIONS FOR USING THE SNOW SAMPLER

#### A. Care of Sampler:

(1) In transporting sampler, extreme care should be used to guard it against injury; it can be easily dented.

(2) When sampling on steep slopes do not cling to the sampler to

avoid sliding down hill; the tube is easily bent.

(3) Keep the sampler covered inside and out with a thin coating of shellac or paraffin. The inside coating can be applied by pulling through a swab soaked or wet with shellac. This coating not only prevents corrosion but tends to keep moist snow from adhering to the tube.

(4) Since ice and rock sound and feel alike when struck by the sampler, be careful to determine what the substance is; ice will not blunt

the cutter, rocks will.

(5) Keep the cutter sharp and the orifice true to its original diameter (1½ inches inside in case the Mt. Rose Steel Tube is used; and 1.485 in case the improved Utah Aluminum Tube is used).2

### B. Measuring for Samples:

Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Note any irregular spacing between samples. Care should be used in spacing by tape measurements, so that the samples taken different years on the same course will be at the same spots.

(1) Plunging the tube should be avoided. In drivintered, etc., may be thrust is preferable to twisting, because with his is to be used in recording snow enters the slots. However, a mir-

the driving and also facilitates Plunging should be entirely

freezes down, a light to or badly worn, send first tube section with cutter attached

(2) The preservative office for repair or replacement.

while the temporare is evidenced when length of core compared to snow depth is to adhere for the same throughout a course. to adhere feet has

In some cases, where not too far from a night's lodging, time can be saved by taking the samples in the morning or evening instead of during the warm part of the day.

#### C. Weighing the Sample.

Before taking the sample, place the empty sample tube in the cradle hanging from the scales. If the Mt. Rose scale is used, turn the pointer back to zero. If the standard tubular scale is used, record the weight empty in proper column in field book. When the sample has been taken, place the sampler in the cradle and record the weight for tube and core. For the Mt. Rose scale this reading equals the water content of the snow core. For the standard tubular scale the water content is given by the difference between the reading empty and the reading for tube and core. The zero setting in the case of the Mt. Rose scale, and the "empty" reading for the standard tubular scale should be checked at frequent intervals (not more than 5 measurements).

If dirt is picked up by the cutter it should be cleaned out with knife before weighing the sample, and proper deduction made before recording length of core or depth of snow.

#### D. Recording:

The snow cover survey sheets are made in pads of two sizes, the smaller being white and the larger pink. Only the white waterproof pads are to be used for field notes. The larger pink pads are to be used to make copies from the white field sheets as soon as possible after each survey. Instructions regarding the disposition of the pink copy sheets will be issued for each State and where necessary for each drainage basin, since the needs will require some variation in this respect.

Appropriate covers are to be provided for protection of field notes. Sketch maps showing points of observation are pasted to the inside of the covers.

Use pencil only for recording field measurements. Fill in complete description of course, party, date, etc.

If the depth of core is very much less than the depth of snow, the reason should be determined and noted under "Remarks." In case of doubt regarding the core, determine the density (water content divided by depth gives density) and compare with that of other adjacent measurements about which there is no doubt. "Remarks" should include special items as to the character of snow, nature and condition of soil or other bottom reached by the cutter, whether wet, dry, frozen, etc.

Any extended remarks as to weather conditions at the time of survey or shortly before the survey, unusual difficulties encountered, etc., may be placed on the back of the sheet, as one side only is to be used in recording the snow measurements.

approximately the same throughout a course.

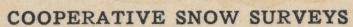
Or paraffin. <sup>2</sup>If the cutter is broken or badly worn, send first tube section with cutter attached to your regional snow survey office for repair or replacement.

<sup>3</sup>A complete core is evidenced when length of core compared to snow depth is

### COOPERATIVE SNOW SURVEYS

State	State Horm California									
Drainage Basin Truelled Kiver										
Snow	Snow Course Donner Rahe									
Party		**********	************		der	<u> </u>		***********		
Date	/	5-6	112-	- 44	9					
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks		
	1	0				0				
	2	0				0				
	3	15	14	20	27					
	H	0				â				
	5	0				0				
	6	5	5	20	22					
	7	0				0				
	8	21	20,5	20	30	10		-0,5		
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	10	7	7	20	23			-0.25		
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	12	0				1	-			
	121	53	5		171	24				
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Snow	Course	Do	un	en v	two BA	Acres		
Party		ma		an	+ 6		Ma	MANTA.
Date	0 (	1 5	/13,	146		V		
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
					0	0		
					<b>C</b>			
	2	100	The state of the s	1	0	0		
	3	8.5	8.5	18	23.5	55		
					*			
	4			1	0			7 / 20 mm
	5				0	0		
	The state of the s							
	6	5.	5.5	18	22			- In
	7				0	0		
	8	11	11	-	26			
	8 A	14		20.5	27	6.5		
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	Course	1l	hum	u d	La Jan	Section 1		Consultation of the state of
Party	11	nha	11.04	A pr	6	SAL	MARA	4-M
	0 (		5/13	146				
Date		Depth			Weight			
*Description or Number of Course	†Sam- ple Number	of Snow Inches	Length of Core Inches	Weight of Empty Tube	of tube and Core	Water Content Inches	Density Per Cent	Remarks
	9	5	3	21	22	1		1.5
	10	4	4,5	19	24	5		
	11				0	٥		
	12			34	0	0		
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			4			F		
						X = 3	12 22	
*Shov	v numbe	er or d	escripti	on as g	given or	n sketcl	n map,	i.e., "Course

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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Drainage Basin South Fork Yula
Snow Course 5 Sample Connice Donner Pars
Party J. J. Johansen
Date 5-18

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	No Remarks
	1	126	99,5	34	105	171		ground, solid ice
	2	129	127	34	114,2	70 2		Rock
						*		not ground
	3	154	137	34	1275	935		solid ice
								wood &
	4	160	132,5	34	125			Rock
			1365			4		
	5			34	126	92	100	Rocks & needles
	5	741			5 4	17	7	
	1	148.	2		5	03		56.3%
						85.	0	7
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\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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State									
Draina	ge Bas	in							
	Course	4-		Bata a	Pa	and a	4 4 9		
	Course								
Party And And Andrews									
Date May 214 1946,									
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks	
- 1.00 M	1			0 14	ng	12		1,7	
	1	111	70	34	70-	1		wet to	
	100	-8			A			at bothmy	
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	-		38.0			AA			
	2	1211	14.3	34	104	16		many net	
	13	330	+1.5		22			enched	
According to the last of the second contract of	boom	1110	100	-	1 = 1	P. A			
	7	143	139	34	124	74		Jacobson	
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	4	142	166	-34	I bear of	8	NO NO	Pleston Contract	
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	1				V				
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\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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State Samples tank for comparate Drainage Basin weight morning and might Snow Course at Johannens pause Party Soela Springs

Date 5-24-46 10 AM

					A STATE OF THE PARTY OF			
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
-0,8	1	36	36	13.	32	19		376 gram
-1,0	2	35	35	13,5	32	185		373 11
Death of the	3	32	32	13,8	32	182	2009 200	375 11
matter.	4	35	35	138	325	187		381 "
MANUEL TO SERVICE STATE OF THE PARTY OF THE	5	35	35	13.8	339	201		391,2 4
	1	73			AT	942		May Visit
Ilint	1	38,5	34	13.8	344	204		398,311
						· ÉDI		
	7	35	35	13.8	33	19.2		385,5 11
						4		
	6	39,5	3/1	13,8	32	18.2		370,011
	8	27	7.2		81	152	38	13050
*C1	r numbro		accrinti	on ac c	riven on	cleatel	man	in "Course

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

Noofsheets.	Comp.	by	Checked	by
34.6		19.0	54,9%	381

9

Drainage Basin 1975

Snow Course 1975

Party

Date

Depth Course 1975

The Course 1975

The

Show								
		2		10			3 8	
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		123						
		25						
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-63						17		
Thescription or Mumber of Course	15.00. ple Number	Depth of Snow Inches	Leagth of Core Inches	Weight of Three	of subs And Core	Water Content Inches	Deputer Per Cont	Remarks
			The first		770.11			

"Show aumber of description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5" E." etc.

Always start measurements for sampling from the mind point as shown by the sketch map of the course and tollow the spacing for samplestal milicated. Particular care should be taken to note may irrequiar spacing between samples.

360

poets. Comp

proceed by

enter to com Drainage Basin Mort Date Depth of Snow Weight of Weight of tube †Sam-\*Description Water Length Density ple Empty or Number of Core and Content Per of Course Number Cent Inches Inches Tube Core Inches Remarks 365.6 Br 365-5 Gr 366-7 Gr 34 2 30 5

Noofsheets.	Comp.	byChecked	by
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<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

Bend

State Samples taken to compare
Drainage Basin weight morning and night
Snow Course near Jahansen Ranse
Party Soda Springs
Date 5-25-46 10 # M

Date			- M. J.		£			
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Per	Remarks
-1,5	1	39	37,5	13,8	33	19.2		383,5 gr
								Many 1
Rock	2	37,5	37,5	13,8	33	19.2		384,5"
-81								
-0,9	3	38	38	13,8	32	18.2		377,50
400								
-0,7	4	38	38	13,8	33	192		378.6 "
	7					1		
Rack	5	37	37	13,8	33	192		379,7
						11		
	6	37	37	13.8	33	19.2		3830
-03						4		49K 1
	7	38	37	13,8	32,5	307		3785
								Sec. A
	8	36	36	13.8	32,2	184		378
100	2)	29-	4		211	51	3 2)	3043,3
*Show	numb	ar did	escrinti	on as g	riven or	sketch	man/	ie "Course

\*Show number description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

No	of	sheets.	Comp.	by	Checked	by
		37,2	1	8.9	Checked 50.8%	380.7

see start recomments for sampling from the named grown as shown the sketch map of the names and follow the aparang for samples as indicated Furticular care should be taken to note se," or "M 5" H," sic 383.5 Show Course assets

## COOPERATIVE SNOW SURVEYS

State	Sam	ples	Talo	len	to	com	RAN	c weight	
Draina	ige Bas	in M	um	ing	and	de	iffe	ts at	
Snow Course Jefransens Hanse									
Party									
Date 5-27-46 9441									
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks	
	1	42	42	14	36	22		410,5 grs	
						A			
-0,5	2	39	39	14	34	20		394,50	
-/.7	3	41	405	14	34	20		393,2 11	
					PA - 14				
	4	40	39	13,8	34	20.2		395-11	
	5	39	38	13,8	341	202		4005-	
-0.8	6	39	39	13,8	33.8	700		391,-	
	100								
	7	29	38	13.8.	33.8	nor		391-11	
	1			1000		A			
-0,8	8	391	38.00	13.0	33			383,5	
*Show	numbe	er or de	escription	on as g	iven or	sketch	map,	i.e., "Course	
†Alwa	No. 1," o	t measu	rement	s for s	ampling	g from	the ini	tial point as	
†Always start measurements for sampling from the <i>initial</i> point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note									
No	iny irreg	gular sp	eets	Comp	sample	20.	2/5/1 Check	5% 395.0 ed by	
140	8)	7/5	7/3	/. 5	01	11 londa	60	13160.2	

\*Show were \$1500 Course, or 'N 5' E, sec.

\*Always star possurements for suppling from the retire point as showed by seattles as indicated to be seen should be retired for samples as indicated to be seen should be retired for suppling the second for the spacing only was supplied as indicated to be seen to note that was any was spacing to be seen to note the second second

State Samples taken to compare weights

Drainage Basin morning & night at

Snow Course Irhansten thouse Soda Synings

Party J. J. Johansen

Date 5-27-46

Date								
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	41	41	13,8	35	212		411,0gz.
							3,	
	2	40	37	13,8	341	203	The Black	397,011
	3	395	385	13,8	33,8	20.0		388,011
The state of							100	
	4	37,5	37	13,8	32,5	187		383,011
						373		
	5	38,5	38	13,8	335	107		387
			1					See See
	1-1	195.	5		51	99,9	1	1966
	79	100			3		1	1
		39.	3		20,0		50,9	To 393.7
							11	
					3-43			
				2				

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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any aveguar spacing between samples. Bei

#### COOPERATIVE SNOW SURVEYS

State Samples Taken To compare weights
Drainage Basin morning and might at
Snow Course Johansen house Soda Springs
Party
Date 5-29-46 930 AM

Date	2	7.7	- 4	6			100m	
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	39	39	14,2	31	11.8		393,5 gr.
				*				
	2	38	38	14,2	34	198		390,5 "
	3	38	37	14,2	35	00.8		395-11
	4	37	37,5	14.2	36	9/8		413, - "
								matter se
	5	345	345	142	33	188	-	372,2
	6	325	32	14.2	31,5	173		356,5
	7	35	35,5	142	33,0	193		381,5
						1 3	Cal I	
	8	33,5	32,5	14,2	31,5	73		357,6
<b>4C1</b>	1					-1-4-1		is "Course

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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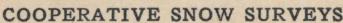
Always start measurements for sampling from the minal shown by the stictch may of the course and follow the for samples as indicated. Particular care should be take any pregular spacing between samples. Myetch map, he

COOPERATIVE SNOW SURVEYS

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Draina	ige Bas	in M	our	ing a	roll	Me	phi	et	
Snow Course plantsenderwalk Socia Springs									
Party		0					Fa AB	2000	
Date	3	-2	9-	46		le	30	7-191	
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks	
	1	36	36	141	35	09		396 gr.	
								0	
	2	38	37	14,1	34	199		3915 W	
						7			
	3	37	36	14.1	335	19.0		380,511	
						1	7		
	4	35	34	14.1	32,5	124		380 1	
								erc services	
	5	35	34	14.1	32,5	184	Cod :	380, -11	
						1	04	100	
	4	33	32	14,1	32	179		362 - 4	
			4			4.1			
	7	31	30	14:1	31	169		351,5	
						AFF		20/10	
	8	30	29	14,1	30.	159		3435	
*Show	numbe			-		1-84	map,	i.e., "Course	

No. 1," or "Major Course," or "N 5° E," etc.

and arrestates spinoses relapiera gampine thinays start measurements for sampling from the shown by the sheets may of the course and far for samples as indicated Particular are should WW



State Samples taken to compare weight

Drainage Basin morning and might for

Snow Course In Church at follansed houser

Party Sada Springs

Date 5-30-46 9 30 AM

Depth of Snow Inches	Length of Core	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
36,5	36,5	14.2	35	008		391,5 gr.
				•		. /
34,5	35,5	14.2	33,8	196		382-11
				1		
34,5	345	14,2	33	18.8		378,5 11
34	34	14,2	33	18 8		3736 "
32,5	32	14,2	32	178		364,5"
	31					
30	29	14,2	31	168		352, 4
	1					Alan O
18	275	14,2	29	148		338,7 11
1/3/				•		
1 27	27	14.1	29	148		337, 11
	36,3 36,3 36,3 34,3 32,5 32,5	36,5 36,5  36,5 36,5  36,5 35,5  34,5 34,5  34,5 34,5  34,5 32  32,5 32  28,5 32	Snow Inches Inches of Core Inches Tube  36,5 36,5 14.2  34,5 35,5 14.2  34,5 34,5 14,2  34,5 34,5 14,2  34,5 34,5 14,2  34,5 34,5 14,2  34,7 34 14,2  32,5 32 14,2  38,5 32 14,2	of Snow of Core Inches of Core Empty and Core  36,5 36,5 14,2 35  34,5 35,5 14,2 33  34,5 34,5 14,2 33  34,5 34,5 14,2 33  34,5 32 14,2 33  32,5 32 14,2 32  34,5 32 14,2 32  34,5 32 14,2 32	of Snow length of Core Empty Inches of Length of Core Inches Of Co	of Snow of Core Inches of Core Inches of Core Inches Inches of Core Inches of Core Inches Ore Inches Ore

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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any arregular spacing between TOT SMITH Micasod Par Me spenia be 20 Always start of shown byto \*Show number of No. 1," or "I man 1

COOPERATIVE SNOW SURVEYS

State	San	MAL	1 4	a M	m l	m C	on	ngal			
Draina	Drainage Basin weight morning chil might										
Snow	Course	for	De	co C	Kur	as Mari					
Party	Party										
Date	5	- 30	, seems, (	46		6	30				
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks			
	1	345	34	14.2	32,5	18.3		372092			
		and the second									
	2	37,5	33,5	142	32	17.8		376,011			
	3	33	32	14,2	35	178		364, -11			
	4	32	30	142	3/	16 8		360,5.11			
	8					0					
	. 7	36	29	142	38	158		35-4-11			
				/							
	6	245	24	142	29,9	157		344,5 "			
	7	24	25	14.2	30	15.8		351,-11			
					24			ter love			
3克里	8	26	245	142	29,17	14.8		336, -11			
*Show		er or de	escriptio	on as g	iven or	sketch	map,	i.e., "Course			

†Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

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8) /32.8 ) 239,5

shows by the electels man of the course in Mow the spacing for samples as indicated. Particular of Muls be taken to note any irregular spacing between samples. Now the spacetie w a Ben

#### COOPERATIVE SNOW SURVEYS

State Sangules taken to compare
Designate Base weight morning and might
Snow Course by Johannen hause
Party
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Date	*********					*********	**********	
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
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\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

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COOPERATIVE SNOW SURVEYS

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	1	325	31.5	64,2	319	177		359 492			
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†Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

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# FEDERAL AND STATE COOPERATIVE SNOW SURVEYS

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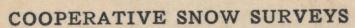
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†Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

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#### COOPERATIVE SNOW SURVEYS

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COOPERATIVE SNOW SURVEYS

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	1	93	80	34	91	A7					
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	3	115	86	34	103	69					
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# FEDERAL AND STATE COOPERATIVE SNOW SURVEYS

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COOPERATIVE SNOW SURVEYS

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Snow Course Donner Pass
Party J. J. Johnson
Date

Date								
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	109	102	34	97	63		
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	3	132	130	34	115	81		
	4	141	135,5	34	120	86		
	5	156	144	34	120	86		
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Form No. 144

Inna 3, 1946

#### FEDERAL-STATE COOPERATIVE SNOW COVER SURVEYS

FEDERAL, STATE AND PRIVATE AGENCIES

#### SURVEY NOTES

Snow Surveying is completely explained in Miscellaneous Publication No. 380, United States Department of Agriculture.

#### Brief Directions and Suggestions for Snow Cover Sampling

(1) The usefulness of snow cover surveying depends primarly on the care and honesty of the men actually doing the field work.

(2) The work of the snow cover surveyor is often laborious, especially in stormy weather, and men willing to undertake such work can usually be depended upon to do their best and record the results faithfully.

#### DIRECTIONS FOR USING THE SNOW SAMPLER

#### A. Care of Sampler:

(1) In transporting sampler, extreme care should be used to guard it against injury; it can be easily dented.

(2) When sampling on steep slopes do not cling to the sampler to

avoid sliding down hill; the tube is easily bent.

(3) Keep the sampler covered inside and out with a thin coating of shellac or paraffin. The inside coating can be applied by pulling through a swab soaked or wet with shellac. This coating not only prevents corrosion but tends to keep moist snow from adhering to the tube.

(4) Since ice and rock sound and feel alike when struck by the sampler, be careful to determine what the substance is; ice will not blunt

the cutter, rocks will.

(5) Keep the cutter sharp and the orifice true to its original diameter (12 inches inside in case the Mt. Rose Steel Tube is used; and 1.485 in case the improved Utah Aluminum Tube is used).2

### B. Measuring for Samples:

Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Note any irregular spacing between samples. Care should be used in spacing by tape measurements, so that the samples taken different years on the same course will be at the same spots.

(1) Plunging the tube should be avoided. In driving, a steady downthrust is preferable to twisting, because with the latter a small amount of snow enters the slots. However, a minimum amount of twisting aids in the driving and also facilitates the quick cutting of the thinner crusts. Plunging should be entirely unnecessary. In case the sampler sticks or freezes down, a light twist will usually release it.

(2) The presence of temperatures below 32 degrees F. in the snow, while the temperature of the air is above freezing, often causes the snow to adhere firmly to the orifice of the cutter after a depth of from 10 to 12 feet has been reached. This difficulty can be met in three ways.

(a) Withdraw the sampler when cutter becomes clogged and clean cutter and tube thoroughly. Push the tube rapidly through the snow without stopping until bottom is reached but do not plunge tube. Repeat until a complete core is obtained.3

(b) In case sampling is being done in the forest, keep the sampler

in the shade as much as possible to keep it cold.

(c) The best method of all is to sample when the temperature of the air is at or below freezing, or late in the season when the temperature of the deep snow has risen to 32 degrees F. At these times sampling is easy and rapid.

In some cases, where not too far from a night's lodging, time can be saved by taking the samples in the morning or evening instead of during the warm part of the day.

#### C. Weighing the Sample.

Before taking the sample, place the empty sample tube in the cradle hanging from the scales. If the Mt. Rose scale is used, turn the pointer back to zero. If the standard tubular scale is used, record the weight empty in proper column in field book. When the sample has been taken, place the sampler in the cradle and record the weight for tube and core. For the Mt. Rose scale this reading equals the water content of the snow core. For the standard tubular scale the water content is given by the difference between the reading empty and the reading for tube and core. The zero setting in the case of the Mt. Rose scale, and the "empty" reading for the standard tubular scale should be checked at frequent intervals (not more than 5 measurements).

If dirt is picked up by the cutter it should be cleaned out with knife before weighing the sample, and proper deduction made before recording length of core or depth of snow.

#### D. Recording:

The snow cover survey sheets are made in pads of two sizes, the smaller being white and the larger pink. Only the white waterproof pads are to be used for field notes. The larger pink pads are to be used to make copies from the white field sheets as soon as possible after each survey. Instructions regarding the disposition of the pink copy sheets will be issued for each State and where necessary for each drainage basin, since the needs will require some variation in this respect.

Appropriate covers are to be provided for protection of field notes. Sketch maps showing points of observation are pasted to the inside of the covers.

Use pencil only for recording field measurements. Fill in complete description of course, party, date, etc.

If the depth of core is very much less than the depth of snow, the reason should be determined and noted under "Remarks." In case of doubt regarding the core, determine the density (water content divided by depth gives density) and compare with that of other adjacent measurements about which there is no doubt. "Remarks" should include special items as to the character of snow, nature and condition of soil or other bottom reached by the cutter, whether wet, dry, frozen, etc.

Any extended remarks as to weather conditions at the time of survey or shortly before the survey, unusual difficulties encountered, etc., may be placed on the back of the sheet, as one side only is to be used in recording the snow measurements.

<sup>&</sup>lt;sup>1</sup>Or paraffin.

<sup>2</sup>If the cutter is broken or badly worn, send first tube section with cutter attached to your regional snow survey office for repair or replacement.

to your regional snow survey office for repair or replacement.

3A complete core is evidenced when length of core compared to snow depth is approximately the same throughout a course.

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## FEDERAL AND STATE COOPERATIVE SNOW SURVEYS



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	8	31.	3/	149	24	19 8		365,5 11
*Show	The same of the sa							i.e., "Course

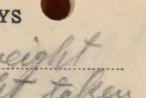
No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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1 Co shown by the sketch map of the course an for samples as indicated. Particular care sh Of Length of Show of Core Empty and Inches Inches Tube Core

### FEDERAL AND STATE COOPERATIVE SNOW SURVEYS



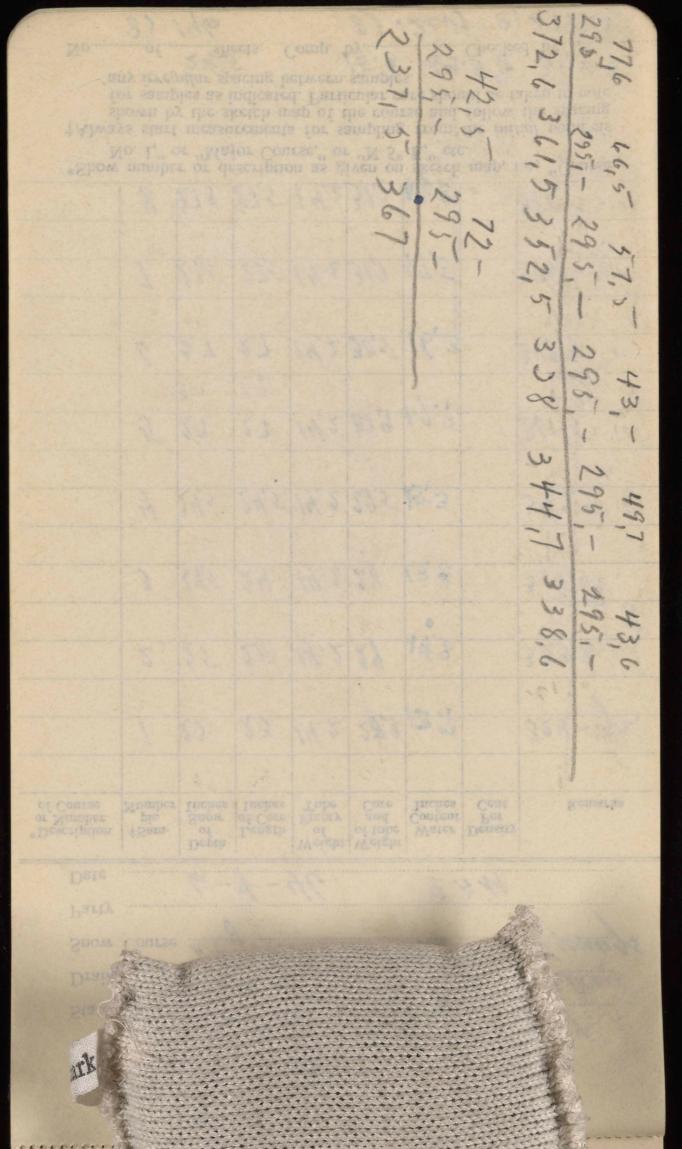
State Samm Drainage Basin Snow Course 4 Party Date

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	23	23	14.2	27.9	137		324-92.
					100			
	2	25	15	14:2	29	148		333,8 "
						•		
	3	245	24	14,2	28	13.8		325,5
					38			200 100 4
	4	24,5	24,5	14,2	29,5	15.3		343,50
	5	27	27	14,2	31,9	127		341,5 11
		17	27	17 2	23.			May #
	6	27	27	14,2	30,5	16.3		348.3 "
				792				
	7	27,5	27,5	142	31,9	175		395-11
			2.3				43	
	8	275	27,5	14,2	31,5	173		356,5"
*Charre	mumba	1	comintic		11100 00	deatah	man	a "Course

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

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COOPERATIVE SNOW SURVEYS

State	Sams	wes to	compart	weight
Drains	age Basin	mounn	and night	at taken
Snow	Course .a.	7-19-186	rusen Ch	ouse
Party Date	4	9-4-2	4	630

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	29	29	14/2	30,5	163		372,692
						er of		
	2	285	285	14/2	319	17.7		36/5 "
				12	M 0			
	3	28	27	14,2	30	158		352,511
								All of
	4	28	26,5	142	29	9.8		338 11
						1		
	7	27	26,5	14,2	29	148		344,711
						110		7150
	6	26	25	14.2	29	4.8		338,611
								-da
	7	25,5	25.5	742	29	148		237,51
								my y
	8	32	28	14,2	32	M 8		367, -11
					-5	6		pil.te
7					· STATE			. "

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

any irregular spacing between samples.

No. of sheets. Comp. by Checked by Checked by 224

<sup>†</sup>Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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. No	of.					N		A PL	The state of the s	
					SSES	100	- 10			
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					the cou	g from	follow	N	1 38 M	
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	numpe	r or di	escr.pm		CAN S	sketch E," et		100	20	
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				-	10 1	00	W.		1 0	
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					1-11	1		1	1	
		23		1	0 41	00		34		
				0	100		0			
				Tobot.	Bud	Content	1		cmarks	
*Description		Depth				Water	74			
										-
Date										
						The state of		3.9		
Snaw						Wall of				
DIAME										
State	· All		Trans.	22.22			221220			
	生	HARRY CH	The said	and the same		the test to				

COOPERATIVE SNOW SURVEYS

								recent
Drainage Basin morning land myll taken Snow Course of Marken hande								
Snow	Course	at	Jall	MARA	en	Ma	ML	
Party								
Date 6-5-46 9 AM								
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	28	28	14,2	30	15.8		345,5 92.
						11 10		
	2	27,5	27	14,2	29,9	15.7		345,5 "
	3	28	275	14,2	29,5	15.2		339,4 11
		25				•		
	4	28	28	14.2	30,2	160		351, -11
			26			1.7 %		
	5	28	28	14.2	305	16.3		315,511
					253	1 1997		
	6	29	28	142	30	15.8		347-11
					34.6	3.0		
	7	27,5	275	142	29	148	10 %	2407 "
33912	3.5	4		1				A CONTRACTOR OF THE PARTY OF TH
TANK T	8	26	26	14.2	29.9	15.7	2	343,6 11
142	1		30.3	大车	7	10.1		303.81 4

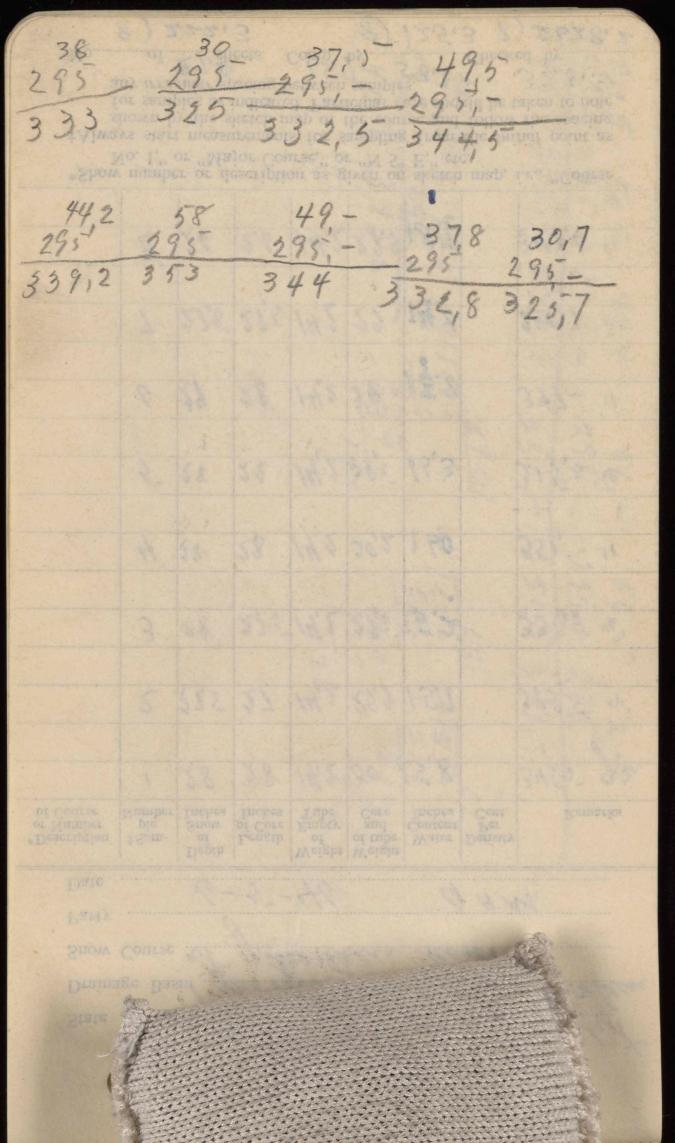
\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

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2628.2



# FEDERAL AND STATE COOPERATIVE SNOW SURVEYS

State Samples to compare weight
Drainage Basin morning and might taken
Snow Course at Johannsen haber
Party
Date 6-5-46 51M

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	26	26	14,2	29	14.3		333,-gr.
	2	26,5	24,5	14,2	28	138		325,- "
	3	25,5	25	14,2	29	14.8		332,5 "
3717	4	27	26	14,2	30	15.8		344,5 "
TALE								
26.5	5	27	25,5	14,2	299	157		339,2 "
3 4 2 5	6	26	26	14,2	31	16.8		353-11
	Maria Maria		7		3 1	•	40 1	
400	7	253	25,5	14,2	30	158	30	344, - 11
						•		
	8	24,5	24,5	14,2	29	148		332,8 "
+C1 1 - 1 - itim as given on distable man is "Course								

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

435 295,-26,5 27.8 285\_ 321,5

#### COOPERATIVE SNOW SURVEYS

								veight	
Drainage Basin snowing and night taken									
Snow Course at Joblanden hande									
Party 6-6-46 9 AM									
Date		6	-6-	46		9	17 108		
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks	
- 1	1	26	27	142	295	15.3		3385 92	
								'/	
	2	255	25	14,2	28,5	143		334- "	
in the	3	25	25	142	28	138		328,4 "	
						•			
- 2	4	25	26	14,2	28	13.8		3257 4	
	5	25,5	25,5	142	27	128		3215 "	
						14.			
	1	4	4.2	116 4	6 mg	-		38/ - 11	

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

24 24 142 27

14,226,5 123

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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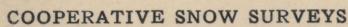
8)198.5

8) 108.4 8) 2609.0

Snow Cours &

Always start measurements for sampling from the mind point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

8) 108,4 8) 26.09,1



State	Samp	la 1	Ago A	e we	nac	e ru	ught
Dusing	age Basin	met 2	arana	· Co	early	men	William .
Draina	Course La	Bear	0.0	9	tatal 82 s	. Ch	end l
Snow	Course		on la	as and			
	986	6-66	and the			130	PM
Date		le le l	16			0	

Date									
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks	
- 5	1	25	A5	14.2	29.9	15.7		335.5	
						, ,			
	2	25	23	14.2	28	138		326.5	
-1	3	25	25	14.7	29	148		338	
- 5	4	25	245	147	285	143		343,5	
	5	25	23	14,2	29	148		336,5	
NAME OF									
A Same	6	24	23	14,5	27	12.8		3170	
						3-10-			
-,04	7	245	24	Har	27	128		319.8	
		100		1 2	3				
TAR.	8	23,5	22	14,2	26,	128		313,6	
+.01	1	1	. , .			alrotal		is "Course	

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any irregular spacing between samples.

neets. Comp. by. .....Checked by..... 8) 111,3 8) 2630,4

O spor miniper o 315 342,7 295,-Keisch Trube and Party

#### COOPERATIVE SNOW SURVEYS

State Samples to compare weight
Drainage Basin morning and might
Snow Course taken at of phanten Maure
Party 94M
Date 6-7-46 94M
Depth   Weight Weight   Water Density

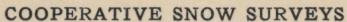
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
12 4		* 45		章 8%				22600000
	1	21	21	14,2	25	10.8		2985 92
15 9 . 5	2	24	25	14,2	29	148		335,- 1
10 16 18	3	215	22	142	27	128		3157 - 1
						*		
No (1)	4	25,5	25,5	142	3/5	17.3		338,5 11
						180		
	5	25,	245	142	30	15.8		342.7 1.
			,					
P. Alters	6	24	26,5	14,2	30	158		3455 1.
						, ,		
Physical Physics	7	245	245	142	29	148		3294 "
		1				. 66		
	8	24	24.	142	28,5	14.3		330,3 "

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

•

State Samples to Compare Weight									
Drainage Basin Murning & Might									
Snow Course Talson by John Johnson									
Party									
Date 6/7/46 0:43 F W -									
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Grans Remarks	
Divt	0	225	225	20.	30	10		324,561	
NoDIH	(2)	12,5	12,5	20	30,5	103		3245	
NO DIVT	(3)	225	225	20		13		324	
No Dit	(4)	23.	22	20	32	12		321.5	
No Dist	(3)	20	18	20	30,1	101		233.8	
Bottom	(0)	21	21	20	33,3	135		263.8	
Bottem	(9)	2/3	145	20	315	115		244,7	
	4								
Buttom	0	270	215	20)	321	121		258.3	
		2.1	1	111	2	5/1	0/2	2870	
	0)	175	-	200	8)	72.7	1 31	2296.1	
*Show	number 1"	er or de	escription	on as g	given or	sketch	map,	i.e., "Course	
1.41	No. 1,"	or wa						tial point as	

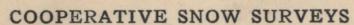


State	Samples to compare weight
Drain	age Basin morning and might talken
Snow	Course at Johlansen hulese
	Saela Sommas
Date	6-8-45 9AM

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Remarks
	1	22	22	20	32	12	2500 gr
	2	22	23	20	33	13	261,7 "
	3	22	22	20	32	12	248,2 4
	4	215	23	20	32	12	251,7 "
	3	21	23	20	33	10	257,6 "
	4	22	23	20	32	12	2461 1
	7	21	21	20	32	12	246,6 "
	8	21,5	22	26	32	12	252,4"

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

8) 173 8) 95 8) 2014. 3



		0	assangher		
State	Sum	All	April	compan	necold
State	1		4	and migh	to the U
Draina	age Basin	n Myses	ORAL BUT	and magn	
Snew	Course	tallow	Val	Blanker	Anus
Party		Ope	MAL	Soungs	- FY - #
Date		6-8-	-46	6	MA
male	*******				

pate			.30					
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	19.5	19.5	20	37	17		239,2
	2	19	9	20	37	19		235:2
						1		
	3	17	17	20	359	15.9		220,5
	4	20	20	20	37.9	199		241.0
						8 %.1		
	5	195	19	20	37.9	179		2400
						10/-1		
	6	19.5	19,5	20	38	18		244.2
	7	18.5	18.5	20	37	17		230,3
						11		
-,5	8	19	19	20	36	16		230.4
*Show	numbe	e or di	eccription	n 25 0	riven or	sketch	man	i.e. "Course

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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8) 13617 8) 1880

0			16
State San	ales to ce	marke	weight
Drainage Basin	taken at	- Bhair	car house
Snow Course	Sada s	Though	
Party		0	5 PM
D-4-	6-19-4	G A	S MACON

Date									
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches		Remarks	
					46				
	1	20	22	32	45	13		Dirt	
	200	3.8							
	2	30	30	32	50	18		Dort	
	25.00		W.S.						
	3	45	46%	32	61	29		Fort	
			* 3						
*	4	42	44	32	62	30		Roel	
	No.	1		33					
	5	60	52	32	63	31		Jut	
						24			
	5)	V97			5)	121			
	1	111							
		39.4			24.2	•	61.4	70	

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

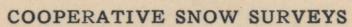
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State	
Drainage Basis	Sacroples -
Snow Course	Dandar Simul
Party	Johnson + Elffansen
	6-16-46
Date	6 13 43

Date	***********	,			Assol		***********	
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	23	22	32	46	14.		
				3.3				
	2	32	32	32	51.5	19.5		
			12	200		0.9		
	3	54	45	32	59.5	275	7	
			47			1.		Children Land
	4	61	58	34	70	38		
	5	74	65	The second	72	40		-1
	5	244			5	139		
	2		•		00			
		48.	8		27.8		570	%
		44	39	**			1	
		2 40 3				28	2000	
	-							

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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State		ely	62	400				
Drainage Basin								
Snow	Course							************
Party				~ /	//		0 7 1	A
Date		********	6-1	1-4	16		941	1
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	20	19	32	42	10		Dirt
	2	15	17	32	4/5	05		N. C.
						1.		
	3	36	41	32	58	26		Sold ice
	3a	42	48	32	58	26	/	-11-
	4	66	53	32	66	340	/	Dut
	49	67	45	32	61	29		
	5	66	64	32	72	40		N
						•		
	-	209		1	-1	150	-	

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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41.8		61.5%	

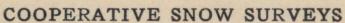
State								
Draina	ge Bas	in						
Snow	Course							
Party								
Date		6	-16	- 4	6		47	M
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches		Remarks
	1	30	30	32	51,5	195		Decomposed
	2	3.8	36	32	54	23		Rock
								1
	3	62	615	32	72	40		doct own
			1923					
	3a	63	56	32	68	36		Dort
	4	66	64	32	73	41		Roch
o -	5	86	73	32	77	45		Rack
	5	283	20		1-1	167	5	
2		450	1		38	1		
		56.	4		33.	50	59	
*Show	*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.							

	-	
- 1		

State						en	da	by for
Draina	ige Bas	in	& C	hu	el	( a	1	0,0
Snow	Course	110	nne	11			on	icl
Party		J.	d.	77	lan	dei	10,0	AA
Date		V (	6-13	year haf	le		9	
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches		Remarks
	2	46	43	32	58	26		
	1	29	27	32	49,5	175		
	3	73	58	32	69,5	275		Marie Age and
						21.		
	39	57	57	32	67	35		
<b>#</b>								
	4	70	69,5	32	77	45		
		36						
	5	72	72	32	78	46		Brook.
	5	290			E	172		
*	-	50	0		21	1	59,	2 %
		200			34,4		71	3 /0

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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State	5 San	nles	taken	daily	for
Draina	ige Basin	Ja C	hurch	att	
Snow	Course Des	mer	Pass	Corne	ol .
Party	1.2.	whan	sen		
Date	11 /1	6-12	-46	11-4	M

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	30	29	32	49	17		Rach
	2	62	485	32	63	31		
	3	53	575	32	70	38		many layers
	4	74	76,5	32	85	53	7	Too much dut
	4a	80	75	32	80.	48		Rock
	5	77	78,5	32	83	51		Rock
	F1	298			4	190		
	5)	50	6		39.	3	63.	8 %
		1			~ 6.			The second second

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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State 5 Samples tuken daily Drainage Basin at Donner Pass of por Snow Course In Church Party Johnson Date 6-11-46 5 PM										
Date		Depth	C Comm		Weight		)			
*Description or Number of Course	†Sam- ple Number	of Snow	Length of Core Inches	of	of tube and Core	Water Content Inches		Remarks		
	12	41	41,5	33	57	24				
	2	49	49	33	62	79				
*	3	65	47	33	62	29				
			- 1							
	39	77	77	33	80	47				
	1	40	- D	2 %	0-31					

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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	50							ly for		
Drainage Basin In Church at I										
Snow Course Jounes Pass										
Party J. V. Johansen										
Date 6-10-46										
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core			Remarks		
	44							Buck		
	1	32	32	32	50	18				
	756			***				<b>第49</b> 字		
	1	48	48	32	60	28				
				45.74				- Electrical Control		
	3	59	58	32	72	46	7.25			
	4	82	335	32	85	43				
					4					
	5	91	81	32	81	119				
	5.				13.84	74				
	5a	91	90	32	88	1-1				
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		63.	7		40.	1	64.	1/0		
*Shov	v numbe	er or d	escripti	on as g	given or	n sketch	n map,	i.e., "Course		
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Drainage Basin 554mple Cousve.									
Snow Course Donner, Symmit.									
Party Johansen, Coda, Bennion									
Date June 9,1946									
*Description or Number of Course	†Sam- ple Number	Depth of Snow	Length of Core Inches		Weight of tube and Core		Density Per Cent	Remarks	
	0	51	505	53	95	32	627	Rock	
	(2)		62						
	3		800	53		520		Dirt	
	3A)	7/0	710	53	102	490	690	168	
	<b>A</b>	912	900	53	115	62	684	Dirt.	
	5	852	84 =	53	106	53	624	Rock	
	5)	370	245	5	-12	38.	5		
AND SOUTH		74.0	7	23	4		64.	4%	
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	44				75				
		100	701	13	77				
					FA.A		*		

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<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

MAAN	TT TT A PRE W W W W W W	MATER	ATTTTTTTT
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		AND 100 100 100 100 100 100 100 100 100 10	500 and 100 to 100 to 100.

State		San	200		tall	Authoria "		M.		
Drainage Basin at Donne Pass Cerane										
Snow Course										
Party A- Sphansen										
Date 6-7-4 4PM										
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks		
	1	50	49	13.	435	305	7	Roch		
					2.5					
	2	63	62	13	5/	38				
	7	74	73	13	64	.56				
- de					875					
mush	30	83	7/5	13	61	48		Rock		
tost some	3 le	98	72	13	61			Dist with		
	4	93	92,5	13	75	62		Rock		
	5	104	101	13	79	66		Just		
							0,	79		
		76.	8		50.5	March 174	65.	8%		
	5)	384	+		5,) =	2.52	.5			
*Show	numbe No. 1," o	er or de	escription for Cou	on as g	iven on r "N 5°	sketch E," et	map,	i.e., "Course		

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State 5 Samples takens daily
Drainage Basin at Donner Pass Cermber
Snow Course
Party J. J. Johansen
Date 6-6-46 4PM

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
		8						1
	1	59	13	35	69,5	245		Dirt
	a	53	3 2	35	66	, ,		Roph
		71	795	35				
	2	73	71	35	79,9	1149		
		98	To a	15	74	11.	0	100
	3	86	86	35	875	545		
		27		25		4		
	4	102	985	35	100	15		Just
						9 -		
	5	107	98	35	100	65		
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		85.4	+		52,	2	61.1	%
								6

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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Neuro			ALPO.			The same of the sa	Miller Cont &	4
Draina	ige Bas	sin a	111	our	ich	Mad	1 0	Connec
Snow	Course	A 1						
Party		1. X	9 h	MARA	de		2 44	
Date	V		6-	5-44	6	40		
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	63	59	35	72	97		
	2	71	705	35	80	45		
	3	98	925	35	96	61		
	4	97	965	35	98	6.3		
			1					
	7	Pi	1 1.	OMM	cet	Phila d	+ of	2
				11			1	
7.				D		-		

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

·	
Drainage Basin Tr Church  Snow Course Towner Summit  Party  Date  Date	State 5 Samples taken daily for
Snow Course Tonner Sammit  Party J. J. Johnson 4PM  Date 6-4-46 4PM	Drainage Basin Tr Church
Party J. J. Johnson Date 6-4-46 47M	Snow Course Towner Summerit
Date 6-4-46 4rm	
Depth Weight Weight	Date 66-4-46 4PM
rintion t Same of Length of of tube Water Density	eription †Sam- of Length of of tube Water Density

Date								
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
Co								
27	1	69	67	36	78	42		
20								
	2	76	75	36	81,9	459		
3						1-12		
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	3	110	855	36	89	53		
3				7.5			-	<b>.</b>
* chan	4	115	1075	36	107	71	1	7
						1		- Malline
	19	120	1115	36	106	70		The same of the sa
			1	2		1		-
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	5)	776			1	8		
		900			56.	4	57.	1%
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	1			-		1 , 1		: "Course

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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COOPERATIVE SNOW SURVEYS



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Draina	ge Bas	in A	2000		(1)	The said		man the
Snow	Course		3VM		gale	3		
Party		Mu	The	10	ed x	MAJ.		
Date		The	149	Second Second	2.7.1.	7.14	()-	
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	73	MO	34	79	45		
		the state of			1			
	2	94	88	24	99	15		
	Jan	11			11	8		
	9	80	79	34	84	50		
		A POST	1					
	m	106	100	34	IN	1 +17		-15
	Quar.					01		
	M	114	106.	35	102	73		7.5
		62 3				1		
	5	122	117	35	1091	74		
The state of the s						1		
	-1	Ная	-		-1	309		
	5)	1 10			01-	1		
		99,1			1)9		620	4 %
		1 610			pho		0 40 6	1
*Show	numbe	er or de	escription Con	on as g	iven on	sketch	map,	i.e., "Course

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Form No. 144 FEDERA Boon To Snow Surveying Brief Directio (1) The us Hate to care and honest (2) The w cially in stormy usually be deper DIRECT A. Care of Sa (1) In trai are should be used to guard it against injury; it can be easily dented. (2) When sampling on steep slopes do not cling to the sampler to avoid sliding down hill; the tube is easily bent. (3) Keep the sampler covered inside and out with a thin coating of shellac or paraffin. The inside coating can be applied by pulling through a swab soaked or wet with shellac. This coating not only prevents corrosion but tends to keep moist snow from adhering to the tube. (4) Since ice and rock sound and feel alike when struck by the sampler, be careful to determine what the substance is; ice will not blunt the cutter, rocks will. (5) Keep the cutter sharp and the orifice true to its original diameter (11 inches inside in case the Mt. Rose Steel Tube is used; and 1.485 in case the improved Utah Aluminum Tube is used). B. Measuring for Samples: Always start measurements for sampling from the initial point as shown by the sketch map of the course and follow the spacing for samples as indicated. Note any irregular spacing between samples. Care should be used in spacing by tape measurements, so that the samples taken different years on the same course will be at the same spots. (1) Plunging the tube should be avoided. In driving, a steady downthrust is preferable to twisting, because with the latter a small amount of snow enters the slots. However, a minimum amount of twisting aids in the driving and also facilitates the quick cutting of the thinner crusts. Plunging should be entirely unnecessary. In case the sampler sticks or freezes down, a light twist will usually release it. (2) The presence of temperatures below 32 degrees F. in the snow, while the temperature of the air is above freezing, often causes the snow to adhere firmly to the orifice of the cutter after a depth of from 10 to 12 feet has been reached. This difficulty can be met in three ways. (a) Withdraw the sampler when cutter becomes clogged and clean cutter and tube thoroughly. Push the tube rapidly through the snow without stopping until bottom is reached but do not plunge tube. Repeat until a complete core is obtained.3 (b) In case sampling is being done in the forest, keep the sampler in the shade as much as possible to keep it cold.

(c) The best method of all is to sample when the temperature of the air is at or below freezing, or late in the season when the temperature of the deep snow has risen to 32 degrees F. At these times sampling is easy and rapid.

#### FEDERAL, STATE AND PRIVATE AGENCIES

#### SURVEY NOTES

Snow Surveying is completely explained in Miscellaneous Publication No. 380, United States Department of Agriculture.

#### Brief Directions and Suggestions for Snow Cover Sampling

(1) The usefulness of snow cover surveying depends primarily on the

care and honesty of the men actually doing the field work.

(2) The work of the snow cover surveyor is often laborious, especially in stormy weather, and men willing to undertake such work can usually be depended upon to do their best and record the results faithfully.

#### DIRECTIONS FOR USING THE SNOW SAMPLER

#### A. Care of Sampler:

(1) In transporting sampler, extreme care should be used to guard it against injury; it can be easily dented.

(2) When sampling on steep slopes do not cling to the sampler to

avoid sliding down hill; the tube is easily bent.

- (3) Keep the sampler covered inside and out with a thin coating of shellac or paraffin. The inside coating can be applied by pulling through a swab soaked or wet with shellac. This coating not only prevents corrosion but tends to keep moist snow from adhering to the tube.
- (4) Since ice and rock sound and feel alike when struck by the sampler, be careful to determine what the substance is; ice will not blunt the cutter, rocks will.
- (5) Keep the cutter sharp and the orifice true to its original diameter (1½ inches inside in case the Mt. Rose Steel Tube is used; and 1.485 in case the improved Utah Aluminum Tube is used).2

#### B. Measuring for Samples:

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(c) The best method of all is to sample when the temperature of the air is at or below freezing, or late in the season when the temperature of the deep snow has risen to 32 degrees F. At these times sampling is easy and rapid.

In some cases, where not too far from a night's lodging, time can be saved by taking the samples in the morning or evening instead of during the warm part of the day.

#### C. Weighing the Sample.

Before taking the sample, place the empty sample tube in the cradle hanging from the scales. If the Mt. Rose scale is used, turn the pointer back to zero. If the standard tubular scale is used, record the weight empty in proper column in field book. When the sample has been taken, place the sampler in the cradle and record the weight for tube and core. For the Mt. Rose scale this reading equals the water content of the snow core. For the standard tubular scale the water content is given by the difference between the reading empty and the reading for tube and core. The zero setting in the case of the Mt. Rose scale, and the "empty" reading for the standard tubular scale should be checked at frequent intervals (not more than 5 measurements).

If dirt is picked up by the cutter it should be cleaned out with knife before weighing the sample, and proper deduction made before recording

length of core or depth of snow.

#### D. Recording:

The snow cover survey sheets are made in pads of two sizes, the smaller being white and the larger pink. Only the white waterproof pads are to be used for field notes. The larger pink pads are to be used to make copies from the white field sheets as soon as possible after each survey. Instructions regarding the disposition of the pink copy sheets will be issued for each State and where necessary for each drainage basin, since the needs will require some variation in this respect.

Appropriate covers are to be provided for protection of field notes. Sketch maps showing points of observation are pasted to the inside of

the covers.

Use pencil only for recording field measurements. Fill in complete

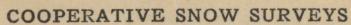
description of course, party, date, etc.

If the depth of core is very much less than the depth of snow, the reason should be determined and noted under "Remarks." In case of doubt regarding the core, determine the density (water content divided by depth gives density) and compare with that of other adjacent measurements about which there is no doubt. "Remarks" should include special items as to the character of snow, nature and condition of soil or other bottom reached by the cutter, whether wet, dry, frozen, etc.

Any extended remarks as to weather conditions at the time of survey or shortly before the survey, unusual difficulties encountered, etc., may be placed on the back of the sheet, as one side only is to be used in recording

the snow measurements.

¹Or paraffin.
²If the cutter is broken or badly worn, send first tube section with cutter attached to your regional snow survey office for repair or replacement.
³A complete core is evidenced when length of core compared to snow depth is approximately the same throughout a course.



State								
Draina	age Bas	in						
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Party	The same							
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*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
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†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

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### COOPERATIVE SNOW SURVEYS



State	************					•••••		
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Date	1		1	1	1	1	1	1
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
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2	755.0			037.2	106,1	142.6	186.7	238.0	2840	484.0	637.4	695,2	7220	755.0	496.0	937.5
9	6939.0			7355.3	7451.4	7521.3	75989	7667.8	7752.6	2059.3	8265,2	8346.7	4391.7	84424	8572.8	8724.0
10	5504.0			5800.9	5847.3	5863.0	59001	5925.4	5976.9	6264.8	6456.5	6493.5	6508.4	6530.3	6565.5	6736.9
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Snowstick	//3"			23"	26"	30	29"	J8°	38°	26	25"	26"	25	25	" 25	24"
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Avenometers 1	741.0	897.0	134.0	302./	347.5	365,8	487.7	598.7	639,0	678.0	777.5	852.0	883.8	146.5	239.2	
2	12516	303.2	608,2	815.0	869.0	903.7	035.0	142.1	196,4	250,2	- 361.4	415.9	455.6	804,7	9/3.5	
9	8994.3	9264.9	9727.5	0050,0	01306	0/96.2	0361.5	0539.3	0618.8	06833	0879.0	1943.0	1026.6	154513	1715.7	
10	7000.4	7269.9	76963	8008.0	8052.8	8090.3	8231.1	8389.8	8446,5	8487.6	8606.9	8626.5	- 8660.8	9148.4	9309.4	
1/	452.7	634.7		165.5	218.5	262.2	375.4	498.5	551,3	608.7	750.2	812.3	850,0	523 /	3440	
Emperatures															Table 1	
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Min	+180	+149	28	+34	+190	+3/	THE RESERVE OF THE PARTY OF THE	+290	+20	+26	+230		+18	+ 16	7 3	
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ANemometers	0	1500	The state of the s	aura		279.4	270 1	4400	516.3	NECESTAL DESCRIPTION OF THE PERSON OF THE PE	612,4	Continues of the property of the state of th	843.2	THE RESIDENCE OF THE PROPERTY	129.3	357.7
	302.6	625.0	18.1	941.0	032.6	9/1.7	3/8./	7777.8	3/6.3	2000	6/21/					221.7
2	001.6	4001	cord	699.4	767.6	034.0	184,1	234.3	271.7	353.4	383.6	455.9	614.2	720.3	974.6	194.6
	001.6	701.6	333.3	6//./	161.6	051.0	10/11	221.3								
9 1	1832.0	auton	9/50 W	70914	2991.6	22/02	35902	2/00 4	3764.2	3855.0	3897.5	4032.8	4277 9	4544.8	4892.1	5219.4
	1031.0	24344	2680.7	2871.7	6 1 1 . 6	37683	33/6.3	36 80 1								
10	94097	0022 5	02507	0453 8	0519.8	0882.8	10945	1119.8	1153.4	1201.3	1222.5	1313,7	1546.9	1775.8	2085,4	2439.9
	7707.7	0052.3	0 22011	0/00,0		000000	10/110									
	4/12,8	8487	003.5	151.1	214.0	473.1	630.0	695.2	753.2	832.4	856.4	950,0	143.3	337.2	566.0	794.8
Temperature																
Hotel	+ 284	+26	+ 25	+ 4/14	+40	+33°	+ 340	+ 36 9	+30	+ 40	+ 36°	+ 19	+ 15	+ 179	+20	+ 280
Max	+ 36	+30	4 - 4			+ 37.5		+ 55		A SECURE OF THE PERSON OF THE	+ 58		+ 52			9 000
Min	+ 22	+ 140					+ 22	6					+ 15	+ 17	+ 2	+ 360
Pastore	+ 26	+21.5	0	+ 34			+37.59						+ 13	+ 14		+ 250
Max	+319	+ 25	6			+ 34	0		+ 54	+ 48	+ 465	+ 265	+ + 18	+ 18	+ 22	+ 33
Min	+ 180	+12	+89				+ 18	+ 7	+ 9	+ 11	+ 16	+129	+ 13	T 13	" + 5"	+ 14
								1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1								
Snowstick	29"	27	27	1	26	16	26	" 25	25	24	" 24"	26	30	34	32	36
													and the control of th	A company of the state of the s	And the second s	Service of the servic
	17	18	19	20	21	12	MANAGEMENT CONTRACTOR AND	AND DESCRIPTION OF THE PROPERTY OF THE PROPERT	AND THE PROPERTY AS ADDRESS OF THE PROPERTY OF		27	28	Mary 1132 all Carlotter Anna Anna Anna Anna Anna Anna Anna Ann	AND ASSESSMENT HAS RECOGNISHED BY THE	AND ADDRESS OF THE PARTY OF THE	The same of the sa
Avenometers 1	449.8	535.5	607.5	705.8	779.2	855,0	913,4	970,0	056.5	183.2	284.3	461.5	516.1	627.0	683.2	A STATE OF A
							1849									
2	293.6	341.4	408.8	514.4	606.1	615.4	676.9	737.9	814.6	940.4	056.6	191.7	307,5	381.2	435.4	
9	5362.8	5456.4	5552.4	5717.4	5796.6	5885.8	5979,4	6051.9	2993.9	6374.7	6551.4	6776.8	69648	7150,3	7243.1	
				4												
10	2557.3	2614.5	2656.5	2760.5	2802.3	2839.0	2875,7	2918,2	6175.6	3/2/13	3242.4	3428.0	3587.1	37508	38300	4
												200				
	880.0	955.0	032.0	147.0		288.0	354,2	- 420.c	500.0	646.0	782.0	9883	097.2	June 20 Commence Land	June Marchander	
Temperature													6 ,		1	
"Hotel	+33	S brown &	+330			+480		Dia Control of the Co	+ 40°				1/7.5	4	The second second	
Max	+ 45	+ 56	+480	+46	+ 57				0 + 418					1000 May 1000		
Min	7/4	+ 3	+ 4		+ 4	+6						+ 15	200		1	-
Pasture	+29	STREET, STREET	+32,5					0 - 41			+ 17			6		
Max	+ 48	+5/	7 4/	+70	+ 51		5 + 78	9 + 44		+ 28	+ 25	+ 18°	The state of the s	+ 26	+31	4
Min	-19	1-19	-1.50		-1	6	+6	9 + 15	o + 4	1 10		7 /3	Tank		na na ana ang ang ang ang ang ang ang an	or the second displacement and the second
	201		10	20	u 28	11 40	, 46	27	7 26	37	34	, _	50	4		Takes to
Snowstick	30"		29"	29	LO	28	28		~		37		30			

		7 10 10															
	A John	Too had					Febr	LUARY	- 19	I have many							
Avenomet	ters 1	2	3	2 4			7	1 81	4	10	SKIDSSINGAGE AND SERVICE SERVI	12	13	Land Sand	12 15		MA
	738.6	774,0	871.9	953.3	0407	133.8	194.0	252,2	2963		424.6	582.4	595,3	26 2.3	727.5		
2	452,5	500.0	602.3	668.9	729.5	846.0	908.6	981.2	020,7	077.5	145,0	285.7	356,5	433.3	492.0		
9	7262.3	7343.2	7477.5	7568.3	7650.0	7810.2	7902.3	7988.4	80543	8124,6	8226.8	8484.5	8527.5	9636.5	8737.0		
10	3848.2	2896.0	3996.3	4060.7	4101.2	4242.9	4206.9	4365.0	4307.7	4419.7	4482.8	4647.8	4607.0	Tanga personal of the Paris Control of the Paris Co	47663		
,,	35-1.6	403.4	503.3	574.3	6370	759.0	810.0	870,4	928.2	992.7	077.2	216.6	281.2	368.7	429.0		
Temperati	ure																
Hotel		+42°	+410		+360	. +450			BROWN BURNEY		THE REAL PROPERTY AND PERSONS ASSESSED.				+390		
Max	.+519	+48	+550	+580	4480	+57"	+52°				+35	9					
Min.	+ 49	1200		+120	+18	+250	+20°	+180			+15					The state of the s	
Pasture	e +33.5	+ 36°	+390		+36.5		and the second second			CONTRACTOR OF THE PARTY OF THE				( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )			
Max	+43°	+ 42	+50°	4540	+57	The second secon											
Min	- 10	+ 140	арушилий.	+60	+12	+22°	+140	+ 120	428°	124	+80	+299	+16	+17	+18		
8	1000										1/10		1611		40"	STATES IN PROPERTY MANAGEMENT AND	
Snow Dept	6 48	46"		4/"	40	38"	38"	37.	41"	42"	41"	43"	42"	41"	70		
														A ANTONIO POR PARA PARA PARA PARA PARA PARA PARA			
	16	17	18	19	20	21	22	23	24	25	1 26	17	28				
Anemoneters	The Committee of the Co	and the second	AND AND ADDRESS OF THE PARTY OF	CONTRACTOR OF STATE O	DESIGNATION OF THE PROPERTY OF	229.4		STATE OF THE PERSON NAMED IN COLUMN 1	THE RESIDENCE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLU	597.8	A STATE OF THE PROPERTY OF THE	WORKS AND					
2	588.2	- 689.7	804.0	871.8	032.4	105,1	195,5	342.5	475.2	527.4	654.0	803.0	933,4				
9	8869.1	9005,2	9191.9	9293.4	95-32,1	9629.3	9752.2	9975,8	0169.2	0301.7	0.446.1	0667.3	0880.0				
10	4857.0	4957.9	5126,9	5/89, 2	5391.2	6477.4	6554.6	5747,0	5906.6	6007.7	6190,0	6295.7	6447,5				
1,	533.4	1390		820 9	99/2	136.7	159.5	321,8	4575	558.4	660.0	819.2	983.8				
TEMPERA	Control of the Assessment Control of the Control of					a consideration and the consideration						The second secon		W 194 17			
Hotel	+28	+35°	+470	448	5 +43	+ 440	+470	+50	+50	0 +58	+32°	+28	+34				
Max	+340		+52		3 + 450							THE REAL PROPERTY.					
Min	+280		1379			+180							+ 25			AND THE RESIDENCE OF THE PARTY	
Pasture	+2.5	CATALOGUE AND THE CONTRACTOR OF THE CONTRACTOR O	MARKET THE PROPERTY OF THE PARTY OF THE PART	ww 42			THE SHADOWS SHOULD BE SHOULD BE SHOULD SHOUL	+46	A SAME AND COMPANY OF PASSIVE	0 +43	4 28	+26	+30	>		1	
Max	+32°		+46	+ 46	+38		+ 45	+ 47			1 + 38	+28	+ 34				
Min	+26°	Manage Control	+23	+ 46	+40	+ 13		+ 25	10	1 + 14	A STATE OF THE STA	126	+ 219				
		proposition and proposition of the second control of the second co															
Swow Dept	6 43"	43"	41*	40"	39	39	1 39	38	38	36.3	36"	37	36				and the second second second second second

2 972.5 109.7 242 2 398.6 440.3 535.1 495.0 682.0 752.1 989.0 050.5 251.4 402.8 516.2 576.4 744  9 07397 1139.4 1333.4 1428.8 1643.8 1785.0 1878.8 2021.1 2150.6 2449.4 2598.1 2898.3 3098.4 3173.8 3388.5 3548  10 6481.7 6627.1 6771.5 6816.7 7007.0 7137.0 7206.5 7297.7 7375.1 7573.6 7688.6 7996.0 8178.0 8331.3 8412.7 8540  11 022.6 177.0 316.0 373.4 549.3 639.3 700.2 816.0 900.3 100.5 200.3 433.2 5200 705.3 764.1 882  Temperature  40 42 1 42° + 28° + 26° + 30° + 30° + 32° + 18° + 30° + 31° + 30° + 32° + 42° + 455° + 45° + 55° + 62° + 55° + 62° + 55° + 62° + 55° + 62° + 55° + 62° + 55° + 62° + 55° + 62° + 55° + 62° + 55° + 62° + 55° + 56° + 51° + 50° + 50	16
9 09997 1139, 4 1333, 4 1428.8 1643.8 1785.0 1878.8 2021.1 2150.6 2449, 4 2596.1 2898.3 3098.4 3173.8 3388.5 3546  10 6481.7 6627.1 6771.5 6816.7 70070 7137.0 7200.5 7297.7 7375.1 7573.6 7688.6 79960 8178.0 8331.3 8412.7 8540  11 222.6 177.0 316.0 373.4 559.3 639.3 700.2 811.0 900.3 100.5 200.3 423.1 580.0 705.3 784.1 882  Temperature  Hotel +33° +28° +26° +30° +30° +30° +32° +18° +80° +31° +30° +38° +44° +47° +47° +45.5° +45° +36° Max +26° +32° +33° +44° +34° +34° +34° +34° +36° +486° +49° +52° +55° +62° +38° +46° +24° +24° +24° +45° +25° +55° +62° +48° +26° +26° +26° +26° +26° +26° +26° +26	1,3
10 \$4817 6627.1 6771.5 6816.7 70070 7137.0 7200.5 7297.7 7375.1 7573.6 7688.6 7996.0 8178.0 8331.3 8412.7 8540  11 222.6 177.0 316.0 373.4 559.3 639.3 700.2 811.0 900.3 100.5 200.3 423.2 580.0 705.3 764,1 882  Temperature  Hotel +32° +26° +26° +30° +30° +32° +18° +30° +31° +30° +33° +44° +47° +45.5° +45° +3  Max +26° +32° +32° +33° +33° +44° +37° +34° +34° +38° +46° +49° +52° +55° +62° +3  Min +30° +37° +36° +26° +24° +20° +10° +15° +24° +12° — +15° +30° +17° +14° +32° +  Pasture +30° +26° +26° +26° +26° +26° +27° +28° +29° +28° +29° +32° +41° +41° +41° +38° +1  Max +85° +28° +26° +26° +26° +26° +27° +28° +29° +28° +29° +32° +41° +41° +41° +41° +38° +1  Max +85° +28° +20° +26° +26° +26° +27° +28° +29° +28° +28° +28° +28° +43° +46° +49° +55° +.  Min +25° +22° +24° +22° +17° +6° +8° +21° +18° +8° +25° +23° +23° +21° +55° +.  Snow Depth 46° 45° 65° 60° 58° 55° 56° 57° 58° 65° 64° 64° 64° 66° 57° 55° 12° 58° 65° 64° 64° 64° 66° 57° 55° 65° 65° 64° 64° 64° 66° 57° 55° 65° 65° 66° 58° 55° 56° 57° 58° 65° 64° 64° 64° 64° 66° 57° 55° 65° 66° 58° 55° 56° 57° 58° 65° 64° 64° 64° 66° 57° 55° 65° 66° 58° 55° 56° 57° 58° 65° 64° 64° 64° 66° 57° 55° 66° 58° 55° 56° 57° 58° 65° 64° 64° 64° 64° 66° 57° 55° 65° 64° 64° 64° 64° 66° 57° 55° 66° 58° 55° 56° 57° 58° 65° 64° 64° 64° 66° 57° 55° 66° 58° 55° 56° 57° 58° 65° 64° 64° 64° 64° 66° 57° 55° 66° 58° 55° 56° 57° 58° 65° 64° 64° 64° 64° 66° 57° 55° 66° 57° 55° 66° 57° 58° 65° 64° 64° 64° 64° 66° 57° 55° 66° 57° 55° 66° 57° 58° 65° 64° 64° 64° 64° 66° 57° 55° 66° 57° 55° 66° 57° 58° 65° 64° 64° 64° 64° 66° 57° 55° 66° 57° 58° 65° 64° 64° 64° 66° 57° 55° 66° 66° 66° 67° 67° 67° 67° 67° 67° 67	8
a20.6   177.0   316.0   373.4   559.3   629.3   700.2   811.0   900.3   100.5   200.3   433.2   580.0   705.3   784.1   882    Temperature	,9
Temperature  Hotel +33° +28° +26° +30° +30° +32° +28° +30° +31° +30° +33° +44° +47° +455° +45° +3  Max +36° +32° +30° +33° +33° +44° +37° +34° +34° +38° +46° +49° +52° +55° +62° +3  Min +30° +37° +26° +24° +20° +10° +15° +24° +12°	,0
Hotel +33° +38° +36° +30° +30° +32° +18° +30° +31° +30° +33° +44° +47° +45.5° +45° +36° +36° +36° +32° +33° +44° +37° +34° +34° +38° +46° +49° +52° +55° +62° +32° +32° +32° +32° +32° +32° +32° +3	0
Hotel +33° +38° +36° +30° +30° +32° +18° +30° +31° +30° +33° +44° +47° +45.5° +45° +36° +34° +36° +36° +32° +55° +62° +36° +36° +37° +36° +37° +36° +26° +26° +26° +26° +26° +26° +26° +2	
Max +36° +32° +30° +33° +33° +44° +37° +34° +34° +38° +46° +49° +52° +55° +62° +37° +36° +37° +36° +29° +29° +21° +29° +22° +29° +22° +21° +21° +21° +21° +21° +21° +21	10
Min $+30^{\circ}$ $+37^{\circ}$ $+36^{\circ}$ $+24^{\circ}$ $+10^{\circ}$ $+10^{\circ}$ $+15^{\circ}$ $+24^{\circ}$ $+12^{\circ}$ $+15^{\circ}$ $+30^{\circ}$ $+27^{\circ}$ $+24^{\circ}$ $+32^{\circ}$ $+26^{\circ}$	
Pasture +30° +26° +24° +26° +26° +29° +25° +28° +29° +29° +32° +41° +41° +41° +38° +26° +28° +29° +30° +30° +30° +30° +30° +30° +30° +30	4 8
Max + 85° + 28° + 27° + 28° + 29° + 37° + 30° + 30° + 30° + 38° + 43° + 46° + 49° + 55° + .  Min + 25° + 22° + 24° + 22° + 17° + 6° + 8° + 21° + 18° + 18° + 8° + 25° + 23° + 12° + 27° +  Snow Depth 40° 45" 65" 60° 58° 55" 56" 57" 58° 65" 64" 64" 64" 60° 57" 55°  17 18 19 30 21 22 23 24 25 26 27 28 29 30° .	
Min +25° +22° +24° +22° +19° +6° +8° +21° +18° +28° +25° +23° +22° +27° +  Snow Depth 46° 45" 65° 60° 58° 55° 56° 59° 58° 65° 64° 64° 64° 60° 57° 55° 55° 55° 56° 59° 58° 55° 55° 56° 59° 58° 55° 55° 55° 55° 55° 55° 55° 55° 55	
SNOW Depth 46' 45' 65' 66' 58' 55' 56' 57' 58' 65' 64' 64' 60' 57' 55	ALC:
17 18 19 30 31 32 33 34 35 36 37 38 39 39	53"
	31
2 781.0 842.9 189.1 279.5 334.5 459.7 525.3 656.6 710.0 751.3 639.7 937.5 027	3
9 3642.0 3726.9 4206.5 4340.8 4441.8 4632.0 4919.0 5000.0 5065,0 5408,1 5347.1 547	1.9
10 8593.9 8639.6 9073.5 9170.2 9280.0 9325.4 9497.4 9599.0 95506 9637.3 9721.9 9808	0
11 950,2 028.7 371.3 460.1 530.0 680.0 740.0 880.5 936,3 991.8 090.1 305.5 285	6
Temperature	
Hotel +579 +399 +329 +329 +379 +379 +349 +329 +329	
Max +58 +549 +62° +44° +379 +40° +38° +38° +38°	
MIN +22 +289 +269 +269 +269 +269 +329 +329 +329 +329 +329 +329	
Pasture + 539 + 32 + 300 + 349 + 300 + 379 + 33 + 300 + 329	
Max + 52 + 47 + 55 + 40 + 329 + 471 + 55 + 37° + 34° + 34° + 33° + 34°	
MIN + 189 + 209 +	
Snow Depth 50" 48 47" 44" 40 46" 44" 44" 42" 42 39" - 52"	50"

											MAL	111	HA	200		
						A	or it	1947								
		2	3	Long	5	61	7	8	9	10	11	12	13	The state of the s	-	
Amenometers 1			813.0	916.0	018.1	063.4	152.9	232.3	309.9	344.0	535.3	798.3	966.0	057.0	138.0	
2			230.0	337.0	439.9	502.7	6063	671.6	463.5	780,2	952.8	387.0	649.5	705.7	788.0	
9			5816.0	5976.4	6137.5	6219.9	6370,5	6487.9	6611.6	6658	7038,7	7519.4	7802.4	7954.6	8073.5	
10			0031.7	0/62.8	0290.9	0338.8	0461.7	0539.7	0637.0	07000	1002.1	1464.8	1730.3	18 45.7	1925,5	
11			542.0	6575	776.0	133.2	9484	030 9	120,0	1543	4/30	7692	975.3	095.0	1750	
Temperatures												commendation of the same through	ancour de mades est amos est dimens	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 2 1 2 2 2	
Hotel			+26	7 +32	130	+43	0 +38	+ 31	+43	0 +50	+48	+50	48	0 + 63	£ 45	· u
Max			+ 33	+ 40	+419							groups	13			
Min			+940		+ 28	,		+31							+17"	
Pasture			+279	+30	+ 30				7 40		+ 47	1	+ 45	+64		>
Max			+ 289	1-32	+ 36		+ 409	+35	Million .		+ 47	+52	+57	+ 65	+ 62	0
Min			+19	-/	+ 24	+ 259		+28	+ 179		+24	· +33°	7 41°		+ 20	
																,
Smonistick			60	easie A	55	50	53"		50		48	45"	42	39	35	
	16	17	10	19	20	4/	12	23	24	25	- 36	27	28	29	30	
Anomonders,	207.0	307.0	366.4	436.9		601.0	667.3	73/2	COLING DATA PROMISED TO THE TOTAL OF MALE DATA PROMISED TO THE	819.5		237.7	301.0		474.0	
	201.0	307,0	680,7	700.7		601.0	30/2	13/10		017.0	007.1			321	The second secon	
2	871.0	013.0	057.0	138.1		322.2	427.0	510.6		613.9	898.7	162.6	240.8	338,5	450,0	
9	8195,1	8346.8	8455,1	8570,3		8854.5	8994.0	9100.2		9245.2	9633.6	0013.6	0131.5	02506	1368.0	
10	2008.9	2100.4	2214.4	230.5		2578.5	2639.9	2708.5		2834.4	3200.4	3527.5	3601.0	3685.3	3773.2	
11	261.5	333.5	445.3	538.6		744.3	8500			056,3	3405	619.6	704.0	790,5	871.0	
Temperatures																
Hotel	+ 600	+ 43	+ 54=	+580	and a second	+340	+450	+ 52	0	+44	+48	+ 389	+42	+49	+474	
Max	+ 67	1529	+ 570	+600		+ 450	+ 479	-54		+53°			+50			
Min	+ 280	+ 30	+280	+ 179	The second		+26	+ 13		+ 27		CONTROL COMPANY AND STREET	Missen	+29	9 + 30	
Betupe	+ 57	740	+500	+ 54		+32	+44	+47	THE RESERVE TO SERVE THE PARTY OF THE PARTY	+40	+47	+ 37	+41	+47	+659	
Max	+600	7489		+ 54 *		+ 419	144	7 49	orth .	+ 46.5	" + 47	+50			+65	
SNOWSFICK	+ 33	+27	+239	+ 240			1229	7 185		+ 23	CONTRACTOR OF THE PARTY OF THE	3		+ 26	+ 269	
SNOWSTICK	33	30		24		24"	20"	150		120		6"	3*	0"		
MANAGER AND RESIDENCE OF THE PARTY OF THE PA	PER CITAL				The state of the s	The state of the s	THE PERSON OF THE PERSON NAMED IN COLUMN TWO	State and state response conservations	Commence of the Commence of th		CONTROL OF THE PROPERTY OF THE	A CONTRACTOR OF THE PROPERTY O	THE RESIDENCE OF THE PROPERTY OF THE PARTY O	A CONTRACTOR OF THE PARTY OF TH	processing and a company	Section 200 from the section 2

Joda Springs avenometer de Temp. Readings Jan, Fel, War, apr. David unfed. Here are the diemometer readings. Hope They are ok. The deig taule reading wood come soon. Eleaur

State Co	House.
Drainage Basin	To Froh leeba Ruer
Snow Course	Sodul Springs
Party 1	hausendo & Ashousen
Date 0	2-28-47

Date				Maa				
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	29	23			12,5		Tce
	2	33	26			13.5		v
The state of the	3	30	24			14		Diet
	ef	37	30	** ** ** ** ** ** ** ** ** ** ** ** **		155		~
	5	39	32			16		GRASS
	6	39	30			15		V
	7	41	33			16.5		v
	8	35				14,5		Dirt
	9	36	29			13.5		V
	10	35	28			12.5		
	11	35	29			13.5		
	12	39	31			15		
			Marie San Control					
	TOT	428				172		
Approximation of the second	TOT: PLV	35.	1			14.3	40,1	70
						der.		

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

00.0

State Carforna									
Drainage Basin 50 Yuba									
Snow Course Soda Springs									
Party 9x E Johansen & PG & E men									
( 9, 1, 47									
Date									
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	of tube and Core	Water Content Inches	Density Per Cent	Remarks	
	9	36	29		er en	13,5		Dirt	
	19.14						-		
	10	35	28	an Piles		12,5		11	
	11	35	29			135		N	
		A Police				La company			
	12	39	31			15		4	
	58000								
	2)	128			-	172			
								40,0%	
		7			- 1			David Control	
					NAME OF TAXABLE PARTY.				

Noofsheets.	Comp.	byChecked	by

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

State California	
Drainage Basin 500 Yulia	
Some Source Sorda Smines	
Party J&E Johannen & Ply & E men	
Date 3-11-47	

*Description or Number	†Sam- ple Number	Depth of Snow	Length of Core Inches	Weight of Empty	Weight of tube and Core	Water	Density Per	Remarks
of Course	Number	Inches 29	2/3	Tube	Core	Inches 12,5	Cent	dee
		~ /						<i>o</i> &
	2	33	26			135		*/
							32.39	
	3	30	24			14		Dirt
			al approximation					
	4	37	30			155		v
							13.	
	5	39	32			16		Grass
	6	39	30			15		N
	7	41	33			165		20
	3	35	30			145		Dirt

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

Noofsheets.	Comp.	byChecked	by
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Drainage Basin Snow Course Party Date Weight of tube Depth of Weight Density Per Cent \*Description or Number Length of Core Water †Samof Snow Inches Empty Tube Content and ple Remarks Inches Core Inches Number of Course

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

500 water Tot. 761.0 293 Ave. 476 18.3

COOPESATIVE SHOW SURVEYS

Dens = 3847

Colil

Drainage Basin So Fork Guba										
Snow Course Mishi or 5 mmit										
Party & E Johansen & P. G. & E Surveyers										
Date 3-1-47										
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks		
	1	37	30			135		Dirt		
	2	40	34			16		Gravel		
	3	43	36	14 CT		17		n		
A Maria	4	47	38	eser.		175		Dirt		
* when	5	52	44	2000		19		*/		
		The state of								
	6	50	42			18		71		
						30				
		- 44								

195

55 46

Nosheets.	Comp.	byChecked	by
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<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

State ...

Drainage Basin So Forth Yulia										
Snow Course Riski or Summit										
Party 1-8 & Johansen & 138 & men										
Date										
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches		Remarks		
	9	52	46			19		Dirt		
	10	149	40		700-11-21	185				
	11	48	40			18		**		
	12	39	30			18		a l		
					3					
	13	44	38		<b>X</b>	185				
	9									
	14	46	41			19		re		
	15	50	46			20		**		

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

23

54 48

No of	sheets.	Comp.	by	Checked	by
210	sheets.		18	13 3	8 14 %

State CaliFornia

AUE 39.0

Drainage Basin & doub Yulia Reser									
Snow Course Voucer Street									
Party & Johansen & E Stansen									
Date 0 2-28-47									
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks	
	1	24	22			10		Rock	
	2	27	24			10,5			
	3	30	25			115		U	
	4	35	30			13		U	
	5	48	40			17.5		·	
	6	40	34			15	) SA-P	U	
	7	70	60			25.5		Dirt	
	T07	274				103			

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

State Caly										
Drainage Basin So Fork Yuba Show Course Jonnes Pass										
Snow Course Lonner Pass										
Party 18 E Johansen & PGK E Surveyers  Date  Date										
Date 3-81-47										
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks		
	1	24	22			10		Rock		
	2	27	24			10,5		11		
	3	30	25			115		21		
	4	35	30			13		γ		
	5	48	40			175		28		
	6	40	34			15		u		
	7	70	60			255		I int		
	7)	3 7 4				103		and the second		
	1									
		39,1		4.5				37.6%		
*Show	number	er or de	escription Cou	on as g	iven on 5° r "N 5°	sketch E." et	map,	i.e., "Course		

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

No......of.....sheets. Comp. by......Checked by.....

State California

Drainage Basin Anadrea Rever

Snow Course Donnar Jake

Party Drandus 1944

Date Trandus 1944

Date	Date										
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks			
		38.6	34.5	23	36.0	13		-1" 2"ice			
	2	37.0	35.0	23	36.0	13		-,5" 2" ice			
	3	36.5	36.5	23	38.0	15		-,5 4"ice			
	4	31.0	31,0	23	33,0	10		-,5 2" ice			
	5	39.0	34.5	23	35.5	12.5		3ºice			
	6		34.0	23	35.0	12		-1" 1"xe			
	7	42.5	35.5	23	37.0	14		-1" 2" ice			
	8	38.0	34.0	13	35.0	12		l'ice			
	9	39.5	31.0	23	35.0	12		-1" 2" ice			
	10	34.0	33,0	23	34.0	ACTION OF THE PROPERTY.		2"ice			
	11	33.0	30.0	23	34.0			l'ice			
	12	38.5	36.0	23	35.0	12		3" ice			
	13	315	29.0	23	33,5	10.5		2"ice			
							•				
	TOT	476	5			158	.0				
	AU.	36.7				12.2	+33	2%			

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

No. 7 of Zsheets. Comp. by 10 Checked by ......

California

State			10		2. /	7				
Drainage Basin 50 Yulia										
Snow Course Soda Springs										
Party 1 & & Johansen										
Date 3-26-47										
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks		
	1	420	360	23	43	20		Dirt		
	ia	42	405	23	43	20	1	u		
		7								
	2	4/25	325	2.3	43	20		**		
	3	45	345	23	425	195		1		
	4	45	32	23	45	22		Sample .		
	4a	47	37	23	48	25		Truckor		
								Road		
	5	41	32	23	45,5	225	in	actor tracks		
	6	49	30	23	42	19				
	7	46	34,5	23	435	205				
	The second of th									
						1 1-1		:		

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

Nosheets.	Comp.	byChecked	by
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State	california
Drainage Basin	3- guba
Snow Course	Soela 3 mings
Party 4	8 & Johansen
Date	3-26-47

					**********		***************************************	
†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Rem	arks
8	52	375	23	445	2/5		-25	Dut
8a	49	37	23	435	205		-2"	
9	46	34	23	39	16			řì
10	45	32,5	23	#25	195		-1"	11
		*						
11	44	33,5	-23	435	205			
								48. C
12	44	335	23	435	20,5			
13	525	335	23	43	20			
							516	
	501						331	5
								,0
	45	5			20,			A. a
	Ple Number 8 8 a 9 10 11	†Sample Snow Inches 8 52 8 a 49 9 46 10 45 11 44 12 44 13 52 5	†Sample Snow Inches   Length of Core Inches   8   52   375   8   49   37   9   76   34   5   10   45   325   12   44   335   13   525   335   13   525   335   13   525   335   13   525   335   13   525   335   13   525   335   14   15   15   15   15   15   15   1	†Sample Snow Inches   Length of Core Inches   Tube   8   52   375   23   8   49   37   23     23	†Sample Snow Number Inches   Length of Core   Empty   and Core   Remoth   Snow   Snow	†Sample Snow Number of Snow Inches of Core Inches of Core Inches	†Sam- ple Snow Number Inches   Length of Core   Core   Content   Core   Core	†Sam- of ple Number Inches of Core Inches of Core Inches of Core Inches of Core Inches Ocean Inc

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

Nosheets.	Comp.	byChecked	by
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California

State		/	7	0.	1					
Draina	ige Bas	in	50	- ga	va					
Snove	Course	3	icola	5.	nin	25				
	Course	x 1	1	1	/	1				
Party	73	9 7	ma	usi	M'					
Party & & Johansen  Date 3 - 31 - 47										
Date		1								
*Description	†Sam-	Depth	Length	Weight	of tube	Water	Density			
or Number of Course	ple Number	Snow Inches	of Core Inches	Empty Tube	and Core	Content	Per Cent	Remarks		
	1	53	46			21		dee		
			28 - 11 (c)							
	2	51	43			205		de		
				7						
	3	54	49			215		11		
			· /			1 7/5				
	1,1	52	2/12			4 4		9 1		
	4	2%	43			205		muel		
	5	55	49			22		14		
	6	54	49			22		Grass		
	403			¥						
	7	54	51			23		V		
	-		1	1			CONTRACTOR OF THE PARTY OF THE			

52

8

44

205

11

Nosheets.	Comp.	byChecked	by

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

State		vac		had	2			**************			
Draina	ge Bas	in	50	4		20					
Drainage Basin So Yulia Snow Course Social Smings											
Party J. 48 Johansen & PG& E men											
Date	Party f 48 Johansen & Pgy E men Date 3 1-31-47										
Date		Depth			Weight						
*Description or Number of Course	†Sam- ple Number	of Snow Inches	Length of Core Inches	of Empty Tube	of tube and Core	Water Content Inches	Density Per Cent	Remarks			
	9	52	46			21		Pirt			
	10	54	51			23,5		**			
		The Barret									
	11	53	50			225		Grass			
	12	58	53			245		7			
12		642				262					
	1										
						211		40.4 %			
								197			
							300				

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

Nosheets.	Comp.	byChecked	by
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State California
Drainage Basin 501 Yyba
wish of a somet
Party Jeg E Johansen & 79 & 8 men  Date 3-31-47
Date 3-31-47

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches		Remarks
	1	53	46			20,5		Dirt
	2	58	52	40		22		*/
				<b>19</b>				
	3	74	66			39,5		Gravel
	4	68	62			30		Firt
				No.		12.5	7.57	
	5	75	67			30,5		4
	6	74	64			30	44	N
	7	79	71			32,5		1
					A			
The rest	8	76	68			30,5		V

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

	city orregue	ar spacing	, between	i sumpres.	
No	of	sheets.	Comp.	byChecked	by

State		Ca	lifo	mia	6				
Draina	ge Bas	in <i>50</i>	1 9	Juli	u				
Cnow	Course	1	usta	1:0	n $J$	um	ini	t	
Party	184	Jol	ran	sen	3 1	9.3	EN	mer	
Date	V 3	143	1 -	47	*****				THE PERSON NAMED IN
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks	
	9	75	66			295		Tort	NAME AND POST OF
						•			STATE OF THE PARTY OF
	10	73	66			29		u	
									The state of the s
	11	70	62			28		11	Charles and the Control of the Contr
	12	66	58			27,5		u	THE RESERVE THE PARTY OF THE PA
									STATE OF STA
	13	57	51	-12	14.4	245		ч	STATE OF THE PARTY
						-			THE REAL PROPERTY.
	14	59	54			25		"	STORY OF STREET
									The state of the s
	-	1 .	m			1			1000

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

4

56

63

No of	sheets	Comp	hvChecked	bv
1,0	/ M &	Comp.	byChecked	LA A

State California

Drainage Basin So yuba

Snow Course Tonner Pass (Summer)

Party & Sphansen

Date 3-24-47

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	39	33	23	40	17		Rack
	2	435	425	23	44	21		ĸ
	3	43	37	23	42	19		u
	3a	42	34	23	42	19		"
	4	25	225	23	34	11		N
							*	
	5	68	43	23	525	299		Dort
		1						
	59	68	41	23	48,5	259		u
					Ar is			
	6	38,5	27	23	385	15,5		Rock
						113		
THE RESERVE OF THE PARTY OF THE		1.			•	1 , 1		

\*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note any *irregular* spacing between samples.

No. of sheets. Comp. by Checked by

Calil

State		- 400	100	man	<i>-</i>			
Draina	ige Bas	in	150	9	sul	_		
		7	Jone	ner	P	ass		
	Course	4	********	un		******		
Party	13	5	jour	an	un-			
Date	<i>U</i>	3 /	-31	-4	7		******	
		Depth of		Weight	Weight			
*Description or Number	†Sam- ple	Snow	Length of Core	of Empty	of tube	Content	Density Per	Remarks
of Course	Number	Inches	Inches	Tube	Core	Inches	Cent	
	1	46	39			195		Reck
	2	64	55			250	24	V
76 3								
	3	49	41			20		11
	4	47	40			20		y
	5	69	58			305	100	V
	6	43	37			17,5		1
	7	115	103	-		535		Dort
	7	13				106		
						7		43.0

Nosheets.	Comp.	byChecked	by

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

State Cali	loma
	Truckee River
Snow Course	Jonner lake
	E Johansen
Date // 3 - 2	24-47

Date	******						*******	
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	17	16	23	3/	8	3.0	Dirtice
	2	23	22	23	37	14		ч
	3	25	25	23	34	13		4
	4	18	19	23	32	9		
							M(19)	
	5	25,5	245	23	35	12		Ti de la companya de
	6	265	235	23	345	115		e.
	7	26	23	23	36	13		
	8	21	21	23	36	13		

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

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#### FEDERAL AND STATE

COOPERATIVE SNOW SURVEYS

State			an					
Draina	ige Bas	111	Tru			*******	****	
Snow	Course		Jor	iner	- le	uhe		
	Course	1. 1	8 9	dra	use	<u>بر</u>		
Party		Q .	-24	- U	7	_*********		
Date	V	J	~ 4					
*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	9	30	27	23	31	14		Dirt
				n				
	10	22	21,5	23	34	11		16
	11	23	23	23	36	13		u
	ali, S							
	12	23	22	23	34	11		9.8
	13	16	17	23	335	705		ic
		*						
	Th	is c	own	se	ha	43	ine	hes
			10					
	of	Jes	20	nt	lu:	top	of	the Dirt
		24				1	/	
		221	8			11.5		
*Show	numbe	er or d	escription Con	on as g	riven or	sketch	map,	i.e., "Course

No. I," or "Major Course,"

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C. 8.10

State				J				
	age Bas						Rive	er
Snow	Course	********	Ja	nne	a i	dah	e	
Party	J	4 8	John	and	en			
Date				4-1	-4	7		
*Description	†Sam-	Depth	Length	Weight	Weight of tube	Water	Density	
or Number of Course	ple Number	Snow	of Core Inches	Empty Tube	and Core	Content Inches		Remarks
	1	13	12			7		Dirt
	2	22	18			11		
	3	24	22			1275		
								The second second
	4	245	235			13		
	5	17	17			9		
	6	26	91			13		
		70	~~			9		
	-	17	200			11 1		
	7	27	205			16,5		
	C.		11					
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	8	21	16,5			9,5		

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<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

State						··········		
Draina	age Bas	in			****	***********	R	ser
Snow	Course		羽	nv	u	Kat	re	
Party	9	4 6	Ja	har	ise	h		
Date	1		0	7-1	-4	1		
		Depth		Weight	Weight			
*Description or Number	†Sam- ple	of Snow	Length of Core	of Empty	of tube	Water Content		Remarks
of Course	Number		Inches	Tube	Core	Inches	Cent	
	9	29	25			142		Dut
	10	21,5	205			105		
			*					
	11	24	12	A Second		15		
	1	1-1	22			13		
								As San Land
	12	22	195			10		
	13	12	12			6		
1 200 as	-		b					
	-		/		. 1			
	30	nel	us	ou	th	e t	op	of
	72							1
	the	din	1	2//	and	in	the	1 course
	1	- A 1/3				. #169	1918	
1		233				20		
		No.						
		21,8				101		49.1%
*Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.								
1	10. 1,	or mind	, or con		410	ما ود		

†Always start measurements for sampling from the *initial* point as shown by the sketch map of the course and follow the spacing for samples as indicated. Particular care should be taken to note

No......of.....sheets. Comp. by......Checked by.....

any irregular spacing between samples.

State	California	
Drainage Basin	so suba	
Snow Course	Donner Park Course	
Party 1.	& E Johansen	S Company of the last
Date	3-27-47	-
		-

*Description or Number of Course	†Sam- ple Number	Depth of Snow Inches	Length of Core Inches	Weight of Empty Tube	Weight of tube and Core	Water Content Inches	Density Per Cent	Remarks
	1	71,0	58			35,5		Dirt
	2	825	75 3			38		Rach
29	1							
	3	97	95			42		71
					Samuel of the same			
	4	175	134			70		Aut
Th	us	cor	me	ec	3 4	lld	rift	ted
7.4							0	
			Si	con				
L	4 )	426	3			185		
			2					
		106				416		43.6 %

<sup>\*</sup>Show number or description as given on sketch map, i.e., "Course No. 1," or "Major Course," or "N 5° E," etc.

Noofsheets.	Comp.	byChecked	by

F. Vonsild The Physics of Snow- Welt 1. The problem of elevation of instruments. 2. Radiation, a major phase. (a). Nostimal freezing. (1). True frequently down un overcust. 4. Doscent of melt-water Gravitational pull was The applicating languagements

Freezen at upper edge.

Red one cyptal down.

Radiation from surface or despen?

Lo red due to metter films

and have doly in freezen?

J-ly 1746 1946-

Sola Springer July 28, 1946. Am SS. 1746 21,92 No.4 18,55 DW 20,90 2×8 16,50 Need cal, chloride No. 3 - army Center 22161 NEedge 22.61 Center No. 2-19,2 Stevens W NW 19.21 4X 8 ME 16,11 ·W 16,30 16,20 center 16,26 16,45

Sucto No. 1 D, 9,50 No. 9 (3/19090) 20,83 18,44 No.10 2/11 18.50 D No.8-17.52 No.6 18.40 W Drip Tank . .077 Stevens 9. 14,8 = 0.60 m

Oled aremone. at 1/0, 11 - Salts Gage. Relling dessal

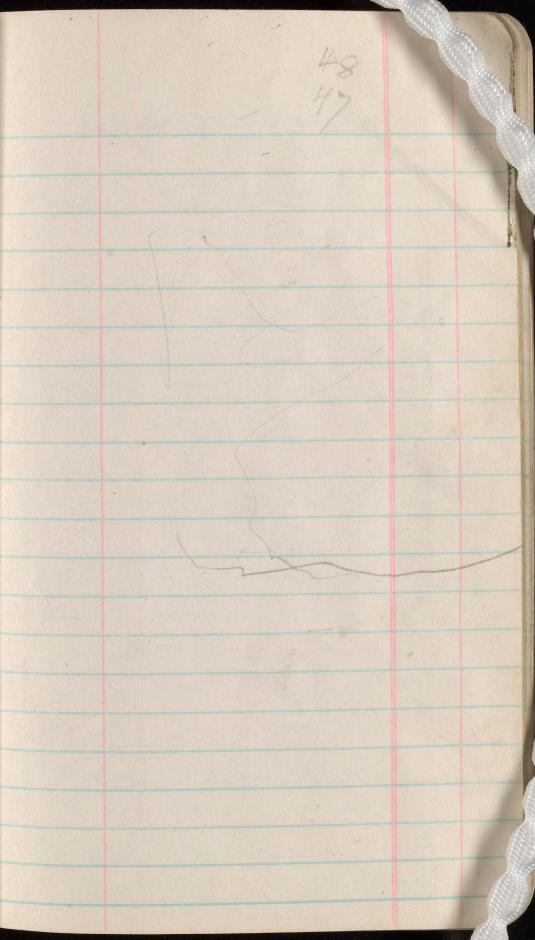
Rugs 19 (Worday) Those form "White," C Sin platforms at Son Carylo 6:30 per bus Coloupul senson to Trucken Some it Fences Two girl observers also for Danner Past Closenstary Som armed robed. Honed Johnny but des not come Trange no ballier

Hare 201 aug. 20 . Beps 87 6 Lunch 15 4+ 19 Repaired anomore record an trigle register but ashton for She 854 pullefly done is Venley, Hand almost colinis Ine I gal white daint Max. tem 79°F Wins 44° (Reset 73°)

Sep 22 Face \$1.09 5423 3 lima he \$ \$ 2,55 Need -Sharing cream Felt for wind direct mirron Black faint, + Chinese red I camel hands brush - Truming Hat, gug, suit

Monday Sep. 23/46. Came last night at 8:15 am. lep at 6 ans Stevent S. Lage Sex 2 11.60 Gain 0.92 Snow 6 m. 0.92 No,1 - (White furniel) Wind diedu Suchine Senati Cometines entre 24 hrs

and sluggish



Monday, Sep. 30/46 Battery being changed 1235"
Water O. K. With Eleanon. 10:30 Changed to winter sheet Humid Dry 64°F.

Wat 51° Diff 13

= 38% Therm ? approx Tank still full-above Donner Pass 14-T 54° Them 55.5 Still 1 day slow - Pen

Farther to right, Ripes need straightening to Grand should be raved Pesture 26 mg 51,55 Dry 52.0 = 70%.
Wet 47.5 = 70%.
Wet 3nt later D, 48 = 9340, W 47 H-T app 87-975

Laid out black banting Home Cleanon, More party Replaced. hairs In H-T cet Hotel thigh at onse, Battery 4:30 pm Still charging. 1250 Fare \$200 Buft 794 Lunch 854 GOOK Case, Height by Wilth (ontoles) 2 to 4" Been shelves 1/3 "

Thursdown Triple Register 41 30pm, Darry menant. Column of sinching recorders still /2 in. above dontesto. But line still straight What's loose? Vero fine pad put on wind - direction peno by Orthur Suilland,

Friday Oct 4. Eleanor brought H-T (Pashere 11 Ft) to Beno to drive out for and insert men humidity hairs Brought also the themograph from Jonnes Pass God regulation and look above the rebuilt thermographs Tues actober 8 Eleanor reported that new humidaly haves mere failing to Johnnie is testing all drup James. all

are now full . 10 x The recent bound and So have postponed trip to belog down the fans and volves. Promised to came up

Sunday Oct 13/46, Expenses 2101 Brede .. Thone Brought to Sada Saga by the Sandorfo Quin and Norma) after talk to Campbe Club Called Johansons Parture pan emphal during week.

Battery found day but refilled apparently deal, at least no reading. Trisople charges pugged in: Immediate test by me 5 cello 1275 Evidently dry cells that with out from achton of records at 114 Charleston Wants to compare flan of artisian wells with precip, an 11th, a

Can provide precip Can and spring baline from Snow Kabbeaton 2. Doubtful about going 3. Well dry at Snowhat, duly 3 7/t deep in "solid rock"! Zed three fisures Must refill it for Stream. 4. Orean dry in theger. vitores of affrox. 1/2 in out second storms of 0,95 m cansed it

to flow. where therefore 21/2 he for Snow melt? / Soil is shallow , snow is normally deep, So factor is small, Helting by Slipes -Two more flumes to they basing - one Tilted toward sun and the other away Krom Dun. a good more, Present flume represents too many aspects toward and must specialize luce our drip tancer

Has abundance of 3/ m caps needed for test of tarres. Talked about Indie Some day he may be able & go to Spain or Iran, or Think or Korea. The futures broadens out. Monday Oct. 14 Schoold cell 1275 Wear cell now 1260 Hot a brightime more West Eleanor at 8 am to asset all Thermond.

She has become adef. Leaves early for Waring hemmer langer parendruer person Sunshine recorder Weed try roundhoused conen on for livering contact runer, Contrate tightened , but no response column for up tute . Head anneles ?

Wed, October 23/46. Donner dans for drip Soil Conservation herer Honds over From bett broke up. Some water and shell some ice in value. Tank full og water warme and had well ice somewhat.

> 50 Keep from black at Donner Laro difficult to underen oldhe beams deere over value was suldered down and conla not be character with intarlo pige, > les he extra compling - also more graphite and tar fant. I Lurch at microe, Trip 9 ann Costa Dodine 15 4

oct 31 With Walter 3:30 pm Donner Love Pumped down to 1394 Howheld coans thorsely Refilled 1.19 No vil Sleeve + pipe 6 1 crescent wrench sin. Donner Pass Coment: Pipes too wheat.

Need 12 - 2 fer and,
air pipe 1/m - 12 in Valva rod found brown

QJ 31 Costs 2120 2 Lunch 1,60 Dinner \$.09 Sucher Nov. / Fara Lunch Nov-2, Truckee-Rono 754

Bress 1,10 Brought ladders for new Tanks and book dave, Home with Walter. Reno 7:30 pm. Friday Nov. 1 - Bus at game Brought piper from Mildl -Flished Donner Passe Towner and connected it up-

Building stone for under pipe from pan to land Presting on two points a rock of Remained all night Sahirday Nac. 2 Wind strong during night, Stranger This worming 700 wild Dyo D Oaxxx Tree blocker down the morning at 9 4 Lighty and frage of

Repair me your dippense of sine on carrill site Senth & Filling States half way to railroad slopes similar but Comer than Steveny W. must raise it to same Renewing Russian wind for 2x8m gage,

On ets site mill be blaced the Calefornia U.S. English from Find Gagett) Despres to stredy snow Enga formation, Joges SS and No. 4 Angen solid. Nos. 2 ( Stevens W) has Josoible trace of plociting ice; 16.3 (4,5,0) entirely ligned -Monday Nov 4 Teno-Soda Spga-Colm, clear, cold. Reset insta in Pasture

Spencer -: Now 4: Reno-Sode Styre Kronch 199 Dinner 150 Nov. 5, 6 100 hunch 110 Nov. 5, 6 and 4 and 55 again i fair day, Eleanor reset Jans Hairs better but trace still soupered at Donner Gass Frally got value

trued upbut med stiffer ones, chain long enough live but witter on it Meeded-Additional Chances. 1-100 3 Value 16 m & Dingtolo have been 1/2" Somewhat

Tuesday Nos 5 Overnight Helpsh Eleanor with amendmends an ballat. Breakfort at 6:30 cm. Eleanon or election board driften. Tred blowlouch to than drip tank : marker for snow surrey come this bunder. The form ga Wto E, B. X 200015 8+17 7 pm ply

Monday Nov. 11/46. Thoned John Johanner Today comented drip pan in place - Cold east bliggers hut weed calaium there Will place mas supporting stones und pige from fan As lo Will rause Can No 3. Plan to compa Free gages after each heavy storm with montoure

ps. Phone 433 Tonopah tered Cocker jup, male, A. nels. Sparks. them at 354 Cocker pupmonths old. O16M-018E NSM-N11E N7M-N13E N6M-F 012M-F 1936 1936 1937 1936 1939 1937 1937 1935 1936 1935 1936 1933 Ford Sedan ..... Auburn Six Conv. Coupe Lincoln Zephyr sedan ... Ford convert. sedan ..... Packard Conv. Coupe .... Pontiac sedan ..... Buick sedan ..... Chevrolet Pickup ..... Buick sedan ..... Chrysler Sedan ..... Plymouth sedan ..... Chevrolet sedan ..... Chevrolet Sedan ..... Dodge sedan .....

446

395

House Trailers and Luggage Trailers 1941 Lincoln Zephyr sedan ... Lincoln Zephyr sedan ... 2135

## McCAUGHEY MOTORS 515 S. Virginia

**LCKS** 

うくくくくく

haired Fox O15M-018E

1938

DeSota 7-pass. Sedan.... Nash convert, coupe ....

1744 795

795 657 695 662 595 495 489 467

1940

1940

mpshire Red,

Barred Rocks

Phone 7255

1 STORE ultry supplies per hundred. yer Motor Service, 340 Lake. from. Terms or trade. 2-1637, Sawradio, \$1463. Within OPA ceiling. 1942 HUDSON Super Six, heater and Many other good used cars to choose

cozy, lean-to room. Parking spaces.

ONE 27-ft. trailer, also trailer with

STREAMLINED, lightweight camppriced. Phone Sparks 2597. O25M-F

ing trailer. May be seen any time.

N7M-N9E

trailer. Fair condition, Reasonably

Mrs. Binns, Chism Court. West 2nd

NSM-N12E

1942 \$800. ナドロロロ FORD JEEP, good condition, Within OPA ceiling. Terms or Many other good wars to N9E-N13M

> ing 1946 Ford pickup with same. tane equipment. Will consider sell-

25.FT., 1945 Glider house trailer. Bu-

Dandond 9990 & Tinginia NOM WILL

dies available

THE PERSON

urther notice.

## ON U.S. HIGHWAY 40

mostatic control. \$42.50. Sawyer Motor Service. 340 Lake St. Phone 51631 Ranch, Doyle, Calif. for cooking. \$675. At Fred Osburn cellent condition. Reasonable, Pri-1941 PRAIRIE Schooner trailer, ex-THREE gallon Cub water heaters Lincoln Park Motel, East of Sparks. rior. Reasonable price. Can be seen, Excellent condition, beautiful inte-FOR SALE - 1943 Barton luggage house trailer. Home for 4. NEW, modern lightweight 18-ft vate party. Mrs. James Frazer, Old HOUSE trailer, 1943 Mainline, 27.ft. Orchard Trailer Court. N9M-N11E for trailer or small apartment. Ther O31M-N13M Butane

## October Is Second Coldest Month on Record for Reno

With an average temperature of 45.5 degrees, last month was the second coldest October of record in Reno, being exceeded only in 1919, when the mean temperature fell to 45 degrees, according to a summary of climatical data issued yestereday at the Hubbard Field station of the U. S. Weather Bureau.

A new all-time minimum record was set, however, when the mercury dropped to a low of 12.7 degrees, October 29. A low of 13 degrees as was recorded on the 31st. Night temperatures averaged unusually cold, with lows a freezing, or below, on 22 days, and almost continuously after the 6th.

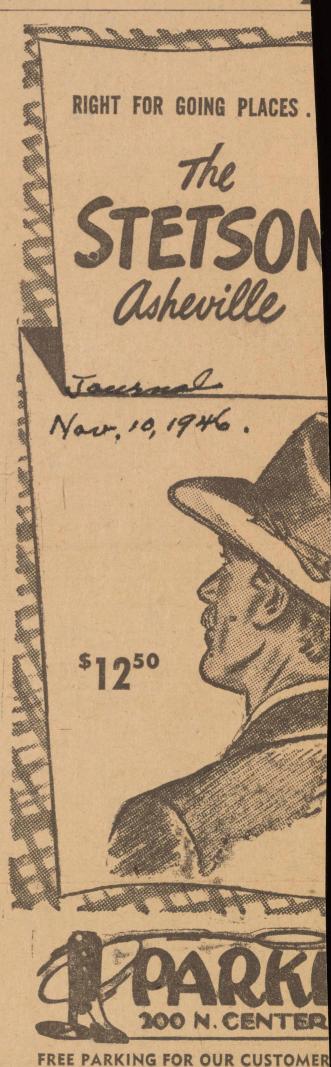
On the other extreme, high temperatures of 77 and 78 degrees occurred on the 13th and 25th. On 20 days, however, the average temperature was below normal.

Moisture was much in evidence, with total precipitation for October being 0.51 inch, or, 0.15 inch above the long time normal. There were six days with measureable precipitation, and four with a trace. There was a trace of snow on three days.

There were 12 clear days, 9 were

With an average temperature of cloudy and 10 partly cloudy. There is degrees, last month was the ceond coldest October of record sunshine.

Considerable wind was noted, with the highest velocity of 32 miles per hour recorded on the 17th.





Monday Nov. 11/46. Today cemented drip pan in place - Cold east bliggers but weed calcium chloride water, Will place more supporting stones under pige from pan to tour (army) 18 in, higher Plan to compare Area gages after each heavy storm

to delicat love me movement record Need an anemometer above Nordan to Compare and Pass. on Dec, 1. Rethanse there,

Sunday - Nov 17/46 Expenses markens 2 Henches (Fraces) 1.35 3,47 Left Reno 8am, 3 Paristankosto Jahnne rold last night He will erect al Hat hat water pipe from Ballenes 1225 Mis Whitey " offered.

me for Dennie The dunex of the hatel kitchem for same rate de los gregent bedroom Steam heat passmut toilet. He would here to make a serte my room and boshes adjoining But cable calent in each resolution of necessay. Bono Indea, Walst ve contil next occurs

2 × 8 pree gage being moved Fred Paget brings Sedo gage up un Well Vacaffin -Clarened to por paraffor abound rough outlitt of old pany 1, But Pasturd pane That show and will he it averylowing 2. Donner Pass Pa throat Some particles of ise floated out of thelone Value Int

Fragen? Ousufull? > Muse measured and Phone Jahnnie. Keep mitake uncovered or deeply dovered ? fill with sale, Chlor, antet until permanent Carried wide open, Donner taxe layes of the in it. Snort only slighty not

Forgot -Rare oilcan

Salveday Dec. 7 Into the douches with Nalter Bodell. Took Themog, Sacto Tank, Stonethe calcium chloride Reno The sake -Nead snow should Leenah for 3 - \$1.00 Water low again ashton Codd brought his more motor to emboad our truck > anded in having Engs Gogo 17 in / 2 height of Stevens W.

> heft Thermag. to exchange for thermog " Forer Smaller cans recharged Des. HP) - No-Should have had cover plates for the dover Sans! Welfing onow in feed pipe, freezing Sacto Jage -Parited dead blacky No foliaging to prome to

sheld, adjecie of Sim asklen has noticed that the black care Collect no onon let the galvaniaed dans do. sur filtering The the thin clanding ashow done To corrent the Bany cos Bridge for the year Waller Wilson come & Joboratory Lost

week and como Sund over to see me. On Fred \* Forrest Pholos and War for been made Peno. 7 Coordinates of Sound home & Research Har The to eduk cheldes army Enginteens. Dec 5,1946 12 echarge 4-55-6-8 goge wit dight wit with 4 24,89 Full 8.19 6.5 S.S: 30.60 22,75 11.75 6.75 24.46 23.25 8.55 7.1 23.35 21.5 8.01 6.75 areved. A Jackman

Sunday Jan 5/47 and Warie called at Reno. They want more home life and chance to educate their children. So he has resigned for the Neather Ourgan Today Relph Dronn rought me view of Enella, Burma Coal asphalted and open entire years, Sopans must be low, Ledo Road andy graveled and fregun I wash out at last monroons,

He will forego an entire sentester Jul the chance to go with me. Jus - Expenses 45 fore \$ 5,5/92 201 Si mittens 3,50 Bryton 222 Feer ride to Caro 155 Purchased. clothing for India-

- Need -1 Gon Calendar Park 1947 Strong eastwird -

Bus at 3:25 pm-Road dry all ways Continuous suo only at fout of Donne Lan This ice for large areas of take, Water drawn considerably Tors buses - a third one at Summit to gather up the sociers and march Special Buy St Sode Spor Nant sid ing skiert Hatel active - Want more quanta affice full - Johnis and Eleanors are happi buy - in six saled Lut are planning to

carry on my more Mess Whiley happy this tald spell with com abatric heater a life owen during cold! period, Will and a Cold ? dr Rems 7 = F Saturday " 8° F Will it snow now ?" Taxe Driver Office used as a cident operating room Jan. 6- Baranter gory? Strang E wind (20 mi) even from Teneres upwards

three Gass. Too windy theat Monday Feb 3/47 Theoremeters and humidity. Upole Houston love So purchased see Clarbox and sumpler reach his - at sode stop & Soda Springer and Holedon, Webe at Sunt sampler from Lucree. Fred Paget but extra Accought Themas, + section taken with snow thermas from S. Strings and H-7 forh Theree for cleaning

Monday Feb 3/47 alyde Houston love Glax box and sumples Sourt samples from Fred Paget but extra section taken with

Tues ang 22 Lions gover at Histolal Kat at 80% F? Haxies -Out - In WW, Gen Tunpertine

(John) Col, Fauthner U.S.E. Division off South Pacific Divisor Calif & Someron. Balfore, Blog, S.F. Kolh of us F. wenth MIT.T. Wm Cossidy woh Bolhis Alace. orele. 1 Farelher 203 Stunley 3 Wi Cossidy.
4 Willen + Miller P. + H.

hight in bachreon wile glass - forcalain Back door light. Cord. 3 Reflector lights Drill \_ Canvas strips for chairs Quet Menn Refinits from The New York