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9 and Drainage Watershed Management Conference, Boise,
10 Idaho and 2) Supplementary Frequency Tables and Figures
11 for 13 Snow Courses in the Western United States.

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TABLE OF CONTENTS

1		
2		Page
3	FREQUENCY ANALYSIS OF SNOW COURSE DATA	1
4	Summary Manuscript Presented at the July 21-23, 1980 ASCE	
5	Irrigation and Drainage Watershed Management Conference,	
6	Boise, Idaho.	
7	APPENDIX TABLES	13
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

APPENDIX LIST OF TABLES	
Appendix Table	Page
1. Probability and contingency data for the Colorado - Colum- bine snow course	13
2. Probability and contingency data for the Idaho - Benton Spring snow course	14
3. Probability and contingency data for the Idaho-Big Springs snow course	15
4. Probability and contingency data for the Idaho - Galena Summit snow course	16
5. Probability and contingency data for the Idaho - Galena snow course	17
6. Probability and contingency data for the Idaho - Graham Ranch snow course	18
7. Probability and contingency data for the Idaho - South Mountain snow course	19
8. Probability and contingency data for the Idaho - Mount Baldy snow course	20
9. Probability and contingency data for the Montana - Ten Mile Middle snow course	21
10. Probability and contingency data for the Oregon - Billie Creek Divide snow course	22
11. Probability and contingency data for the Oregon - Lake of the Woods snow course	23
12. Probability and contingency data for the Oregon - Blue Mountain Spring snow course	24

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27

13. Probability and contingency data for the Washington -
Bumping Lake snow course

Page
25

APPENDIX LIST OF FIGURES

1	APPENDIX LIST OF FIGURES		Page
2	Appendix Figure		Page
3	1-4 Probability of occurrence of snow density, water content, snow depth for the Colorado - Columbine snow course	26-27	
4			
5	5-9 Probability of occurrence of snow density, water content, snow depth for the Idaho - Benton Spring	28-30	
6			
7	10-13 Probability of occurrence of snow density, water content, snow depth for the Idaho - Big Springs snow course	31-32	
8			
9	14-18 Probability of occurrence of snow density, water content, snow depth for the Idaho - Galena Summit snow course	33-35	
10			
11	19-23 Probability of occurrence of snow density, water content, snow depth for the Idaho - Galena snow course	35-37	
12			
13	24-27 Probability of occurrence of snow density, water content, snow depth for the Idaho - Graham Ranch snow course	38-39	
14			
15	28-31 Probability of occurrence of snow density, water content, snow depth for the Idaho - South Mountain snow course	40-41	
16			
17	32-36 Probability of occurrence of snow density, water content, snow depth for the Idaho - Mount Baldy snow course	42-44	
18			
19	37-41 Probability of occurrence of snow density, water content, snow depth for the Montana - Ten Mile Middle snow course	44-46	
20			
21	42-45 Probability of occurrence of snow density, water content, snow depth for the Oregon - Billie Creek Divide snow course	47-48	
22			
23	46-49 Probability of occurrence of snow density, water content, and snow depth for the Oregon - Lake of the Woods snow course	49-50	
24			
25	50-53 Probability of occurrence of snow density, water content, and snow depth for the Oregon - Blue Mountain Spring	51-52	
26			
27	snow course		

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27

Page

54-57 Probability of occurrence of snow density, water content, 53-54
and snow depth for the Washington - Bumping Lake snow
course

FREQUENCY ANALYSIS OF SNOW COURSE DATA^{1/}

By

C. E. Brockway, (M.ASCE) and H. F. Mayland^{2/}

ABSTRACT

The revised log-Pearson Type III frequency analysis was applied to data from 13 snow courses in five western states having a data base of 26 to 49 years. January through May monthly data for depth, water content and snow density were analyzed. The procedure provides good estimates of mid- and high-range depth and density values while overestimating near zero values on some courses.

Generally for the 13 courses the over-estimation occurred whenever water content values were less than 2 to 3 inches. This is the minimum depth often considered for snowmobiling and skiing activities. Other frequency techniques should be considered for courses where estimates of values less than 2 inches are required such as for runoff predictions.

INTRODUCTION

Frequency analysis is a statistical tool that allows the estimation of the probability of recurrence of an event of given magnitude. Various techniques have been routinely applied to rainfall and stream flow events, but less often for analysis of snow data because of the limited data base. Frequency information on the snow pack can provide a probability basis upon which to evaluate snow based winter recreational activities, structural loading factors for architectural planning and runoff forecasts for irrigation water supplies.

The continued increase in winter sports and recreation will undoubtedly lead to evaluation of new sites for development in the western United States. Potential developers and planners are concerned with the length of snow season, frequency of occurrence of specific snow depths, and data on which to base risk analysis for investment purposes. Reliable data from frequency analysis of applicable snow course data can

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supplement their planning efforts. In addition, planning by city and village officials in recreation areas can be enhanced if better estimates of expected snow depths are known. Determination of required snow removal equipment, labor allocation and timing might all be improved.

Recreation equipment suppliers who must evaluate inventory requirements in selected service areas might use frequency analysis data to allocate and plan for inventory. These data might also be used by suppliers evaluating possible expansion of service area.

Agricultural use of snow data has historically been limited to utilization of monthly water content data in stream forecasting procedures. Frequency analysis of snow data can be coupled with existing forecast procedures to provide timely probability-oriented runoff estimates. For instance during a potential low snow pack or low runoff year, farmers in irrigated areas must make decisions on cropping patterns and acreages to be planted based on forecasted water supplies. In irrigated areas where no reservoir storage is available, the situation is even more difficult. Timely estimates of probable water supplies can be aided by evaluating the probability of specific seasonal runoff levels on a month by month basis. An analysis using a contingency ratio approach which will be explained later is applicable. This approach, which calculates the probability of a certain parameter level based on the preceding month's level, can assist the farmer or planner in evaluating the risk involved in planning for a specific water supply. This approach would be especially applicable in drought situations such as occurred in 1977. In the Wood River Valley of Idaho, farmers cut back planted acreage and changed cropping patterns based on estimated available irrigation water supply. Decisions had to be made late in the season based on April snow course data and might have been expedited if some risk analysis had been possible.

PROCEDURE

Vance and Whaley (1971) and Reese et al. (1973) found that the log-Pearson Type III approach was a suitable method to evaluate snow-parameter frequency data. This manuscript applies principals of frequency analysis to monthly snow depth, water content and snow density data.

This method has been used successfully in flood analysis and is recommended by the U. S. Water Resources Council (1977). Reese et al. (1973) in analysis of snow course data for central Idaho evaluated regression techniques on the specific courses and concluded that the log-Pearson Type III revised (Jennings and Benson, 1979) approach was superior.

Analysis of the data for 13 snow courses shows that this revised log-Pearson Type III provides adequate estimates for mid- and high-range values, but over estimates near zero values on some courses.

Snow survey data (Soil Conservation Service, 1921-1964, 1965-1976) were analyzed for 13 snow course sites in the Western United States (Figure

1). Table 1 is a list of snow course names, state and river basin locations and SCS course number. Twenty-six to forty-nine years of record were available for the courses of which seven were in Idaho, three in Oregon and one each in Colorado, Montana, and Washington. Data were available for January through April for seven courses, January through May for five courses, and February through May for one course.

Frequency analyses of the snow depths, water equivalents and snow densities; and the three corresponding contingency ratios were made for each snow course. The contingency ratio is defined as the ratio of a particular snow-water parameter to the same measurement made the preceding month at the same site. Each event within a particular series or data set (e.g., February snow depths for a specific snow course) was then ranked (largest first), and the formula $M/(N+1)$, where M is the rank and N is the number of observed events, including zero values (Jennings and Benson, 1979) was used to compute the plotting positions representing the expected probabilities of the ranked events (Langbein, 1960). The recurrence data were then calculated. These values represent the percent of time that a snow-water parameter value of a specific magnitude or greater will occur.

The contingency ratios were calculated from a data set of individual month/month values that were determined for each year. These data were then subject to the log-Pearson Type III analysis.

Frequency Analysis

Table 2 shows a typical data set and ranking for snow depth for February 1 in the South Mountain snow course in southwestern Idaho. Table 3 shows the results of the revised log-Pearson Type III analysis for the above data.

A plot of March 1 data for the Galena Summit course (Figure 2) near Sun Valley, Idaho shows a nearly linear log-Pearson distribution (i.e., skew coefficient is nearly zero).

Calculated recurrence intervals were revised on data sets with zero events by multiplying by the ratio of the number of non-zero events to the total number of events (Jennings and Benson, 1969). Plots of these three parameters show nearly zero skew indicating approximately log normal distribution. However, South Mountain (Figure 3) data for February 1 demonstrates a relatively large negative skew coefficient resulting from infrequent, but very low snow-fall values in some years. This results in overestimating near-zero snow and water depths. Later months show improvement in the skew factors. This may also occur when initiation of early winter snowfall is delayed or when unusual spring snow melt occurs in some years. The April data for Lake of the Woods in the Klamath Lake basin of Oregon shows this effect (Figure 4). The large negative skew may be calculated for sites simply because of a long record that includes several zero or near zero snow fall values.

A typical summary sheet of probability values (Table 4) and contingency ratios (Table 5) are shown for the Galena Summit Course. Tabulated data (Table 4) can be interpreted as follows: For the Galena Summit

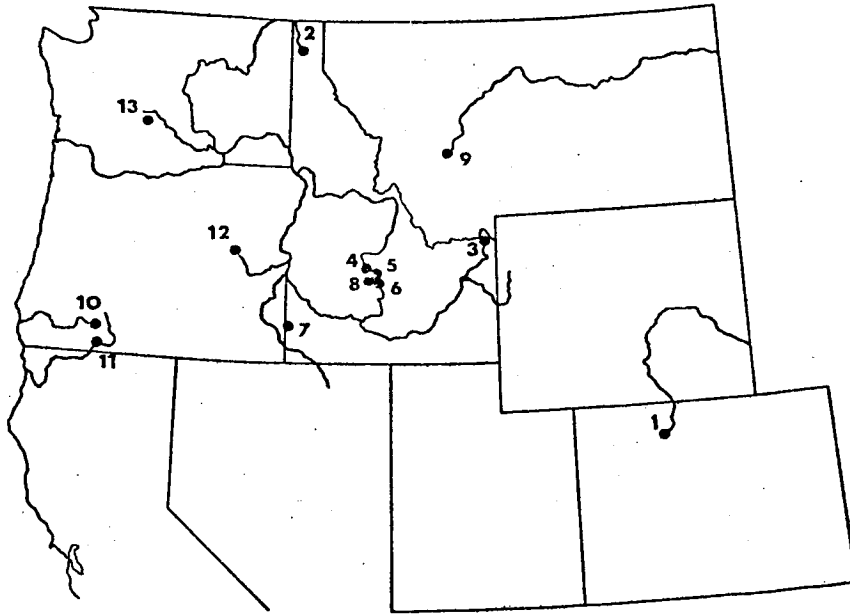


Figure 1. Location of snow courses selected for this study.

Table 1. Name, Location and Snow Course Numbers.

No.	State	Name	River
1.	Colorado	Columbine	North Platte
2.	Idaho	Benton Spring	Priest
3.	Idaho	Big Springs	Henry's Fork
4.	Idaho	Galena Summit	Big Wood
5.	Idaho	Galena	Big Wood
6.	Idaho	Graham Ranch	Big Wood
7.	Idaho	South Mountain	Owyhee
8.	Idaho	Mount Baldy	Big Wood
9.	Montana	Ten Mile Middle	Missouri main
10.	Oregon	Billie Creek Divide	Rogue
11.	Oregon	Lake of the Woods	Klamath
12.	Oregon	Blue Mountain Spring	Malheur
13.	Washington	Bumping Lake	Yakima

Table 2. Typical Data Set for Log-Pearson Type III Frequency Analysis of February 1 Snow Depths on the South Mountain Snow Course in Idaho.

Year	Snow Depth (Inches)	Snow Depth (Log 10)	Plotting Position
1972	54.0	1.732	2.6
1952	53.0	1.724	5.2
1969	52.0	1.716	7.8
1964	46.0	1.662	10.5
1956	41.0	1.612	13.1
1943	41.0	1.612	15.7
1967	40.0	1.602	18.4
1949	39.0	1.591	21.0
1965	38.0	1.579	23.6
1974	38.0	1.579	26.3
1946	36.0	1.556	28.9
1970	35.0	1.544	31.5
1975	31.0	1.491	34.2
1958	29.0	1.462	36.8
1950	29.0	1.462	39.4
1971	29.0	1.462	42.1
1955	26.0	1.414	44.7
1951	25.0	1.397	47.3
1941	25.0	1.397	50.0
1976	25.0	1.397	52.6
1973	24.0	1.380	55.2
1960	24.0	1.380	57.8
1953	23.0	1.361	60.5
1957	23.0	1.361	63.1
1942	23.0	1.361	65.7
1954	19.0	1.278	68.4
1947	19.0	1.278	71.0
1966	19.0	1.278	73.6
1959	18.0	1.255	76.3
1945	18.0	1.255	78.9
1948	17.0	1.230	81.5
1968	17.0	1.230	84.2
1962	16.0	1.204	86.8
1961	15.0	1.176	89.4
1944	12.0	1.079	92.1
1963	4.0	0.602	94.7
1940	0.0		

Table 3. Typical Results of Log-Pearson Type III Frequency Analysis When Revised for Zero Value Events. Data are February 1 Snow Depths on the South Mountain Snow Course in Idaho.

Number of Observations:	37
Arithmetic Mean:	27.649
Number of Observations Equal to Zero:	1
Number of Observations Used:	36
Mean of Logarithms:	1.4087763
Geometric Mean:	25.632
Standard Deviation of Logarithms:	0.2175544
Coefficient of Skewness (Log 10):	-1.3217

Skew Factors	Selected Recurrence Interval (Percent)	Log Computed Snow Depth	Computed Snow Depth	Revised Recurrence (Percent)
-3.234	99.00	0.705	5.0	96.32
-1.917	95.00	0.991	9.8	92.43
-1.253	90.00	1.136	13.6	87.56
-0.710	60.00	1.254	17.9	77.83
0.210	50.00	1.454	28.4	48.64
0.833	20.00	1.589	38.9	19.45
1.060	10.00	1.639	43.5	9.73
1.204	5.00	1.670	46.8	4.86
1.239	4.00	1.678	47.6	3.89
1.325	2.00	1.697	49.7	1.94
1.385	1.00	1.710	51.3	0.97
1.427	0.50	1.719	52.4	0.48
1.483	0.10	1.731	53.8	0.09
1.510	0.01	1.737	54.6	0.01

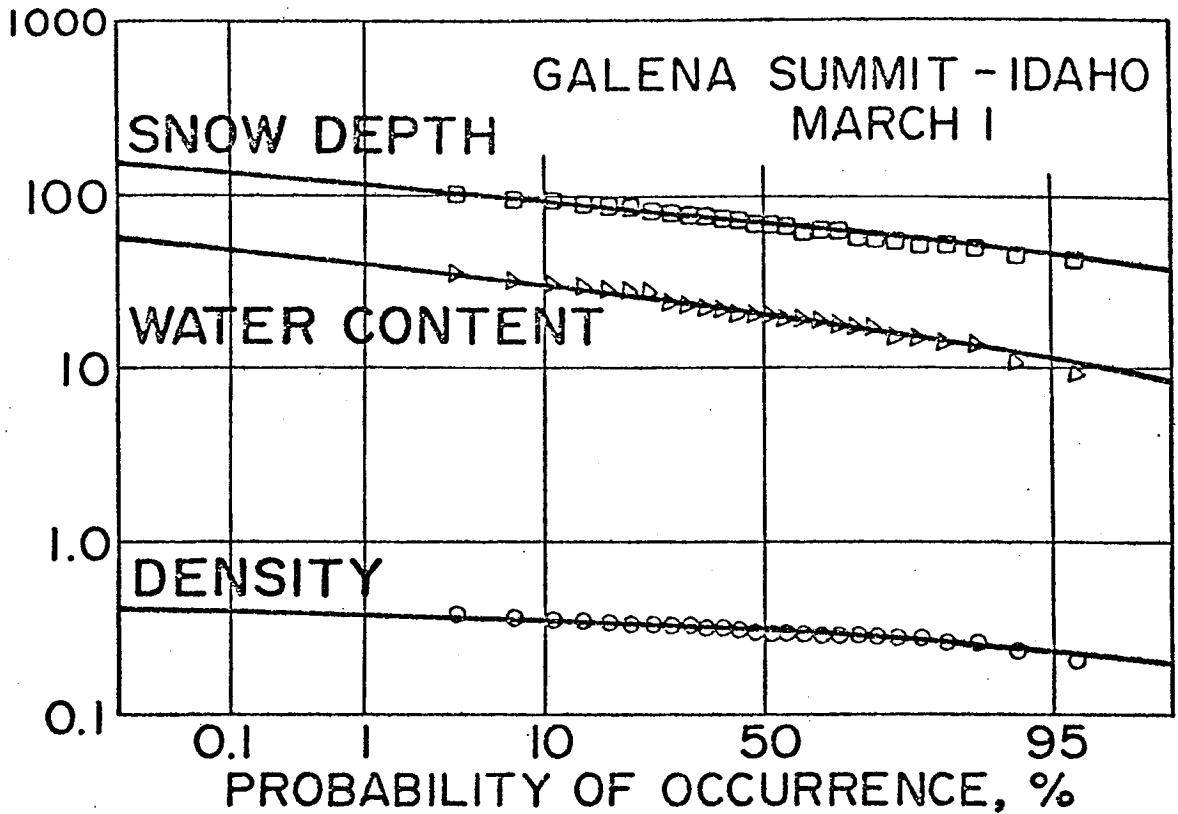


Figure 2. Snow depth (inches), water content (inches), and density frequency distributions for Galena Summit Snow Course.

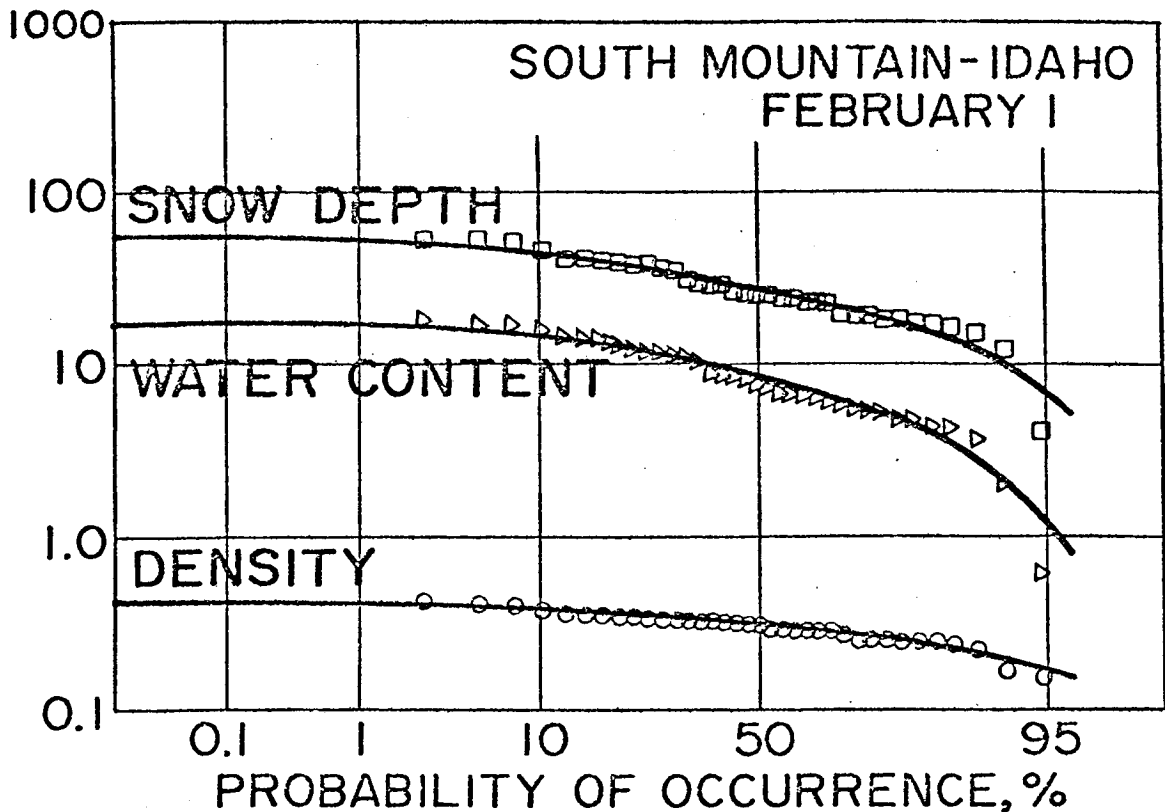


Figure 3. Snow depth (inches), water content (inches) and density frequency distributions for South Mountain Course.

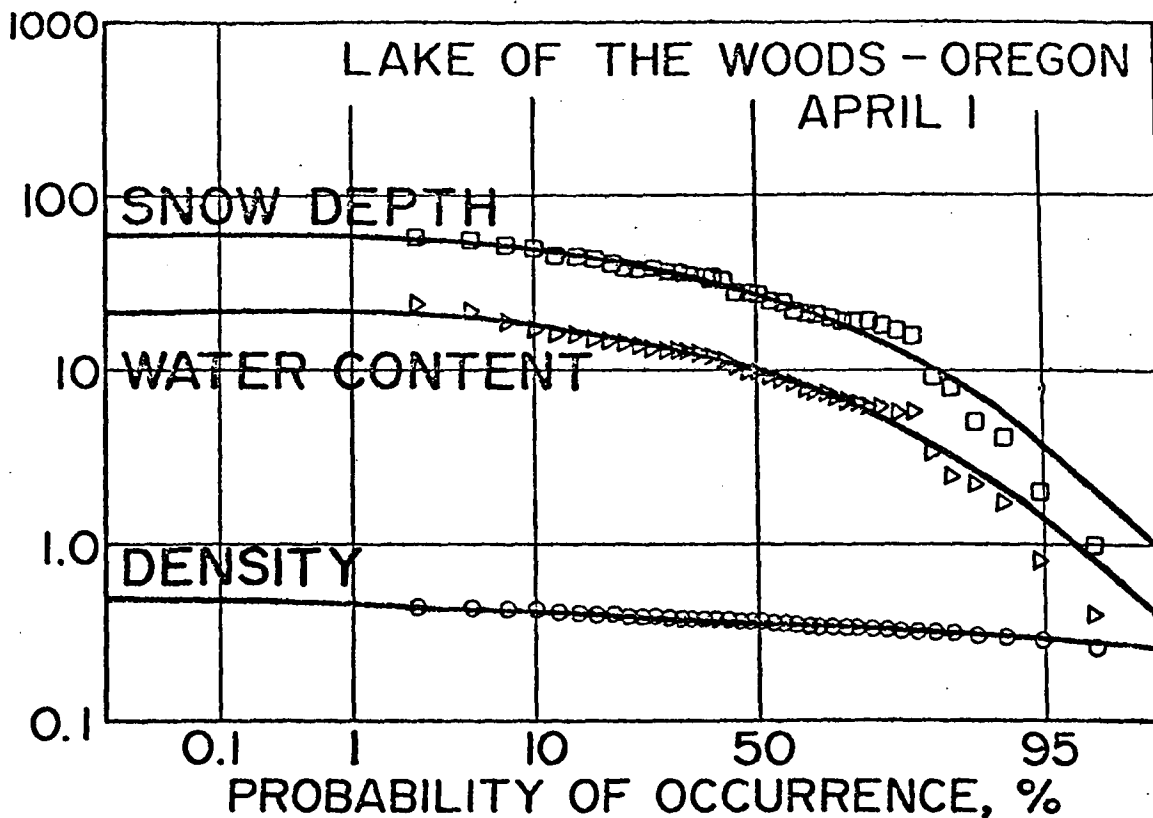


Figure 4. Snow depth (inches), water content (inches), and density frequency distributions for Lake of the Woods, Oregon Snow Course.

course, at least 99, 68, and 45 inches of snow will be found on this course on March 1, 5, 50, and 95% of the time, respectively. At least 5% of the time the course would have a minimum of 100 inches of snow, 29 inches of water and a snow density of 0.32. These values represent the frequency distribution and are not to be interpreted as occurring simultaneously for all three parameters. Data for probability levels other than those shown in the table must be interpolated from curves such as that shown for March 1 (Figure 2).

Probability-Contingency Analysis

Again using the Galena Summit course (Table 5) as an example, at least 95% of the time the March snow depth would be at least 0.8 times that measured in February. Fifty percent of the time the March snow depth would be 1.1 times the February depth.

APPLICATION

The procedure is most appropriately used for areas having at least 20 to 25 years of data. The approach is helpful in providing criteria for building designs in snowfall areas (Vance and Whaley, 1971). The frequency distribution can also be used in planning and allocating winter

Table 4. Minimum Depth of Snow or Water (inches) and Snow Density Values Occurring at Selected Probability Levels. Data are for the Galena Summit Course in Idaho. Column Eight Data are Actual Means.

	95%	90%	75%	50%	25%	10%	5%	Actual Means
January 1								
Snow	24.1	26.6	30.7	38.7	49.1	65.6	78.4	43.27
Water	4.11	5.08	6.62	9.42	12.86	17.53	20.82	10.52
Density	0.16	0.18	0.21	0.24	0.27	0.29	0.30	0.24
February 1								
Snow	33.1	39.2	48.2	61.7	75.7	90.7	99.8	63.27
Water	7.70	9.48	12.17	16.45	21.10	26.29	29.51	17.19
Density	0.21	0.22	0.24	0.27	0.29	0.31	0.32	0.27
March 1								
Snow	44.8	49.8	56.9	67.6	78.7	91.1	98.8	69.04
Water	11.10	13.97	15.95	20.41	25.19	30.49	33.79	21.12
Density	0.23	0.25	0.27	0.30	0.33	0.35	0.36	0.30
April 1								
Snow	51.5	57.1	64.8	75.8	86.7	97.8	104.5	76.54
Water	15.13	17.33	20.49	25.27	30.31	35.84	39.27	25.94
Density	0.28	0.29	0.31	0.33	0.36	0.39	0.40	0.34
May 1								
Snow	43.3	48.7	56.3	67.6	79.3	91.8	99.5	68.92
Water	15.75	17.90	21.02	25.90	31.18	37.29	41.20	26.80
Density	0.33	0.34	0.36	0.39	0.41	0.43	0.44	0.39

Table 5. Minimum Contingency Ratios of Snow Depth, Water Content and Snow Density Occurring at Selected Probability Levels. Data are for the Galena Summit Course in Idaho. Months are Abbreviated as Follows: January, J; February, F; March, M and April, A.

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	1.0	1.1	1.2	1.5	1.8	2.1	2.3
M/J	1.1	1.3	1.5	1.7	1.9	2.1	2.1
A/J	1.2	1.3	1.6	1.9	2.2	2.5	2.6
May/J	1.0	1.1	1.4	1.7	2.1	2.4	2.7
M/F	0.8	0.9	1.0	1.1	1.3	1.5	1.6
A/F	0.9	1.0	1.1	1.2	1.4	1.7	1.8
May/F	0.8	0.8	0.9	1.1	1.3	1.6	1.9
A/M	0.9	1.0	1.0	1.1	1.2	1.3	1.3
May/M	0.7	0.8	0.9	1.0	1.1	1.3	1.5
May/A	0.7	0.8	0.8	0.9	1.0	1.1	1.2
Water content							
F/J	1.11	1.23	1.42	1.70	2.01	2.38	2.62
M/J	1.43	1.57	1.77	2.11	2.50	3.00	3.34
A/J	1.68	1.88	2.18	2.66	3.19	3.83	4.26
May/J	1.53	1.78	2.15	2.76	3.45	4.32	4.90
M/F	1.05	1.09	1.14	1.24	1.35	1.49	1.59
A/F	1.24	1.28	1.36	1.51	1.71	2.01	2.24
May/F	1.13	1.19	1.30	1.53	1.85	2.36	2.77
A/M	1.08	1.11	1.16	1.24	1.32	1.41	1.48
May/M	0.94	1.00	1.09	1.26	1.45	1.72	1.90
May/A	0.82	0.87	0.93	1.02	1.13	1.25	1.34
Density							
F/J	0.89	0.93	1.00	1.12	1.26	1.44	1.57
M/J	0.97	1.04	1.14	1.28	1.44	1.60	1.71
A/J	1.10	1.16	1.25	1.41	1.60	1.84	2.00
May/J	1.30	1.36	1.45	1.62	1.82	2.11	2.32
M/F	0.93	0.97	1.03	1.12	1.21	1.31	1.37
A/F	1.09	1.13	1.18	1.25	1.33	1.41	1.47
May/F	1.24	1.28	1.35	1.44	1.54	1.66	1.73
A/M	0.98	1.01	1.05	1.11	1.18	1.25	1.30
May/M	1.15	1.18	1.21	1.28	1.35	1.44	1.50
May/A	1.03	1.06	1.10	1.16	1.21	1.26	1.29

recreational resources. For example, skiers near Sun Valley, Idaho on the Galena Summit might expect more than 78 inches of snow (Table 4) one year out of 20 (5%) on January 1. Conversely, these skiers might expect only 24 inches of snow with that same frequency. This type of information might also be helpful to retailers in planning inventories of recreational equipment. The revised log-Pearson Type III analysis is appropriate when estimating in the mid- and high-range of snow, water, and density values. However, this analysis tends to overestimate low values. This could have important consequences for those activities requiring a minimum snow base that would be over estimated by this method.

It is recommended that other frequency methods (U. S. Water Resources Council (1977) be evaluated, especially those that have better definition for events of near zero magnitude.

The farmer downstream of the Galena Summit snow course in the Wood River Valley in Idaho facing a March 1 water content of 10.5 inches or 50 percent of normal might better plan his cropping pattern if he knew that in one year out of four, the April 1 water content would be 1.32 times the March 1 value or 13.9 inches, or 53 percent of normal (Table 5).

Complete summary tables such as Tables 4 or 5 are available from the authors for all 13 snow courses listed in Table 1.

REFERENCES

- Anonymous. 1966. Methods of Flow Frequency Analysis. Notes on Hydrologic Activities Bulletin #13. Supt. of Documents. Government Printing Office, Washington, D. C. 20402
- Jennings, M. E. and M. A. Benson. 1969. Frequency Curves for Annual Flood Series with Some Zero Events or Incomplete Data. Water Resources Research. 5:276-280
- Langbein, W. D. 1960. Plotting Positions in Frequency Analysis. In Flood-Frequency Analysis. Edited by T. Dalrymple, U. S. Geological Survey Water Supply Paper 1543-A, 48-51.
- Reese, D. L., H. F. Mayland and C. E. Brockway. 1973. Alternative Methods of Estimating Snow Water Parameters. Water Resources Research. 9:1433-1439.
- Soil Conservation Service. 1927-1976. Basic Snow Survey Measurement Summary for Western United States.
- U. S. Water Resources Council. 1967. A Uniform Technique for Determining Flood Flow Frequencies. Bull. 15, pp. 7-8, Hydrol. Comm., Water Resources Council. Washington, D. C.
- U. S. Water Resources Council. 1977. Guidelines for Determining Flood Flow Frequency. Bull. 17A. Water Resources Council. Washington, D. C.
- Vance, H. M. and B. L. Whaley. 1971. Snow Frequency Analysis for Oregon and Utah. Paper presented at 39th Annual Meeting Western Snow Conference, Billings, MT, April 1971.

COLORADO SNOW COURSE - COLUMBINE

BASIN: Upper Missouri

RIVER: North Platte

COURSE NO.: 6-J-3

ELEVATION: 9300 DATA PERIOD: 1936-1975, inclusive (40 years of record February 1 - May 1)

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>
Mean snow depth	39.07	55.13	64.63	68.08	50.68
Mean water content	9.02	14.55	19.52	23.51	21.25
Mean density	0.22	0.26	0.30	0.34	0.42

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
February 1							
SD	32.8	38.4	45.9	55.8	64.5	71.9	75.6
WC	7.20	8.91	11.34	14.65	17.70	20.30	21.63
Density	.20	.22	.24	.26	.28	.30	.31
March 1							
SD	41.1	47.8	56.2	66.3	74.3	80.0	82.5
WC	10.43	12.66	15.74	19.79	23.38	26.33	27.78
Density	0.24	0.25	0.27	0.30	0.32	0.34	0.36
April 1							
SD	42.0	50.2	60.3	71.2	78.5	82.3	83.5
WC	12.73	15.84	19.88	24.56	27.98	29.99	30.72
Density	0.27	0.29	0.32	0.35	0.37	0.39	0.40
May 1							
SD	27.1	32.8	40.8	51.3	60.7	68.5	72.5
WC	11.02	13.46	16.86	21.45	25.62	29.15	30.95
Density	0.33	0.36	0.39	0.43	0.46	0.48	0.49

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
M/F	0.9	1.0	1.1	1.2	1.3	1.4	1.5
A/F	1.0	1.0	1.1	1.2	1.4	1.6	1.8
May/F	0.5	0.6	0.7	0.9	1.2	1.4	1.5
A/M	0.8	0.9	0.9	1.0	1.2	1.3	1.4
May/M	0.4	0.5	0.6	0.8	1.0	1.1	1.3
May/A	0.4	0.5	0.6	0.8	0.9	1.0	1.1
Water content							
M/F	1.10	1.16	1.24	1.35	1.47	1.60	1.68
A/F	1.24	1.33	1.45	1.64	1.83	2.06	2.20
May/F	0.82	0.97	1.19	1.51	1.84	2.19	2.40
A/M	1.00	1.04	1.10	1.20	1.31	1.44	1.54
May/M	0.66	0.76	0.90	1.10	1.31	1.54	1.67
May/A	0.58	0.66	0.77	0.92	1.06	1.18	1.25
Density							
M/F	0.93	0.98	1.05	1.15	1.24	1.34	1.40
A/F	1.07	1.14	1.23	1.34	1.43	1.51	1.55
May/F	1.31	1.38	1.48	1.62	1.76	1.89	1.97
A/M	0.97	1.02	1.08	1.16	1.23	1.30	1.33
May/M	1.16	1.22	1.30	1.41	1.52	1.64	1.71
May/A	1.06	1.08	1.12	1.20	1.30	1.43	1.52

IDAHO SNOW COURSE - BENTON SPRING

BASIN: Upper Columbia

RIVER: Priest

COURSE NO.: 16A3M

ELEVATION: 4900

DATA PERIOD: 1937-1975, inclusive (39 years of record January 1 - May 1)

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>
Mean snow depth	31.69	47.87	55.64	56.21	36.56
Mean water content	8.46	14.12	18.60	20.73	15.87
Mean density	0.27	0.30	0.33	0.37	0.43

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	16.4	19.4	23.9	30.8	38.0	45.8	50.6
WC	4.11	4.88	6.04	7.97	10.17	12.85	14.62
Density	0.21	0.22	0.24	0.27	0.30	0.32	0.33
February 1							
SD	27.1	32.1	38.9	48.1	56.6	64.1	68.1
WC	7.78	9.22	11.22	14.04	16.77	19.35	20.79
Density	0.24	0.25	0.27	0.30	0.32	0.34	0.35
March 1							
SD	32.5	37.7	45.0	55.2	65.2	74.9	80.5
WC	10.33	12.13	14.68	18.36	22.02	25.68	27.79
Density	0.28	0.30	0.32	0.34	0.36	0.37	0.37
April 1							
SD	29.8	35.9	44.4	56.2	67.4	77.5	83.0
WC	11.15	13.30	16.31	20.59	24.75	28.71	30.92
Density	0.32	0.33	0.35	0.37	0.39	0.41	0.43
May 1							
SD	7.8	13.3	23.3	38.0	50.9	58.7	61.3
WC	2.21	5.43	11.82	18.92	21.38	21.62	22.17
Density	0.26	0.36	0.44	0.47	0.47	0.55	0.68

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	1.1	1.2	1.3	1.5	1.8	2.1	2.4
M/J	1.1	1.3	1.4	1.8	2.1	2.7	3.1
A/J	1.1	1.2	1.5	1.8	2.2	2.6	2.9
May/J	0.3	0.4	0.7	1.2	1.7	2.1	2.3
M/F	0.9	0.9	1.0	1.1	1.3	1.6	1.7
A/F	0.7	0.8	1.0	1.2	1.4	1.6	1.7
May/F	0.2	0.3	0.5	0.8	1.1	1.2	1.2
A/M	0.8	0.8	0.9	1.0	1.1	1.3	1.3
May/M	0.2	0.3	0.5	0.7	0.9	1.0	1.0
May/A	0.2	0.3	0.5	0.7	0.8	0.9	1.0
Water content							
F/J	1.22	1.31	1.45	1.68	1.96	2.33	2.58
M/J	1.51	1.62	1.81	2.17	2.64	3.34	3.88
A/J	1.61	1.77	2.01	2.44	2.98	3.75	4.32
May/J	0.30	0.69	1.47	2.35	2.69	2.73	2.77
M/F	1.00	1.06	1.16	1.31	1.47	1.66	1.78
A/F	1.01	1.12	1.27	1.48	1.69	1.91	2.03
May/F	0.20	0.48	0.94	1.36	1.43	1.48	1.61
A/M	0.91	0.96	1.02	1.11	1.20	1.30	1.35
May/M	0.17	0.39	0.72	1.01	1.05	1.09	1.20
May/A	0.18	0.37	0.65	0.89	0.91	0.95	1.06
Density							
F/J	0.93	0.97	1.02	1.11	1.20	1.31	1.38
M/J	1.01	1.08	1.16	1.27	1.38	1.48	1.55
A/J	1.07	1.14	1.24	1.39	1.56	1.76	1.90
May/J	0.93	1.28	1.60	1.79	1.79	1.88	2.03
M/F	0.94	0.99	1.05	1.14	1.22	1.30	1.34
A/F	1.02	1.07	1.15	1.26	1.37	1.48	1.55
May/F	0.85	1.19	1.47	1.61	1.59	1.78	2.08
A/M	0.96	0.99	1.03	1.10	1.18	1.27	1.34
May/M	0.78	1.08	1.31	1.41	1.40	1.65	2.03
May/A	0.71	0.99	1.19	1.27	1.27	1.58	2.04

IDAHO SNOW COURSE - BIG SPRINGS

BASIN: Snake

RIVER: Henry's Fork

COURSE NO.: 11E9

ELEVATION: 6500

DATA PERIOD: 1936-1976, inclusive (41 years of record January 1 - April

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>
Mean snow depth	34.98	50.51	60.63	59.42
Mean water content	7.55	13.56	18.95	21.35
Mean density	0.21	0.26	0.31	0.35

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	15.1	19.3	25.5	34.6	43.6	52.0	56.5
WC	2.02	2.99	4.64	7.30	10.12	12.75	14.13
Density	0.12	0.15	0.17	0.21	0.24	0.27	0.28
February 1							
SD	26.8	31.8	38.9	49.5	60.3	71.5	78.0
WC	6.26	7.57	9.55	12.81	16.47	20.81	23.62
Density	0.21	0.22	0.24	0.26	0.28	0.31	0.32
March 1							
SD	41.6	45.8	51.6	59.9	68.3	77.0	82.3
WC	11.24	12.82	15.08	18.48	22.04	25.94	28.35
Density	0.26	0.27	0.29	0.31	0.33	0.35	0.36
April 1							
SD	34.8	42.6	51.2	60.9	69.5	77.1	81.0
WC	11.22	14.11	17.52	21.59	25.49	29.18	31.25
Density	0.30	0.31	0.33	0.36	0.38	0.40	0.41

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	0.8	1.0	1.3	1.6	1.8	2.0	2.1
M/J	1.2	1.3	1.5	1.8	2.1	2.7	3.2
A/J	1.1	1.3	1.4	1.8	2.1	2.7	3.2
M/F	1.0	1.0	1.1	1.2	1.3	1.7	1.9
A/F	0.9	0.9	1.0	1.2	1.4	1.7	2.0
A/M	0.8	0.8	0.9	1.0	1.1	1.2	1.2
Water content							
F/J	1.03	1.20	1.46	1.91	2.46	3.20	3.73
M/J	1.68	1.79	1.99	2.53	3.34	5.07	6.68
A/J	1.77	1.95	2.26	2.90	3.87	5.81	7.56
M/F	1.16	1.18	1.23	1.37	1.57	1.94	2.24
A/F	1.20	1.27	1.38	1.59	1.86	2.31	2.66
A/M	0.95	1.00	1.06	1.14	1.24	1.34	1.41
Density							
F/J	1.01	1.06	1.13	1.26	1.44	1.69	1.87
M/J	1.15	1.20	1.29	1.47	1.71	2.07	2.35
A/J	1.27	1.34	1.46	1.68	1.96	2.40	2.75
M/F	1.01	1.05	1.10	1.17	1.25	1.33	1.39
A/F	1.13	1.19	1.26	1.35	1.44	1.55	1.62
A/M	1.01	1.05	1.10	1.15	1.21	1.26	1.30

IDAHO SNOW COURSE - GALENA SUMMIT

BASIN: Snake

RIVER: Big Wood

COURSE NO.: 14F12M

ELEVATION: 8795

DATA PERIOD: 1950-1975, inclusive (26 years of record January 1 - May 1)

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>
Mean snow depth	43.27	63.27	69.04	76.54	68.92
Mean water content	10.52	17.19	21.12	25.94	26.80
Mean density	0.24	0.27	0.30	0.34	0.39

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	24.1	26.6	30.7	38.7	49.1	65.6	78.4
WC	4.11	5.08	6.62	9.42	12.86	17.53	20.82
Density	0.16	0.18	0.21	0.24	0.27	0.29	0.30
February 1							
SD	33.1	39.2	48.2	61.7	75.7	90.7	99.8
WC	7.70	9.48	12.17	16.45	21.10	26.29	29.51
Density	0.21	0.22	0.24	0.27	0.29	0.31	0.32
March 1							
SD	44.8	49.8	56.9	67.6	78.7	91.1	98.8
WC	11.10	13.97	15.95	20.41	25.19	30.49	33.79
Density	0.23	0.25	0.27	0.30	0.33	0.35	0.36
April 1							
SD	51.5	57.1	64.8	75.8	86.7	97.8	104.5
WC	15.13	17.33	20.49	25.27	30.31	35.84	39.27
Density	0.28	0.29	0.31	0.33	0.36	0.39	0.40
May 1							
SD	43.3	48.7	56.3	67.6	79.3	91.8	99.5
WC	15.75	17.90	21.02	25.90	31.18	37.29	41.20
Density	0.33	0.34	0.36	0.39	0.41	0.43	0.44

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	1.0	1.1	1.2	1.5	1.8	2.1	2.3
M/J	1.1	1.3	1.5	1.7	1.9	2.1	2.1
A/J	1.2	1.3	1.6	1.9	2.2	2.5	2.6
May/J	1.0	1.1	1.4	1.7	2.1	2.4	2.7
M/F	0.8	0.9	1.0	1.1	1.3	1.5	1.6
A/F	0.9	1.0	1.1	1.2	1.4	1.7	1.8
May/F	0.8	0.8	0.9	1.1	1.3	1.6	1.9
A/M	0.9	1.0	1.0	1.1	1.2	1.3	1.3
May/M	0.7	0.8	0.9	1.0	1.1	1.3	1.5
May/A	0.7	0.8	0.8	0.9	1.0	1.1	1.2
Water content							
F/J	1.11	1.23	1.42	1.70	2.01	2.38	2.62
M/J	1.43	1.57	1.77	2.11	2.50	3.00	3.34
A/J	1.68	1.88	2.18	2.66	3.19	3.83	4.25
May/J	1.53	1.78	2.15	2.76	3.45	4.32	4.90
M/F	1.05	1.09	1.14	1.24	1.35	1.49	1.59
A/F	1.24	1.28	1.36	1.51	1.71	2.01	2.24
May/F	1.13	1.19	1.30	1.53	1.85	2.36	2.77
A/M	1.08	1.11	1.16	1.24	1.32	1.41	1.48
May/M	0.94	1.00	1.09	1.26	1.45	1.72	1.90
May/A	0.82	0.87	0.93	1.02	1.13	1.25	1.34
Density							
F/J	0.89	0.93	1.00	1.12	1.26	1.44	1.57
M/J	0.97	1.04	1.14	1.28	1.44	1.60	1.71
A/J	1.10	1.16	1.25	1.41	1.60	1.84	2.00
May/J	1.30	1.36	1.45	1.62	1.82	2.11	2.32
M/F	0.93	0.97	1.03	1.12	1.21	1.31	1.37
A/F	1.09	1.13	1.18	1.25	1.33	1.41	1.47
May/F	1.24	1.28	1.35	1.44	1.54	1.66	1.73
A/M	0.98	1.01	1.05	1.11	1.18	1.25	1.30
May/M	1.15	1.18	1.21	1.28	1.35	1.44	1.50
May/A	1.03	1.06	1.10	1.16	1.21	1.26	1.29

IDAHO SNOW COURSE - GALENA

BASIN: Snake

RIVER: Big Wood

COURSE NO.: 14F1M

ELEVATION: 7300

DATA PERIOD: 1950-1975, inclusive (26 years of record January 1 - May 1)

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>
Mean snow depth	36.23	55.50	59.46	61.35	39.62
Mean water content	8.19	14.65	17.97	20.74	16.13
Mean density	0.22	0.26	0.30	0.34	0.41

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	17.6	20.5	25.0	33.1	42.9	56.5	66.3
WC	3.16	3.89	5.06	7.25	9.99	13.84	16.62
Density	0.15	0.17	0.19	0.22	0.25	0.27	0.29
February 1							
SD	28.1	33.5	41.5	53.7	66.8	81.0	89.8
WC	6.34	7.80	10.04	13.76	17.99	23.02	26.29
Density	0.20	0.22	0.23	0.26	0.28	0.31	0.33
March 1							
SD	37.8	42.2	48.5	58.0	68.1	79.3	86.4
WC	9.20	10.87	13.33	17.23	21.50	26.40	29.51
Density	0.22	0.24	0.27	0.30	0.33	0.35	0.36
April 1							
SD	38.7	44.0	51.3	61.3	70.7	79.6	84.5
WC	11.61	13.55	16.32	20.39	24.51	28.77	31.28
Density	0.28	0.29	0.31	0.33	0.36	0.38	0.40
May 1							
SD	13.6	18.5	26.2	38.4	51.2	63.9	70.9
WC	5.59	7.47	10.46	15.35	20.72	26.45	29.85
Density	0.33	0.36	0.38	0.41	0.44	0.46	0.47

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	0.9	1.1	1.2	1.6	1.9	2.4	2.7
M/J	1.1	1.2	1.5	1.8	2.0	2.3	2.5
A/J	1.1	1.2	1.5	1.8	2.2	2.6	2.9
May/J	0.5	0.6	0.8	1.1	1.5	2.0	2.3
M/F	0.8	0.8	0.9	1.1	1.3	1.5	1.6
A/F	0.8	0.9	1.0	1.1	1.3	1.6	1.7
May/F	0.4	0.4	0.5	0.7	0.9	1.2	1.5
A/M	0.8	0.9	0.9	1.0	1.1	1.2	1.3
May/M	0.3	0.4	0.5	0.6	0.8	1.1	1.2
May/A	0.3	0.4	0.5	0.6	0.8	0.9	1.0
Water content							
F/J	1.14	1.29	1.51	1.86	2.24	2.69	2.98
M/J	1.50	1.66	1.89	2.30	2.78	3.42	3.87
A/J	1.66	1.88	2.20	2.73	3.34	4.09	4.59
May/J	0.92	1.12	1.45	2.01	2.68	3.55	4.15
M/F	1.03	1.07	1.13	1.24	1.37	1.54	1.66
A/F	1.10	1.16	1.26	1.44	1.66	1.97	2.21
May/F	0.58	0.65	0.78	1.03	1.36	1.89	2.32
A/M	0.97	1.01	1.07	1.17	1.26	1.38	1.45
May/M	0.44	0.52	0.64	0.84	1.09	1.43	1.67
May/A	0.41	0.48	0.58	0.73	0.90	1.09	1.22
Density							
F/J	0.87	0.93	1.03	1.17	1.34	1.53	1.67
M/J	0.98	1.07	1.19	1.36	1.54	1.73	1.84
A/J	1.14	1.23	1.35	1.53	1.73	1.95	2.09
May/J	1.42	1.50	1.62	1.83	2.08	2.44	2.69
M/F	0.90	0.96	1.04	1.16	1.26	1.36	1.42
A/F	1.10	1.15	1.21	1.30	1.39	1.48	1.53
May/F	1.31	1.37	1.46	1.58	1.70	1.84	1.93
A/M	0.99	1.01	1.04	1.11	1.19	1.31	1.40
May/M	1.19	1.23	1.28	1.37	1.47	1.58	1.65
May/A	1.08	1.11	1.15	1.21	1.28	1.35	1.39

IDAHO SNOW COURSE - GRAHAM RANCH

BASIN: Snake

RIVER: Big Wood

COURSE NO.: 14F5

ELEVATION: 6200

DATA PERIOD: 1936-1975, inclusive (40 years of record January 1 - April 1)

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>
Mean snow depth	25.75	39.08	44.68	40.85
Mean water content	5.46	9.43	12.32	13.57
Mean density	0.20	0.23	0.27	0.33

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	9.1	12.1	16.9	24.5	32.8	41.6	46.7
WC	0.96	1.65	2.99	5.25	7.64	9.59	10.48
Density	0.10	0.13	0.16	0.21	0.24	0.26	0.27
February							
SD	18.1	21.8	27.5	36.8	47.4	60.1	68.4
WC	3.38	4.33	5.85	8.55	11.79	15.91	18.68
Density	0.17	0.19	0.21	0.23	0.26	0.28	0.30
March 1							
SD	30.2	32.6	36.3	42.6	50.0	59.7	66.5
WC	7.23	8.07	9.35	11.55	14.16	17.63	20.08
Density	0.21	0.22	0.24	0.27	0.30	0.33	0.35
April 1							
SD	22.6	26.4	31.8	39.9	48.3	57.2	62.6
WC	7.20	8.34	10.06	12.86	16.03	19.91	22.48
Density	0.28	0.29	0.31	0.33	0.35	0.37	0.38

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	0.9	1.0	1.2	1.5	1.9	2.5	3.0
M/J	1.2	1.2	1.4	1.7	2.2	3.3	4.3
A/J	1.0	1.1	1.2	1.6	2.1	3.0	3.7
M/F	0.8	0.9	1.0	1.2	1.4	1.7	2.0
A/F	0.7	0.8	0.9	1.1	1.3	1.6	1.7
A/M	0.7	0.7	0.8	0.9	1.0	1.1	1.2
Water content							
F/J	1.16	1.21	1.31	1.65	2.22	3.66	5.15
M/J	1.59	1.62	1.69	2.15	2.98	5.95	9.65
A/J	1.59	1.66	1.80	2.41	3.43	6.76	10.69
M/F	0.99	1.04	1.13	1.33	1.60	2.07	2.46
A/F	0.99	1.08	1.22	1.48	1.82	2.33	2.72
A/M	0.82	0.89	0.99	1.11	1.22	1.31	1.36
Density							
F/J	0.89	0.92	0.97	1.12	1.35	1.79	2.18
M/J	1.02	1.05	1.12	1.31	1.60	2.18	2.70
A/J	1.24	1.27	1.34	1.56	1.91	2.71	3.47
M/F	0.91	0.97	1.05	1.17	1.30	1.45	1.55
A/F	1.11	1.16	1.24	1.39	1.57	1.82	1.99
A/M	0.97	1.02	1.09	1.21	1.32	1.46	1.55

IDAHO SNOW COURSE - SOUTH MOUNTAIN

BASIN: Snake

RIVER: Owyhee

COURSE NO.: 16G1

ELEVATION: 6340

DATA PERIOD: 1940-1976, inclusive (37 years of record January 1 - April

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>
Mean snow depth	15.65	27.65	33.54	31.46
Mean water content	4.12	8.53	11.32	11.82
Mean density	0.21	0.29	0.33	0.36

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	-	-	7.1	15.2	23.5	30.9	34.7
WC	-	-	1.50	3.55	6.04	8.89	10.61
Density	-	-	0.19	0.24	0.28	0.31	0.33
February 1							
SD	6.9	11.9	19.0	28.0	36.5	43.4	46.7
WC	1.23	2.69	5.15	8.57	11.88	14.36	15.43
Density	0.17	0.21	0.25	0.30	0.34	0.37	0.38
March 1							
SD	13.6	18.0	24.6	33.8	42.4	49.5	52.9
WC	3.71	5.30	7.81	11.43	14.79	17.40	18.59
Density	0.24	0.27	0.30	0.34	0.37	0.39	0.40
April 1							
SD	5.9	12.8	23.0	34.3	42.3	45.9	46.8
WC	1.78	4.47	8.76	13.30	15.98	16.76	16.83
Density	0.26	0.30	0.34	0.38	0.41	0.44	0.45

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	-	-	1.0	1.4	1.9	2.6	3.2
M/J	-	-	1.1	1.7	2.4	3.4	4.2
A/J	-	-	1.0	1.6	2.4	3.4	4.0
M/F	0.7	0.8	1.0	1.2	1.4	1.7	1.9
A/F	-	0.7	0.8	1.1	1.4	1.9	2.3
A/M	0.5	0.6	0.8	1.0	1.2	1.4	1.5
Water content							
F/J	-	-	1.16	1.54	2.08	3.15	4.10
M/J	-	-	1.41	2.11	3.04	4.69	6.05
A/J	-	-	1.31	2.32	3.50	5.35	6.78
M/F	0.90	0.97	1.07	1.27	1.55	2.05	2.45
A/F	-	0.82	1.08	1.42	1.84	2.44	2.88
A/M	0.56	0.72	0.90	1.11	1.31	1.50	1.61
Density							
F/J	-	-	0.94	1.18	1.32	1.40	1.43
M/J	-	-	1.02	1.27	1.48	1.67	1.77
A/J	-	-	1.12	1.38	1.61	1.87	2.04
M/F	0.84	0.92	1.01	1.12	1.23	1.36	1.44
A/F	-	0.99	1.11	1.24	1.39	1.57	1.69
A/M	0.89	0.96	1.04	1.13	1.22	1.31	1.37

IDAHO SNOW COURSE - MOUNT BALDY

BASIN: Snake

RIVER: Big Wood

COURSE NO.: 14F9

ELEVATION: 9000

DATA PERIOD: 1949-1975, inclusive (27 years of record January 1 - May 1)

	January	February	March	April	May
Mean snow depth	39.07	57.41	64.37	69.48	58.52
Mean water content	9.02	14.94	18.76	22.27	21.37
Mean density	0.22	0.26	0.29	0.32	0.34

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	19.6	22.5	27.0	35.4	45.8	60.8	71.8
WC	3.57	4.34	5.58	7.92	10.90	15.25	18.45
Density	0.16	0.18	0.20	0.22	0.25	0.27	0.29
February 1							
SD	31.0	35.6	42.5	54.0	67.4	84.5	96.1
WC	7.02	8.28	10.23	13.68	17.85	23.49	27.47
Density	0.21	0.22	0.23	0.25	0.27	0.29	0.31
March 1							
SD	41.5	45.7	52.0	62.0	73.2	86.8	95.9
WC	10.07	11.62	13.90	17.72	22.10	27.57	31.24
Density	0.22	0.24	0.26	0.29	0.31	0.34	0.35
April 1							
SD	44.5	49.5	56.7	67.6	79.4	92.7	101.2
WC	12.51	14.36	17.08	21.39	26.13	31.69	35.28
Density	0.27	0.28	0.29	0.31	0.34	0.36	0.38
May 1							
SD	-	37.7	49.2	59.5	70.6	83.5	91.9
WC	-	12.41	16.99	21.28	26.12	32.03	35.99
Density	-	0.28	0.32	0.36	0.39	0.42	0.43

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	1.0	1.1	1.2	1.5	1.8	2.2	2.4
M/J	1.1	1.3	1.4	1.7	2.0	2.4	2.7
A/J	1.2	1.3	1.5	1.9	2.3	2.7	2.9
May/J	-	0.9	1.3	1.7	2.1	2.5	2.8
M/F	0.8	0.9	1.0	1.1	1.3	1.5	1.6
A/F	0.9	0.9	1.0	1.2	1.4	1.8	2.0
May/F	-	0.7	0.9	1.1	1.3	1.7	1.9
A/M	0.9	0.9	1.0	1.1	1.2	1.4	1.5
May/M	-	0.6	0.8	1.0	1.1	1.3	1.5
May/A	-	0.7	0.8	0.9	1.0	1.1	1.2
Water content							
F/J	1.13	1.24	1.41	1.69	2.03	2.47	2.78
M/J	1.40	1.53	1.74	2.14	2.64	3.40	3.97
A/J	1.59	1.78	2.08	2.60	3.24	4.14	4.79
May/J	-	1.37	2.08	2.74	3.46	4.30	4.83
M/F	1.01	1.06	1.14	1.27	1.42	1.60	1.72
A/F	1.13	1.20	1.31	1.51	1.75	2.08	2.32
May/F	-	1.11	1.30	1.52	1.80	2.23	2.56
A/M	1.00	1.04	1.09	1.18	1.29	1.42	1.51
May/M	-	0.88	1.05	1.22	1.40	1.62	1.76
May/A	-	0.82	0.93	1.02	1.12	1.23	1.31
Density							
F/J	0.93	0.98	1.04	1.14	1.24	1.36	1.43
M/J	0.95	1.03	1.14	1.30	1.44	1.59	1.68
A/J	1.08	1.15	1.26	1.42	1.59	1.78	1.91
May/J	-	1.19	1.42	1.62	1.82	2.04	2.17
M/F	0.93	0.98	1.04	1.13	1.20	1.28	1.33
A/F	1.07	1.10	1.15	1.23	1.32	1.42	1.48
May/F	-	1.21	1.31	1.40	1.50	1.61	1.68
A/M	0.96	0.99	1.04	1.11	1.17	1.25	1.29
May/M	-	1.09	1.18	1.25	1.33	1.40	1.44
May/A	-	1.00	1.09	1.14	1.19	1.24	1.26

MONTANA SNOW COURSE - TEN MILE MIDDLE

BASIN: Upper Missouri

RIVER: Missouri main

COURSE NO.: 12C3

ELEVATION: 6800

DATA PERIOD: 1937-1976, inclusive (40 years of record January 1 - May 1).

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>
Mean snow depth	24.80	32.18	38.60	42.85	37.48
Mean water content	5.14	7.75	9.82	12.13	11.85
Mean density	0.20	0.24	0.25	0.28	0.32

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	15.4	17.2	19.8	23.9	28.5	33.8	37.3
WC	2.64	3.08	3.75	4.84	6.10	7.65	8.69
Density	0.15	0.16	0.18	0.21	0.23	0.24	0.25
February 1							
SC	18.9	22.1	26.4	32.3	37.7	42.6	45.2
WC	3.87	4.67	5.83	7.58	9.37	11.23	12.32
Density	0.19	0.20	0.22	0.24	0.26	0.28	0.29
March 1							
SD	24.6	27.8	32.2	38.3	44.3	50.3	53.8
WC	5.28	6.32	7.79	9.81	11.73	13.48	14.42
Density	0.21	0.22	0.23	0.25	0.27	0.29	0.30
April 1							
SD	27.2	32.2	38.2	44.7	49.1	51.4	52.2
WC	7.06	8.35	10.08	12.31	14.25	15.83	16.61
Density	0.22	0.24	0.26	0.29	0.31	0.32	0.33
May 1							
SD	14.5	19.3	26.6	37.2	47.7	57.0	61.8
WC	4.32	6.02	8.60	12.15	15.26	17.52	18.50
Density	0.26	0.27	0.30	0.32	0.34	0.36	0.37

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	1.0	1.0	1.1	1.3	1.5	1.7	1.8
M/J	1.2	1.3	1.4	1.6	1.8	2.0	2.1
A/J	1.2	1.3	1.5	1.8	2.1	2.4	2.6
May/J	0.5	0.7	1.0	1.6	2.1	2.7	3.0
M/F	1.0	1.0	1.1	1.2	1.3	1.5	1.6
A/F	1.0	1.1	1.2	1.3	1.5	1.7	1.9
May/F	0.4	0.6	0.8	1.2	1.6	1.9	2.1
A/M	0.8	0.9	1.0	1.1	1.3	1.4	1.5
May/M	0.4	0.5	0.7	1.0	1.3	1.6	1.7
May/A	0.4	0.5	0.7	0.9	1.1	1.3	1.4
Water content							
F/J	1.09	1.18	1.30	1.50	1.73	2.01	2.19
M/J	1.31	1.44	1.63	1.94	2.28	2.68	2.95
A/J	1.61	1.78	2.02	2.42	2.86	3.40	3.76
May/J	0.72	1.04	1.58	2.48	3.47	4.48	5.04
M/F	1.10	1.12	1.16	1.24	1.36	1.54	1.67
A/F	1.30	1.34	1.41	1.55	1.74	2.01	2.21
May/F	0.56	0.78	1.13	1.64	2.14	2.57	2.78
A/M	1.02	1.07	1.14	1.24	1.36	1.48	1.56
May/M	0.45	0.63	0.89	1.28	1.64	1.93	2.07
May/A	0.39	0.54	0.75	1.03	1.27	1.43	1.49
Density							
F/J	0.89	0.95	1.04	1.17	1.30	1.45	1.54
M/J	0.99	1.03	1.09	1.21	1.35	1.56	1.71
A/J	1.07	1.12	1.21	1.36	1.54	1.78	1.95
May/J	1.15	1.24	1.36	1.56	1.77	2.02	2.18
M/F	0.88	0.92	0.97	1.06	1.15	1.25	1.31
A/F	0.98	1.03	1.10	1.19	1.28	1.38	1.44
May/F	1.06	1.12	1.21	1.33	1.47	1.63	1.73
A/M	0.92	0.95	1.00	1.10	1.21	1.36	1.46
May/M	0.99	1.05	1.14	1.26	1.39	1.53	1.62
May/A	0.92	0.95	1.00	1.10	1.22	1.39	1.52

OREGON SNOW COURSE - BILLIE CREEK DIVIDE

BASIN: North Pacific Coastal

RIVER: Rogue

COURSE NO.: 22G13

ELEVATION: 5300

DATA PERIOD: 1940-1976, exclusive of 1943, 57, 58 (34 years of record - January 1 - April 1)

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>
Mean snow depth	31.09	45.56	56.41	56.82
Mean water content	8.96	14.84	20.20	22.80
Mean density	0.28	0.32	0.35	0.40

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	9.9	13.3	18.8	28.4	39.8	53.6	62.5
WC	2.31	3.24	4.85	7.88	11.66	16.52	19.76
Density	0.18	0.21	0.24	0.28	0.32	0.36	0.38
February 1							
SD	7.9	16.7	30.1	47.1	62.3	72.8	77.1
WC	2.65	5.30	9.38	14.84	20.23	24.64	26.74
Density	0.24	0.26	0.29	0.32	0.35	0.39	0.41
March 1							
SD	23.0	30.6	40.5	54.0	69.3	87.6	99.6
WC	8.67	11.19	14.46	19.10	24.53	31.43	36.13
Density	0.28	0.30	0.33	0.36	0.39	0.41	0.43
April 1							
SD	15.5	23.5	36.9	57.1	76.5	91.8	98.8
WC	4.86	8.75	15.65	24.77	31.32	33.99	34.49
Density	0.27	0.33	0.38	0.43	0.44	0.44	0.44

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	0.8	0.9	1.1	1.4	1.9	2.8	3.6
M/J	1.0	1.2	1.4	1.8	2.3	3.4	4.3
A/J	0.9	1.0	1.2	1.7	2.4	3.7	4.7
M/F	-	0.8	1.0	1.2	1.4	1.7	2.0
A/F	0.4	0.6	0.9	1.2	1.6	1.9	2.2
A/M	0.5	0.6	0.8	1.0	1.2	1.4	1.5
Water content							
F/J	0.89	1.04	1.27	1.69	2.29	3.38	4.30
M/J	1.20	1.39	1.68	2.27	3.13	4.87	6.43
A/J	0.92	1.20	1.68	2.63	3.89	5.79	7.21
M/F	-	1.06	1.14	1.26	1.45	1.77	2.02
A/F	0.56	0.81	1.12	1.48	1.84	2.18	2.36
A/M	0.60	0.76	0.93	1.12	1.29	1.45	1.53
Density							
F/J	0.79	0.88	1.00	1.15	1.33	1.55	1.70
M/J	0.86	0.97	1.10	1.28	1.49	1.74	1.91
A/J	0.77	0.95	1.19	1.51	1.79	2.02	2.14
M/F	-	0.84	0.99	1.11	1.24	1.37	1.44
A/F	0.53	0.80	1.07	1.31	1.45	1.51	1.53
A/M	0.87	0.93	1.01	1.11	1.22	1.36	1.45

OREGON SNOW COURSE - LAKE OF THE WOODS

BASIN: Pacific Coastal

RIVER: Klamath Lake

COURSE NO.: 22G15

ELEVATION: 4960

DATA PERIOD: 1937-1975, inclusive (39 years of record January 1 - April 1

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>
Mean snow depth	16.51	26.97	31.26	29.39
Mean water content	4.64	8.15	10.17	10.50
Mean density	0.24	0.29	0.32	0.36

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	0.8	2.1	5.2	12.3	23.2	38.9	49.6
WC	0.45	0.86	1.63	3.33	5.95	10.68	14.51
Density	0.14	0.17	0.20	0.27	0.38	0.59	0.78
February 1							
SD	5.0	9.0	15.3	25.1	36.3	48.3	55.2
WC	1.17	2.25	4.10	7.21	11.06	15.55	18.32
Density	0.16	0.20	0.24	0.29	0.34	0.38	0.40
March 1							
SD	8.1	12.4	18.8	28.6	40.3	54.6	64.1
WC	2.39	3.80	5.93	9.25	13.23	18.06	21.20
Density	0.23	0.25	0.28	0.32	0.36	0.40	0.43
April 1							
SD	3.8	7.4	15.2	29.0	43.3	53.9	58.1
WC	1.44	2.72	5.38	10.12	15.28	19.39	21.19
Density	0.29	0.31	0.33	0.36	0.39	0.41	0.43

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	0.7	0.8	1.0	1.5	2.1	3.4	4.5
M/J	0.8	1.0	1.2	1.7	2.5	4.1	5.5
A/J	0.7	0.9	1.1	1.6	2.3	4.0	5.6
M/F	0.6	0.7	0.9	1.1	1.5	2.0	2.5
A/F	0.3	0.5	0.7	1.1	1.5	2.0	2.4
A/M	0.3	0.5	0.7	1.0	1.2	1.4	1.5
Water content							
F/J	0.78	0.91	1.14	1.59	2.27	3.65	4.92
M/J	0.85	1.03	1.34	2.01	3.04	5.40	7.70
A/J	0.95	1.08	1.31	1.92	2.93	5.85	9.07
M/F	0.75	0.84	0.98	1.23	1.60	2.24	2.79
A/F	0.50	0.65	0.87	1.25	1.75	2.53	3.14
A/M	0.39	0.55	0.75	1.01	1.27	1.52	1.66
Density							
F/J	0.55	0.70	0.88	1.11	1.33	1.57	1.70
M/J	0.74	0.82	0.93	1.13	1.37	1.74	2.03
A/J	0.69	0.82	0.99	1.26	1.59	2.07	2.43
M/F	0.66	0.78	0.92	1.11	1.32	1.55	1.71
A/F	0.83	0.90	1.01	1.19	1.42	1.74	1.99
A/M	0.73	0.83	0.95	1.10	1.27	1.45	1.57

OREGON SNOW COURSE - BLUE MOUNTAIN SPRING

BASIN: California and Pacific Coastal

RIVER: Malheur

COURSE NO.: 18E16

ELEVATION: 5900

DATA PERIOD: 1936-1976, inclusive (41 years of record January 1 - April 1)

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>
Mean snow depth	24.90	40.24	46.66	45.63
Mean water content	6.11	11.23	15.00	16.28
Mean density	0.23	0.28	0.32	0.36

PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	-	8.7	15.0	23.2	32.8	43.9	50.9
WC	-	1.83	3.38	5.54	8.15	11.27	13.25
Density	-	0.19	0.21	0.23	0.26	0.30	0.32
February 1							
SD	18.1	22.3	28.5	38.4	49.3	61.5	69.2
WC	4.45	5.59	7.37	10.41	13.94	18.23	21.04
Density	0.21	0.22	0.25	0.28	0.30	0.33	0.34
March 1							
SD	27.3	31.8	38.0	46.5	54.7	62.3	66.6
WC	8.28	9.61	11.54	14.52	17.70	21.26	23.50
Density	0.26	0.27	0.29	0.32	0.34	0.37	0.39
April 1							
SD	24.3	29.2	36.1	45.7	54.7	62.8	67.1
WC	8.85	10.47	12.76	16.07	19.37	22.66	24.55
Density	0.29	0.31	0.33	0.36	0.39	0.41	0.42

PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	-	1.0	1.2	1.5	1.9	2.6	3.1
M/J	-	1.2	1.4	1.8	2.3	3.4	4.3
A/J	-	1.0	1.4	1.8	2.4	3.3	3.9
M/F	0.8	0.9	1.0	1.2	1.4	1.7	1.9
A/F	0.7	0.8	0.9	1.2	1.4	1.8	2.1
A/M	0.7	0.7	0.8	1.0	1.1	1.3	1.4
Water content							
F/J	-	1.19	1.39	1.72	2.17	2.97	3.62
M/J	-	1.48	1.81	2.36	3.20	4.87	6.37
A/J	-	1.54	1.95	2.60	3.55	5.33	6.87
M/F	0.96	1.04	1.17	1.38	1.64	1.98	2.21
A/F	0.94	1.06	1.24	1.53	1.86	2.27	2.55
A/M	0.86	0.91	0.98	1.09	1.20	1.32	1.39
Density							
F/J	-	0.86	1.01	1.15	1.28	1.40	1.47
M/J	-	1.04	1.19	1.33	1.47	1.61	1.70
A/J	-	1.13	1.29	1.47	1.67	1.90	2.06
M/F	0.92	0.98	1.05	1.16	1.28	1.42	1.50
A/F	0.96	1.04	1.14	1.31	1.48	1.68	1.81
A/M	0.94	0.98	1.03	1.12	1.21	1.30	1.37

WASHINGTON SNOW COURSE - BUMPING LAKE

BASIN: Lower Columbia

RIVER: Yakima

COURSE NO.: 21C08

ELEVATION: 3450

DATA PERIOD: 1927-1976 exclusive of 1928 (49 years of record, January 1 - April 1)

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>
Mean snow depth	27.76	43.76	48.57	42.59
Mean water content	6.67	12.33	15.61	15.95
Mean density	0.23	0.28	0.32	0.36

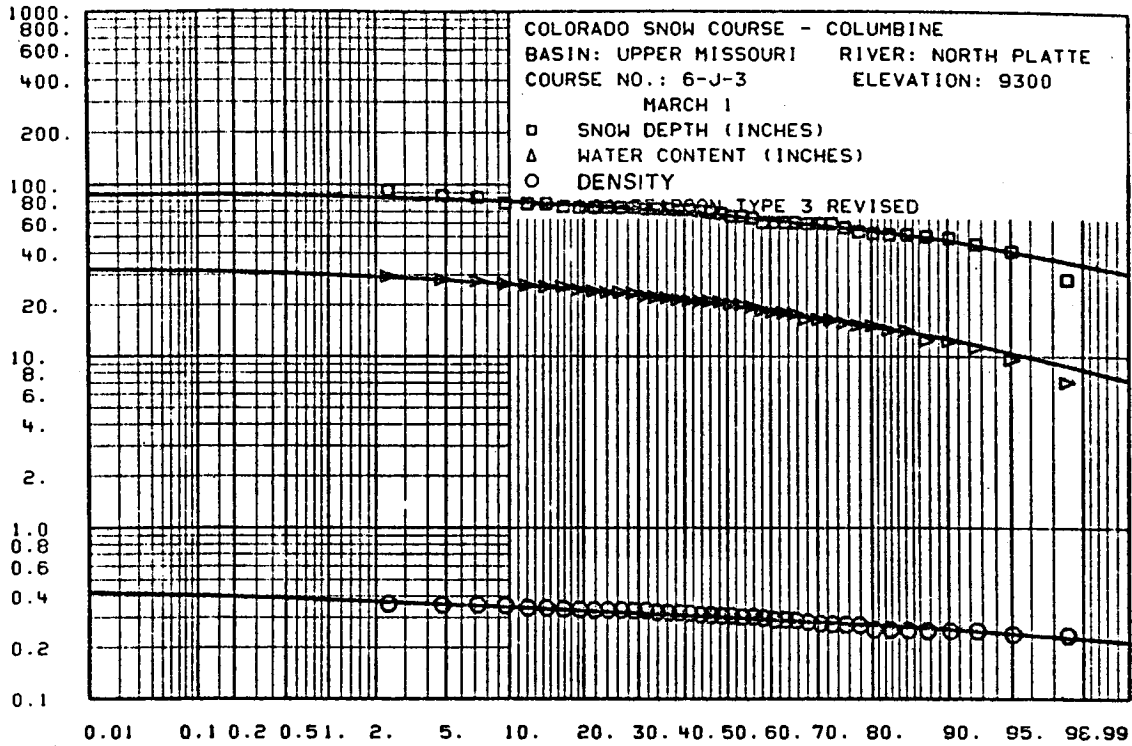
PERCENT PROBABILITY OF INDICATED VALUES OCCURRING DURING THE PRESCRIBED MONTH:

	95%	90%	75%	50%	25%	10%	5%
January 1							
SD	-	9.0	15.6	24.1	35.2	51.5	63.4
WC	-	2.32	3.75	5.64	8.22	12.31	15.48
Density	-	0.15	0.20	0.24	0.28	0.32	0.34
February 1							
SD	15.9	20.7	28.5	41.2	55.4	71.3	81.1
WC	4.30	5.58	7.65	11.26	15.53	20.81	24.27
Density	0.22	0.23	0.25	0.28	0.31	0.34	0.35
March 1							
SD	20.9	26.1	34.0	46.5	60.0	74.8	83.9
WC	7.08	8.41	10.48	14.17	18.68	24.83	29.20
Density	0.24	0.26	0.28	0.32	0.36	0.40	0.42
April 1							
SD	-	17.5	28.0	41.4	55.7	70.5	79.1
WC	-	6.41	10.33	15.39	20.89	26.67	30.06
Density	-	0.31	0.34	0.37	0.40	0.43	0.44

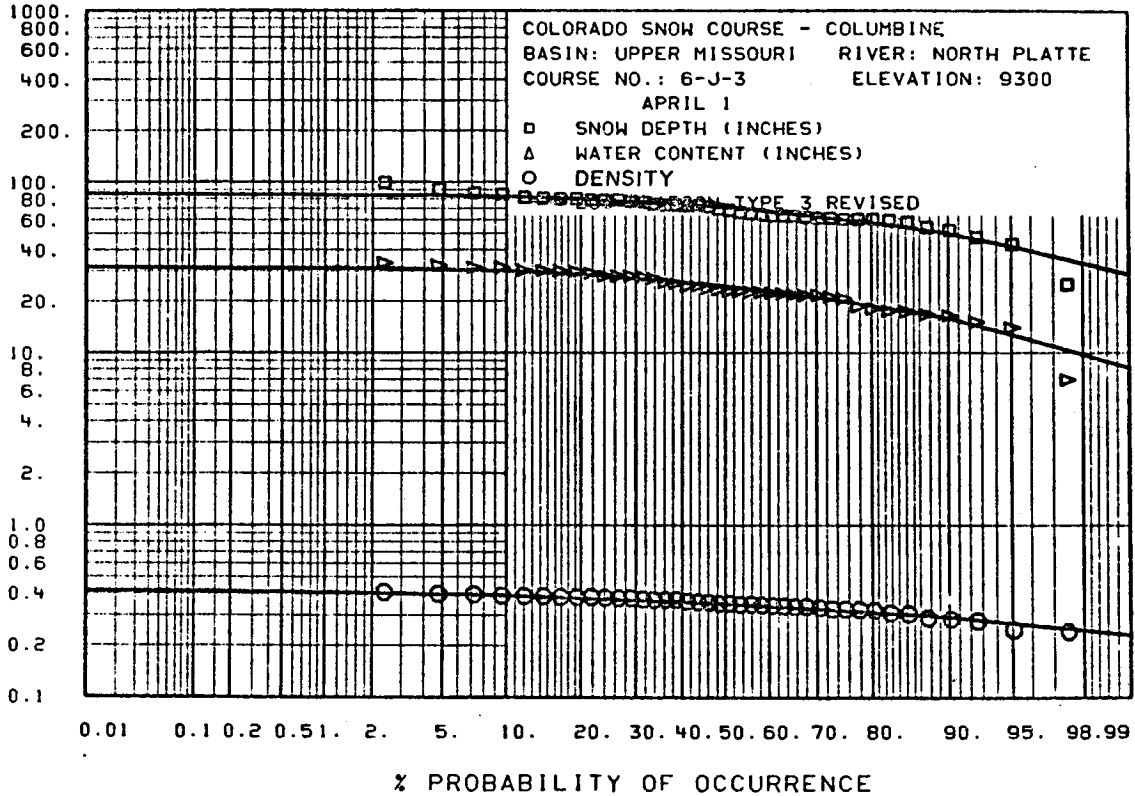
PERCENT PROBABILITY OF INDICATED CONTINGENCY RATIOS OCCURRING FOR THE PRESCRIBED SNOW WATER PARAMETER:

	95%	90%	75%	50%	25%	10%	5%
Snow depth							
F/J	-	0.8	1.1	1.4	1.9	2.8	3.5
M/J	-	0.8	1.2	1.6	2.3	3.4	4.4
A/J	-	-	1.0	1.4	2.0	3.0	3.8
M/F	0.8	0.8	0.9	1.1	1.3	1.6	1.8
A/F	-	0.6	0.7	1.0	1.3	1.6	1.9
A/M	-	0.6	0.7	0.9	1.0	1.2	1.3
Water content							
F/J	-	1.04	1.35	1.73	2.20	2.90	3.42
M/J	-	1.31	1.70	2.20	2.89	3.99	4.87
A/J	-	-	1.64	2.20	2.98	4.35	5.51
M/F	0.90	0.98	1.10	1.30	1.52	1.79	1.97
A/F	-	0.86	1.02	1.27	1.60	2.10	2.49
A/M	-	0.69	0.83	1.00	1.19	1.42	1.58
Density							
F/J	-	0.77	0.94	1.12	1.34	1.63	1.84
M/J	-	0.89	1.08	1.29	1.52	1.82	2.03
A/J	-	-	1.22	1.46	1.73	2.11	2.38
M/F	0.84	0.92	1.03	1.17	1.30	1.41	1.46
A/F	-	1.04	1.17	1.32	1.48	1.68	1.80
A/M	-	0.93	1.04	1.15	1.28	1.42	1.50

DENSITY, WATER CONTENT, SNOW DEPTH

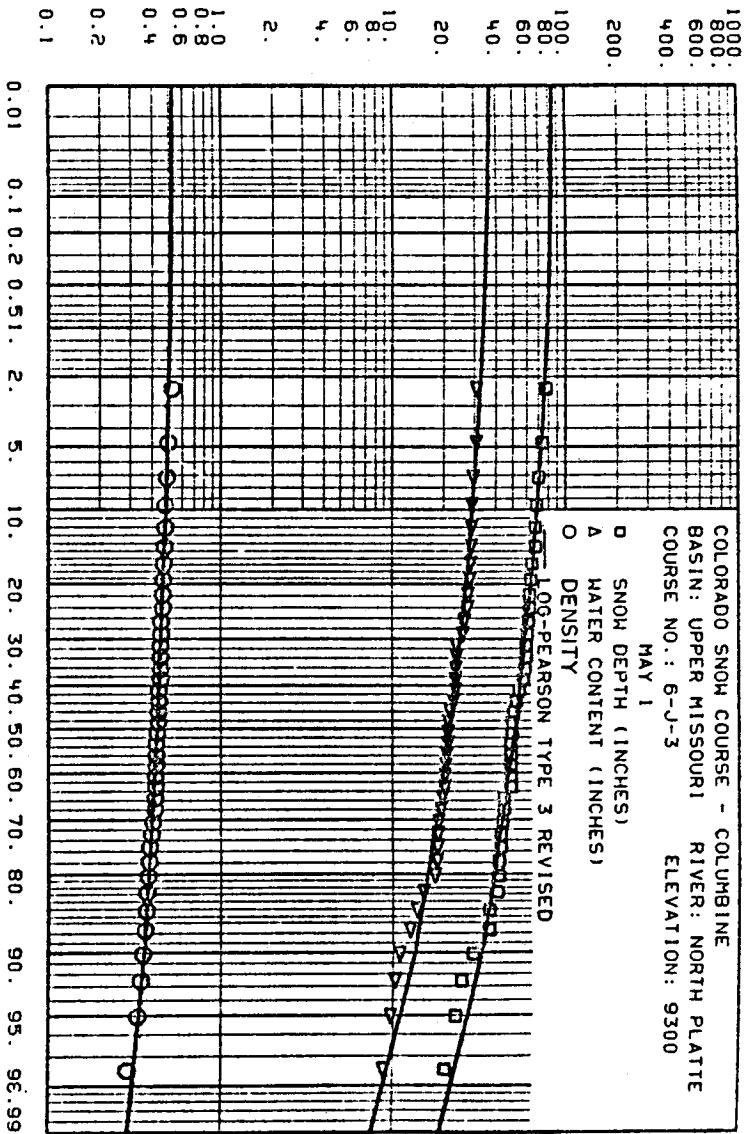


DENSITY, WATER CONTENT, SNOW DEPTH

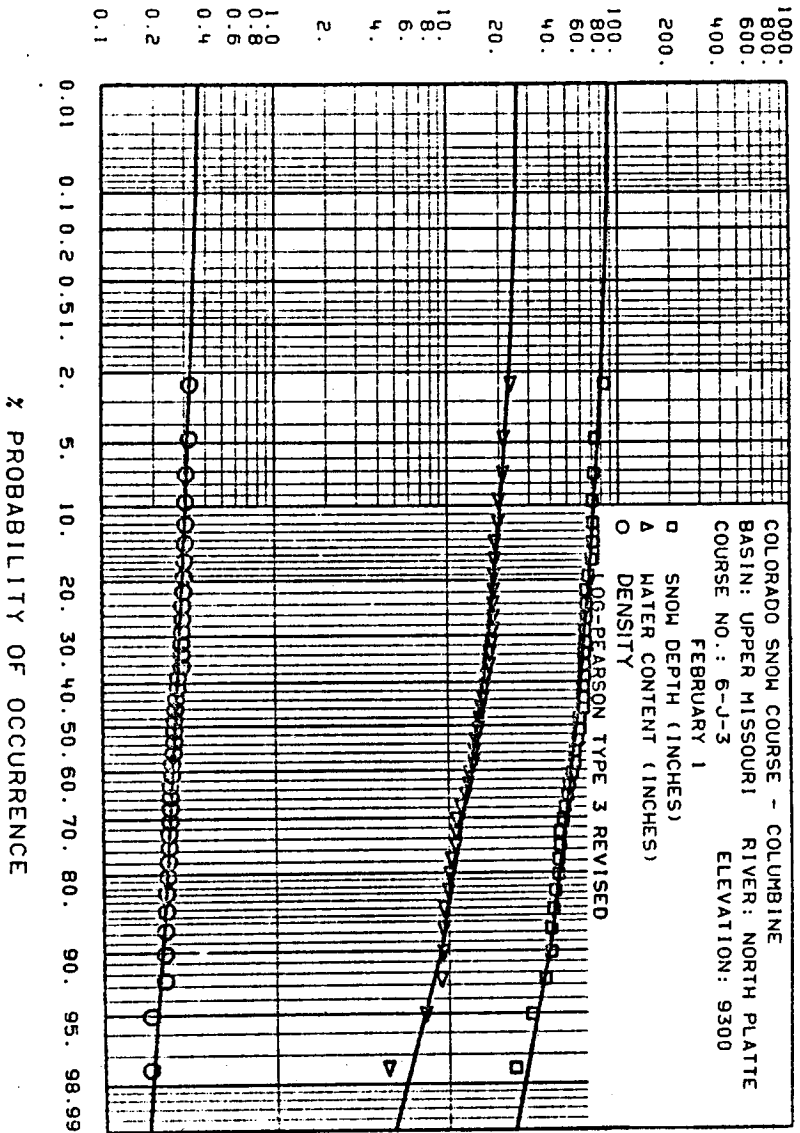


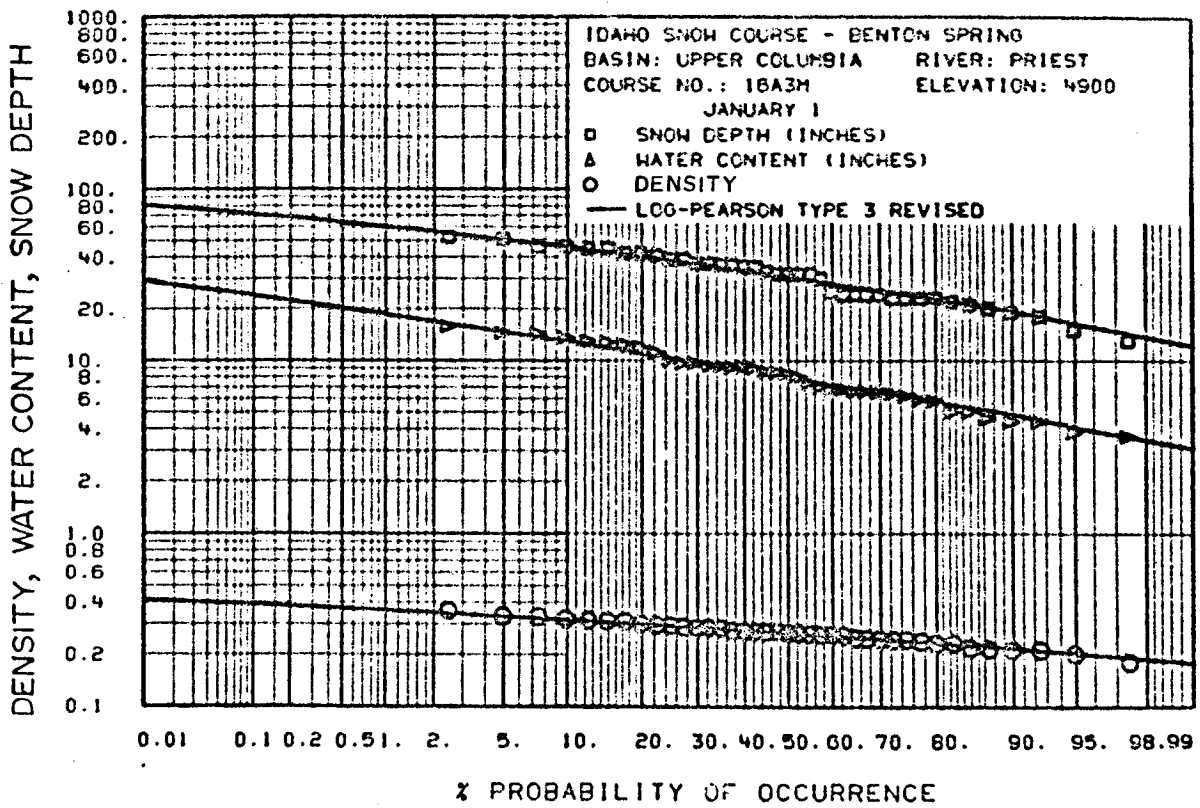
% PROBABILITY OF OCCURRENCE

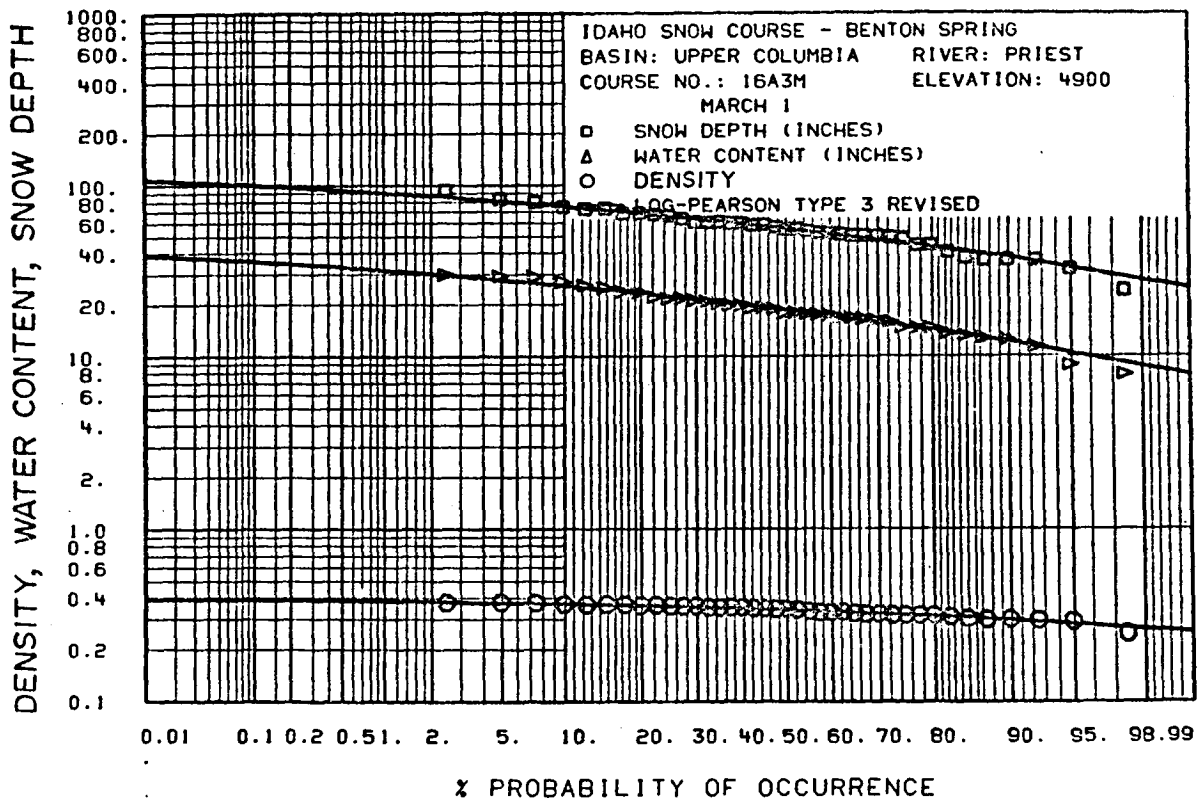
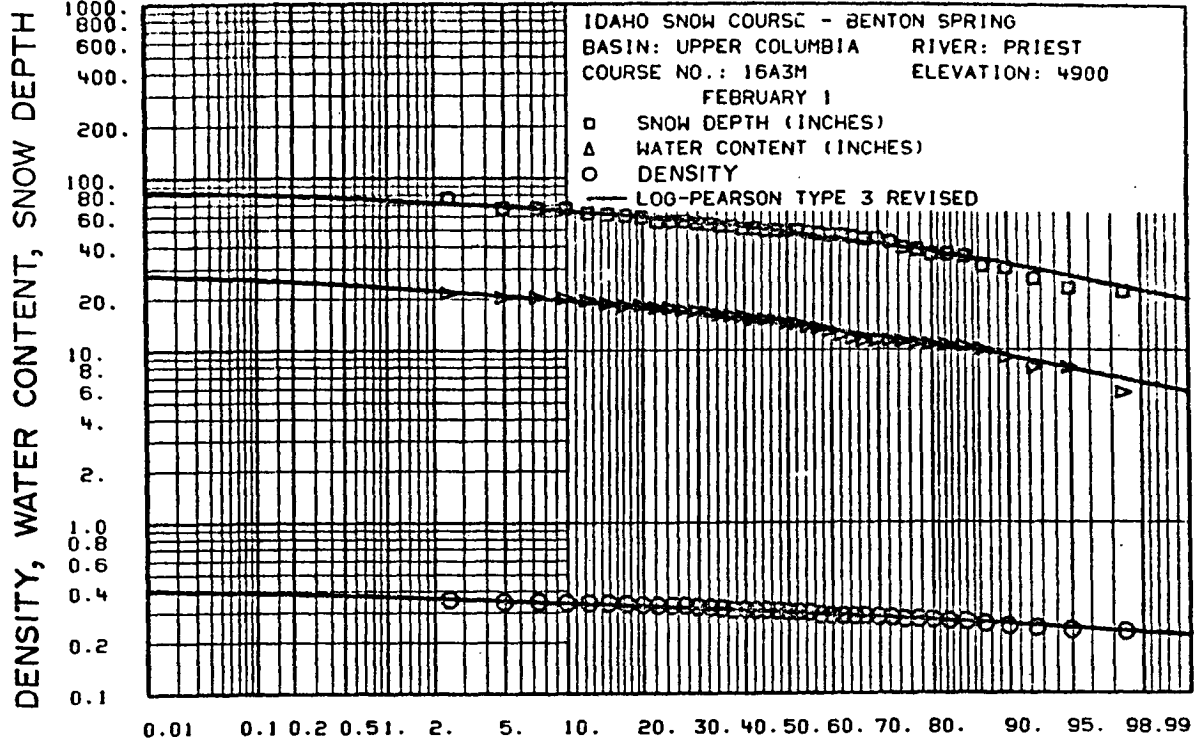
DENSITY, WATER CONTENT, SNOW DEPTH



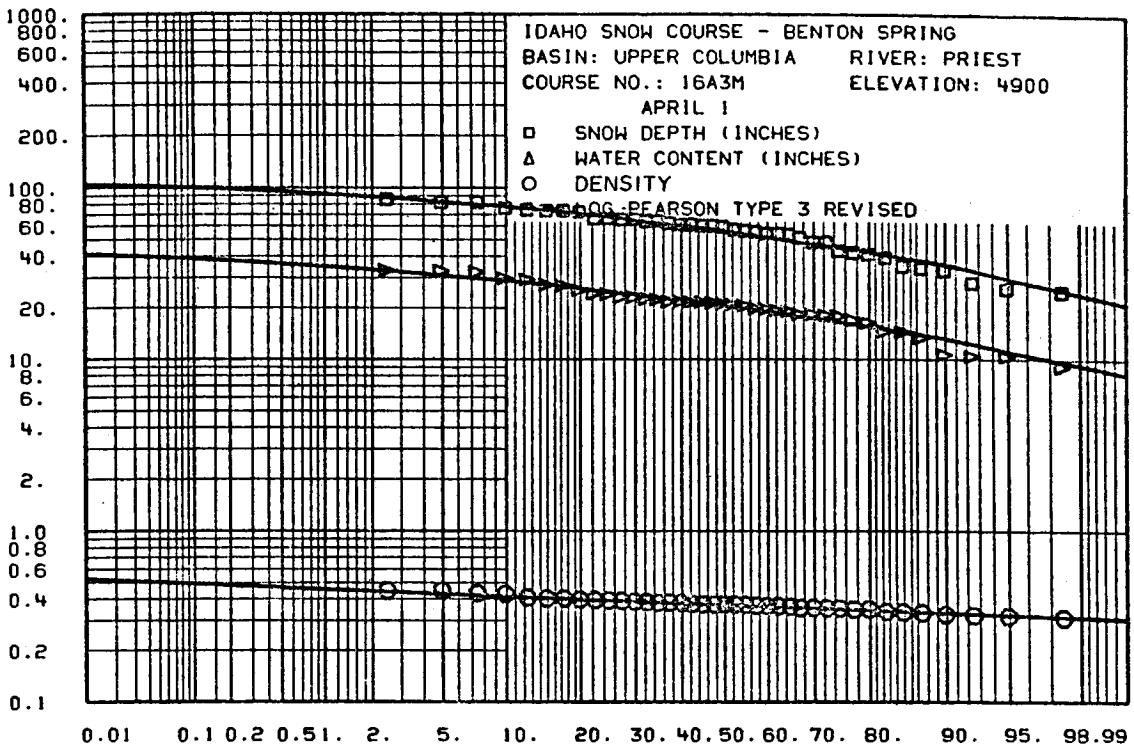
DENSITY, WATER CONTENT, SNOW DEPTH



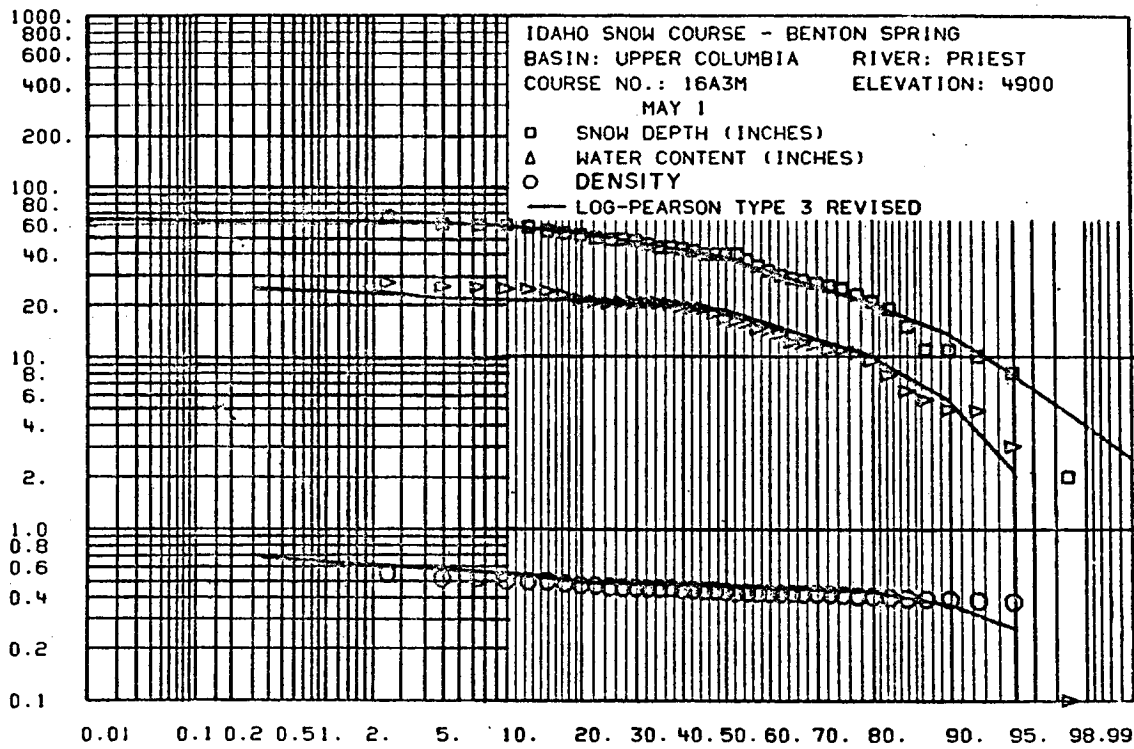




DENSITY, WATER CONTENT, SNOW DEPTH

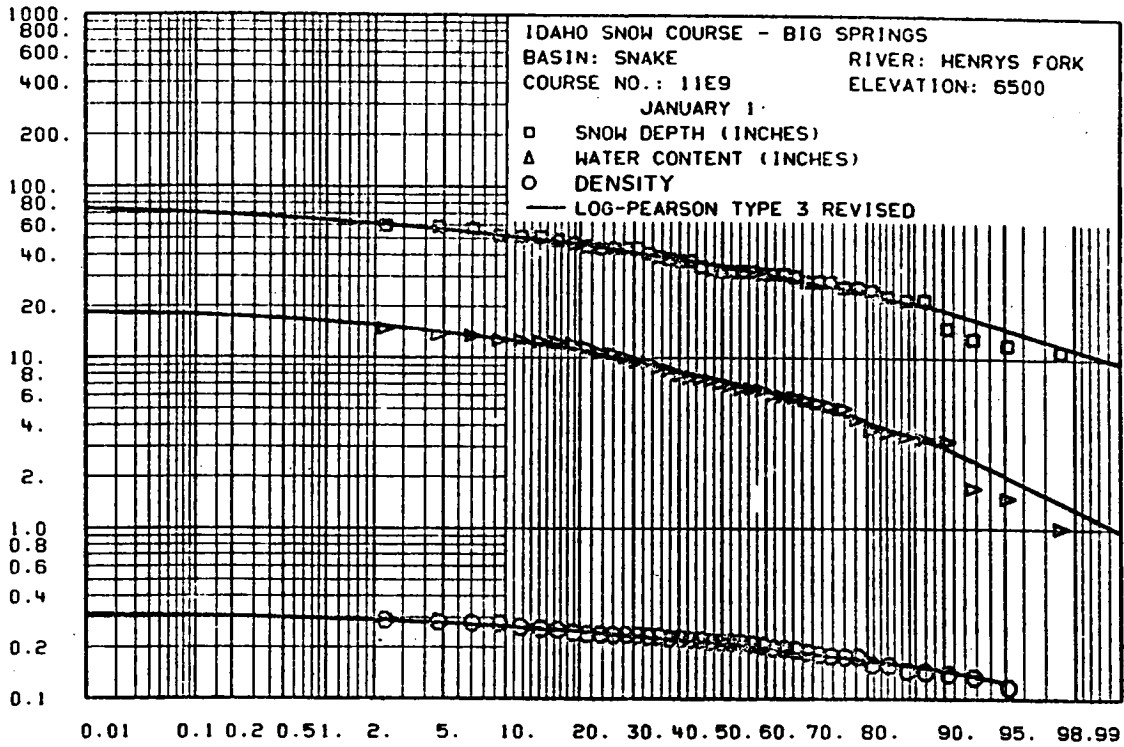


DENSITY, WATER CONTENT, SNOW DEPTH

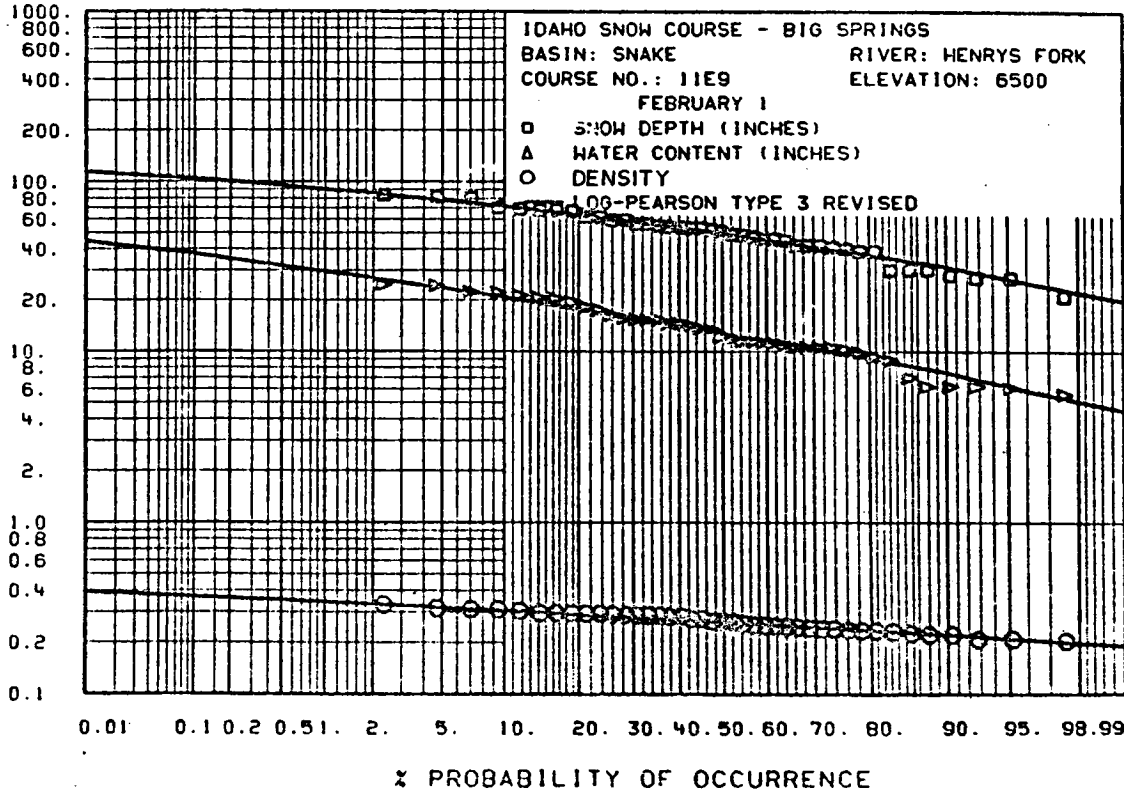


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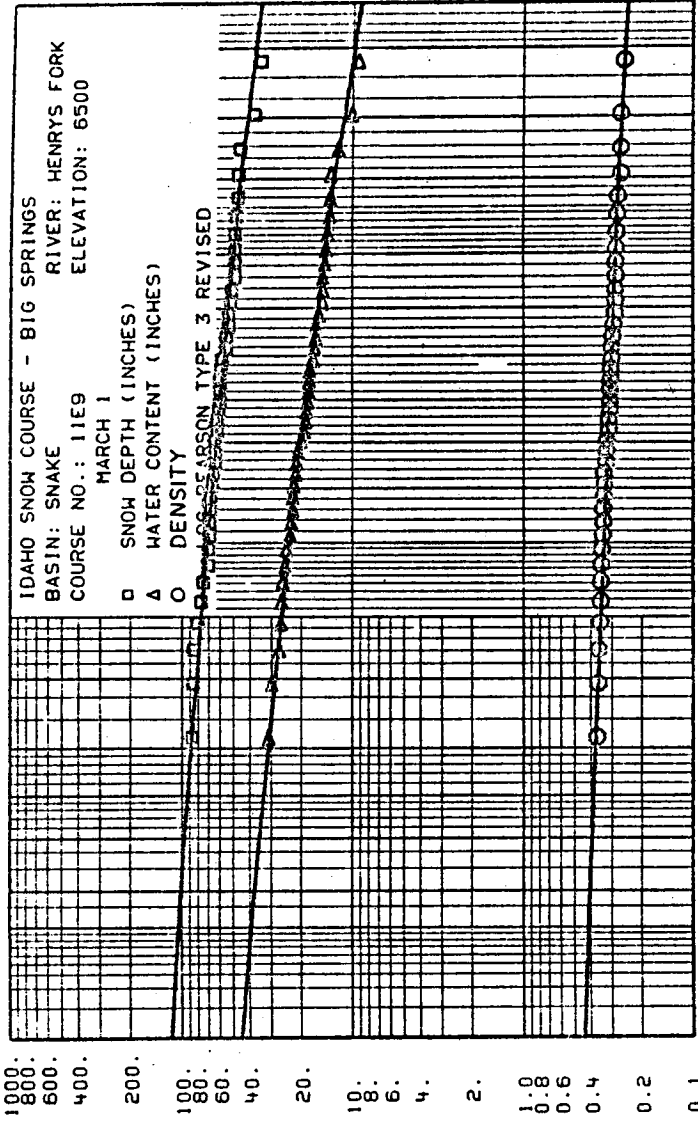
DENSITY, WATER CONTENT, SNOW DEPTH



DENSITY, WATER CONTENT, SNOW DEPTH

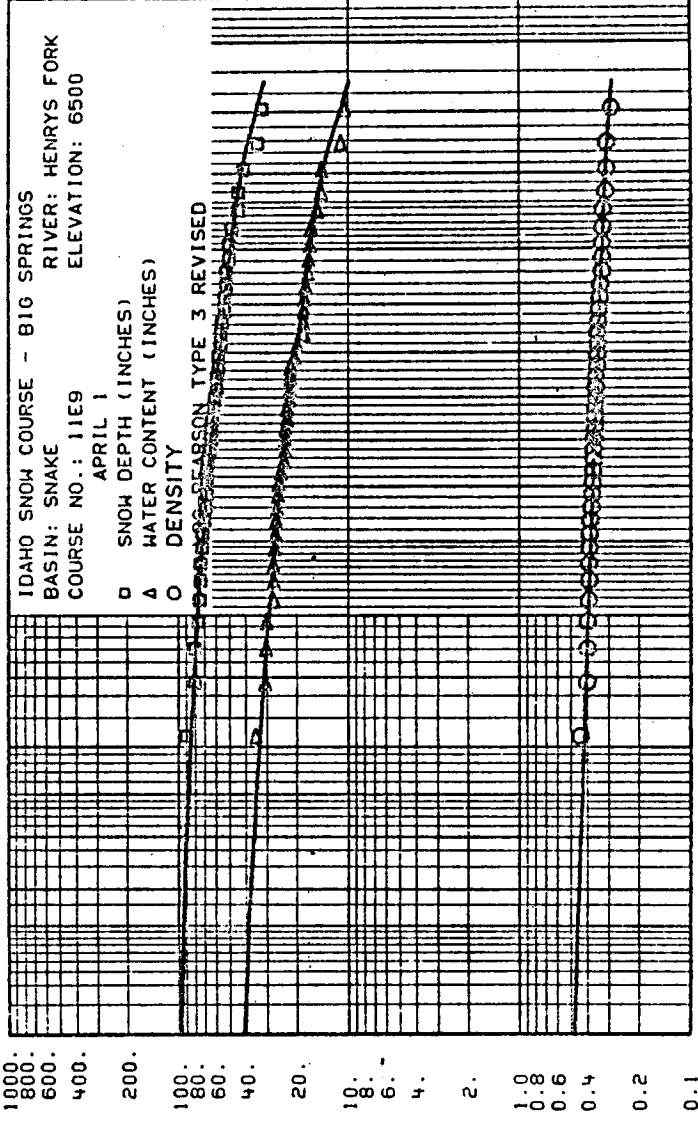


DENSITY, WATER CONTENT, SNOW DEPTH



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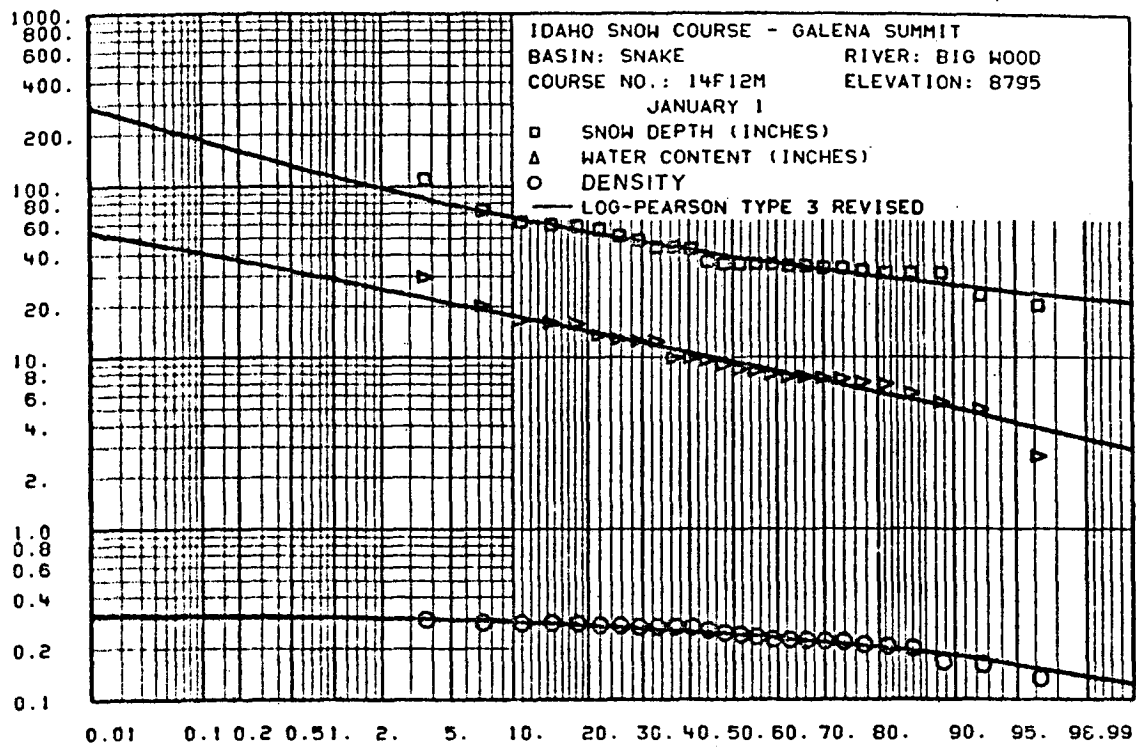
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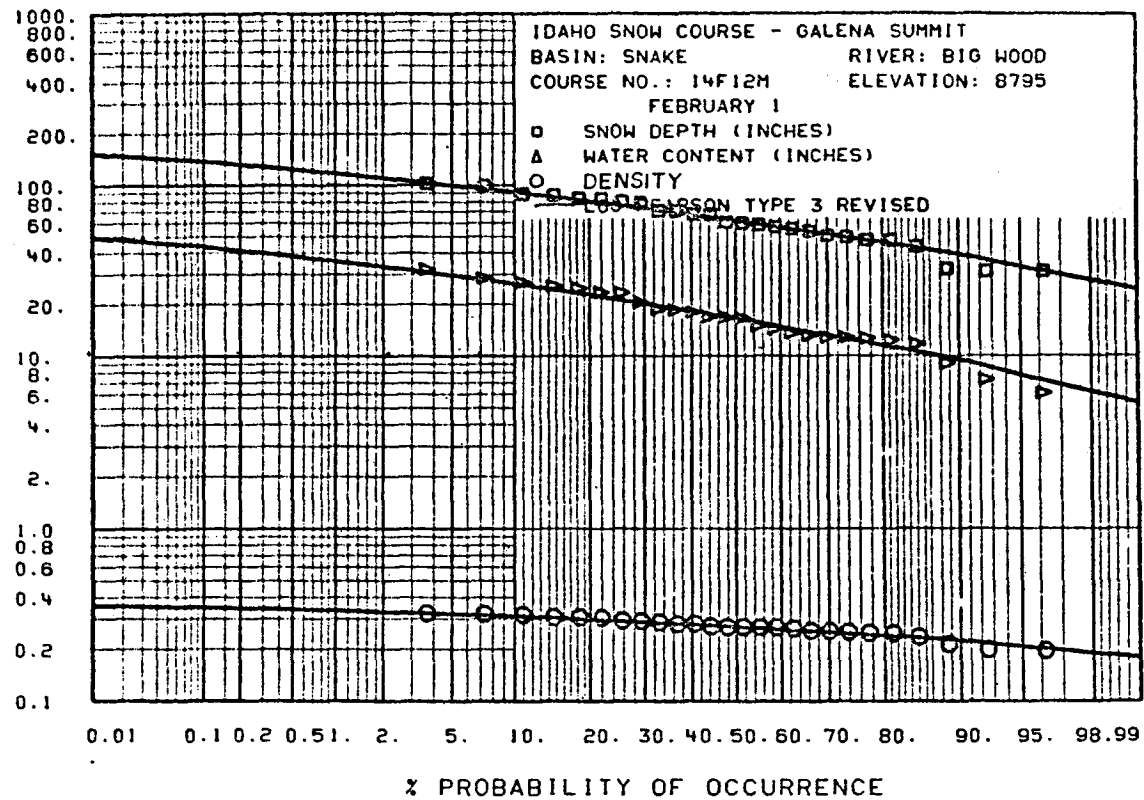
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× PROBABILITY OF OCCURRENCE

DENSITY, WATER CONTENT, SNOW DEPTH

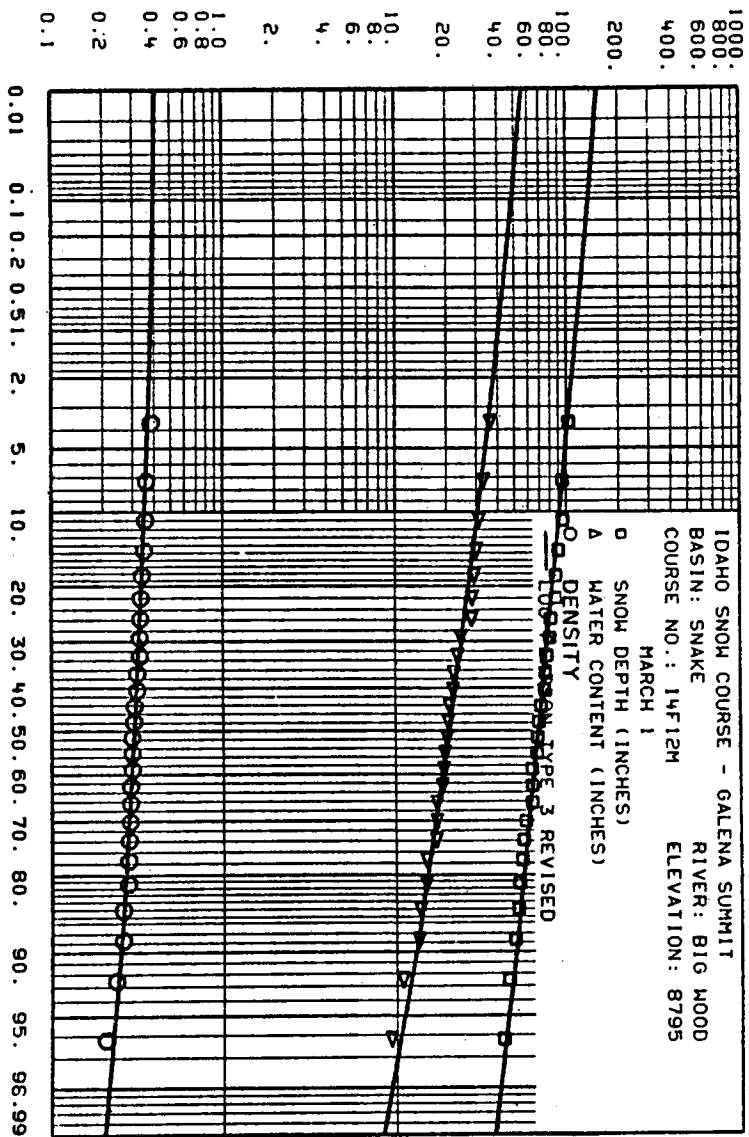


DENSITY, WATER CONTENT, SNOW DEPTH

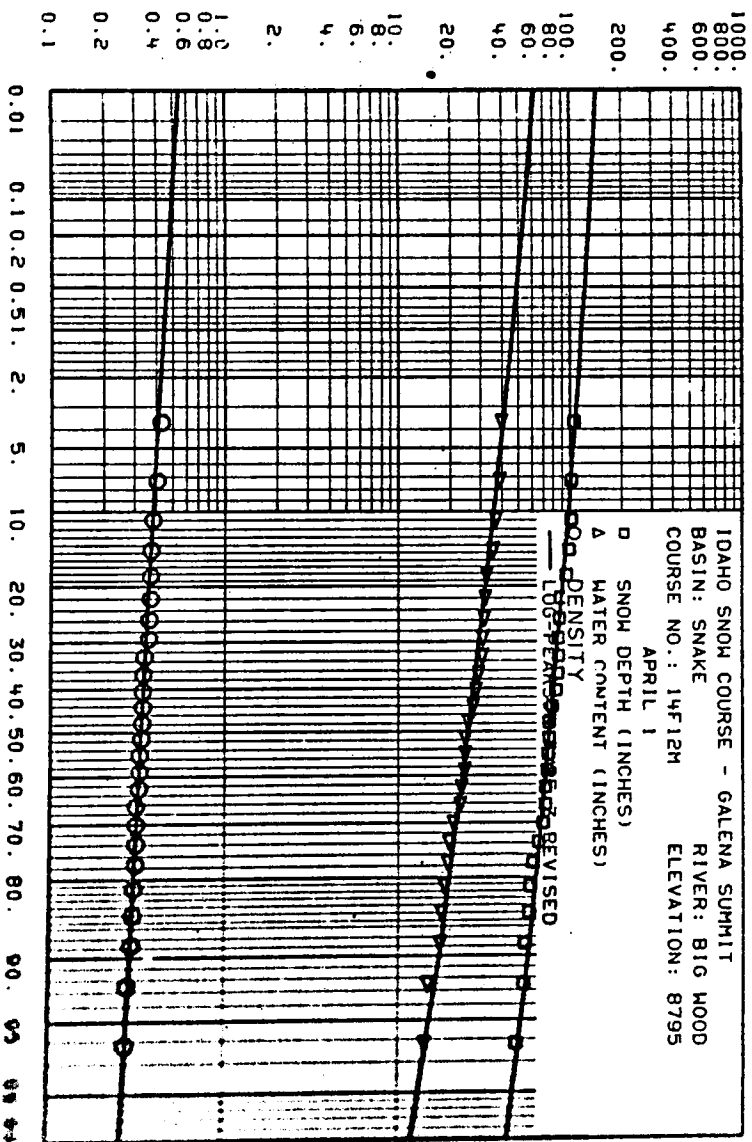


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DENSITY, WATER CONTENT, SNOW DEPTH

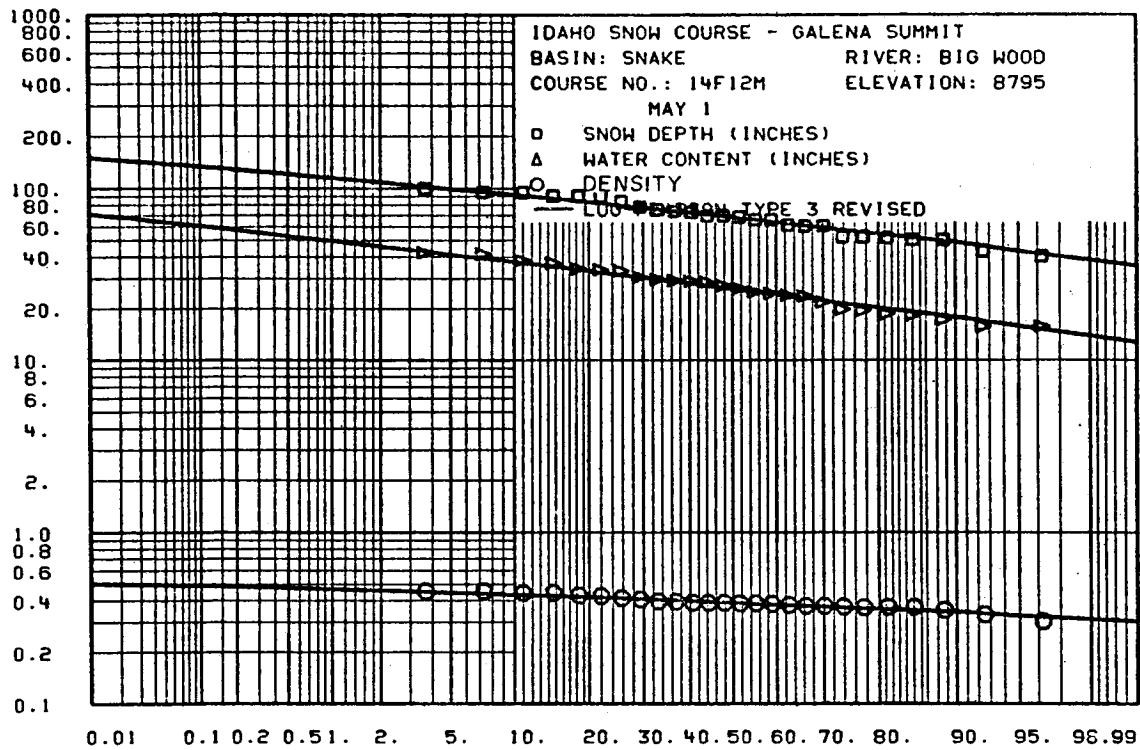


DENSITY, WATER CONTENT, SNOW DEPTH

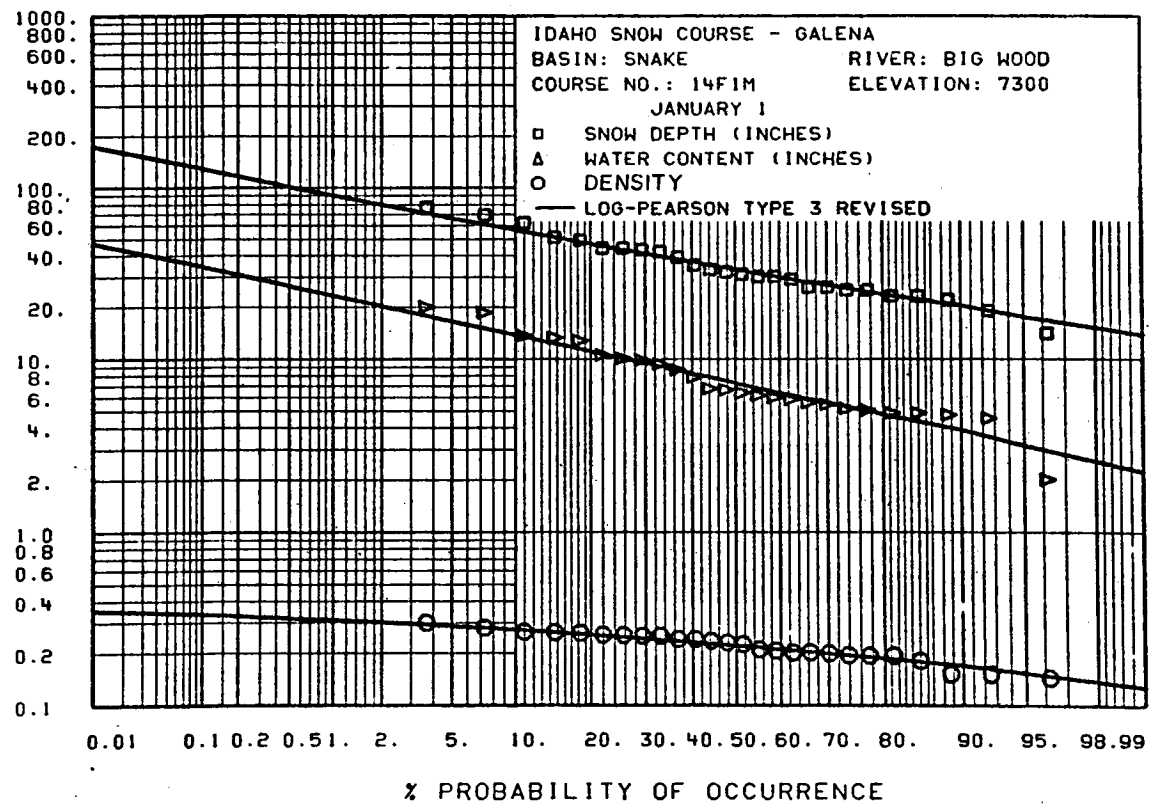


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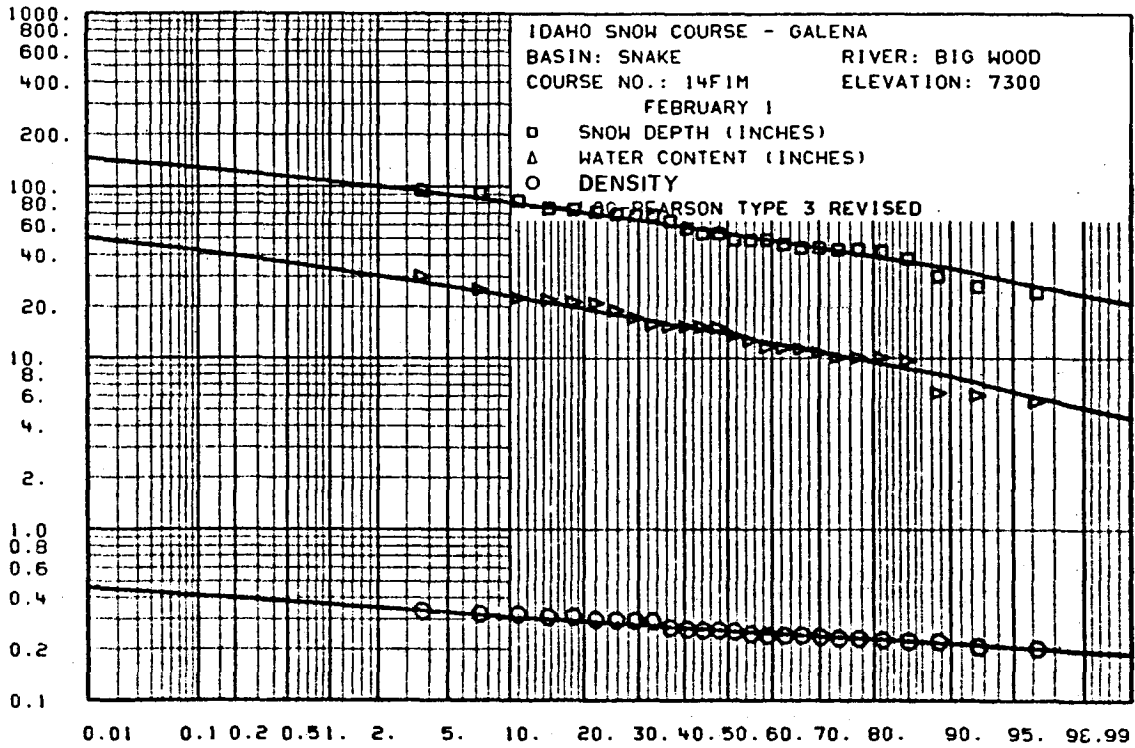
DENSITY, WATER CONTENT, SNOW DEPTH



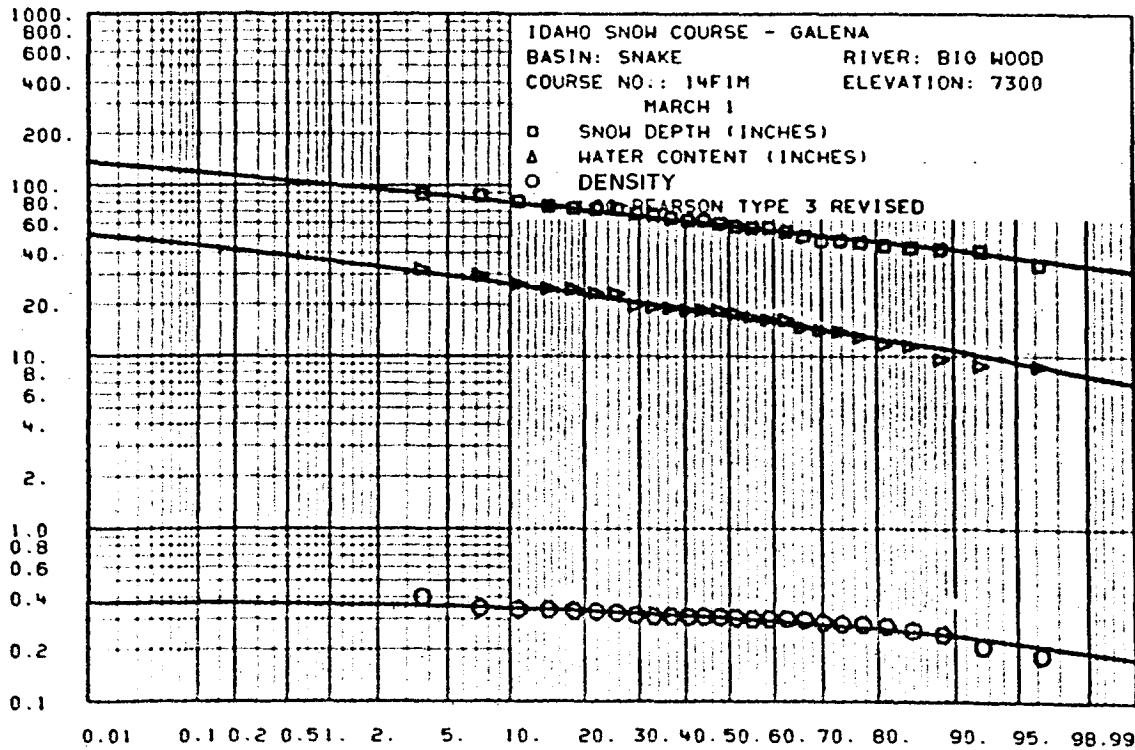
DENSITY, WATER CONTENT, SNOW DEPTH



DENSITY, WATER CONTENT, SNOW DEPTH

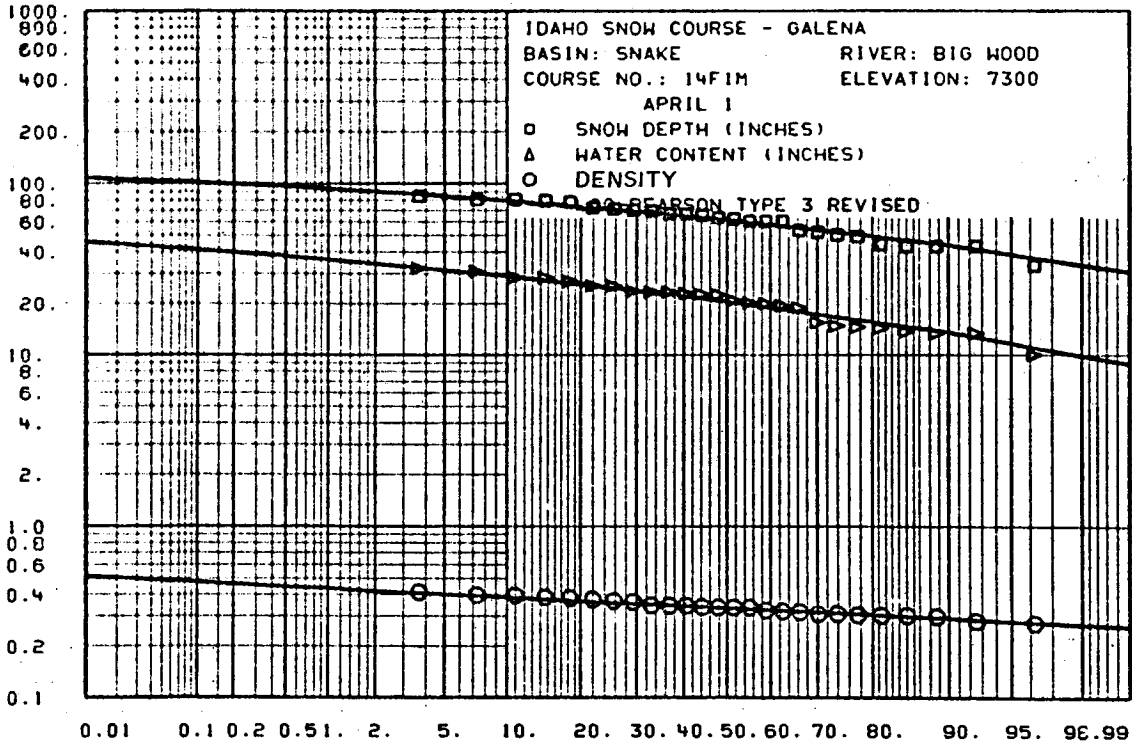


DENSITY, WATER CONTENT, SNOW DEPTH

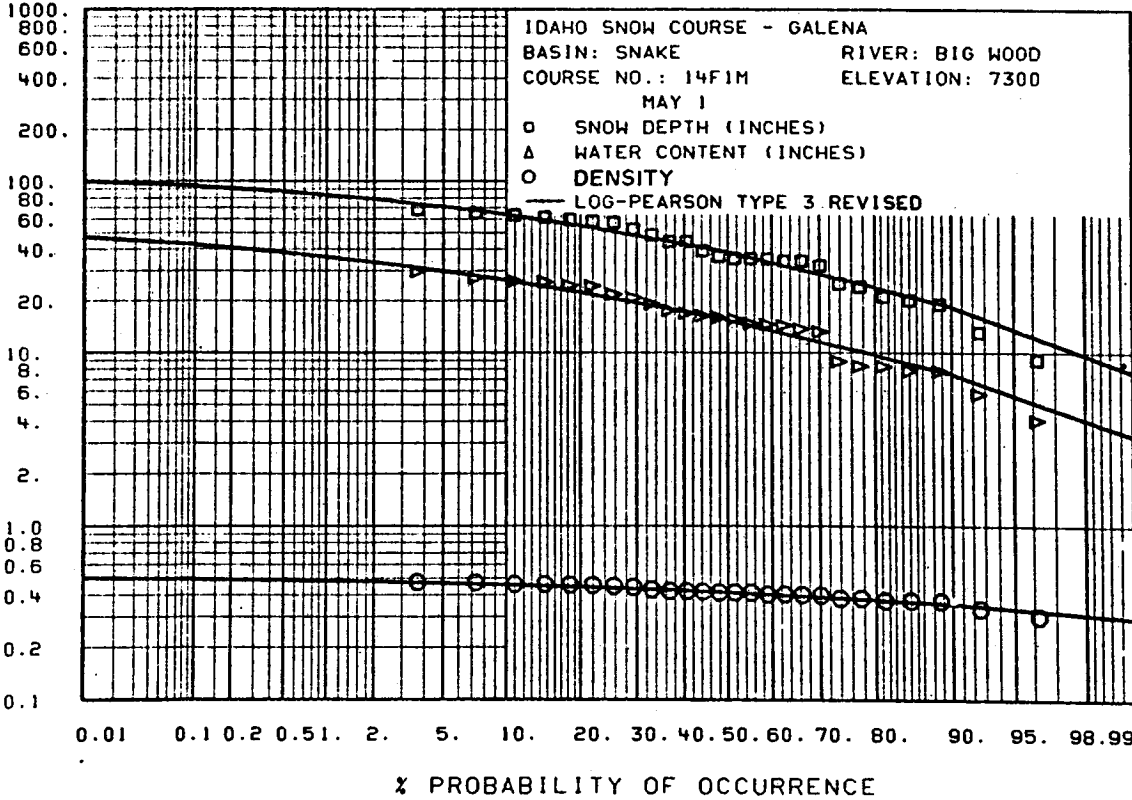


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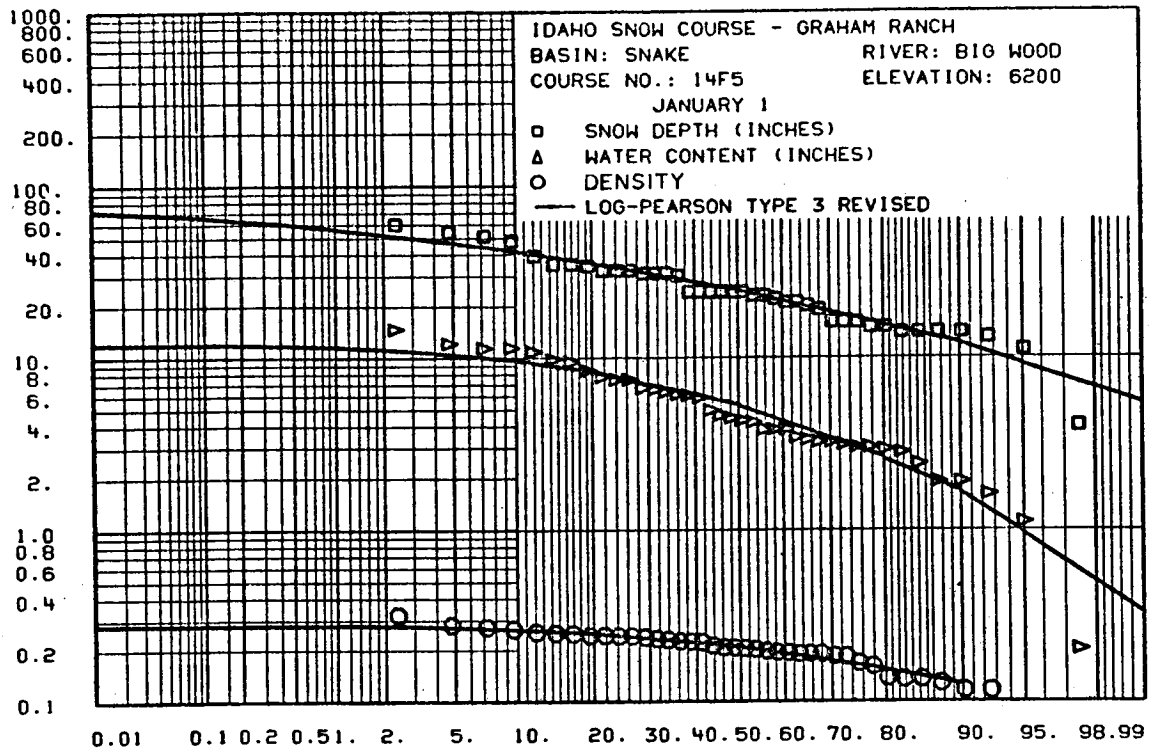
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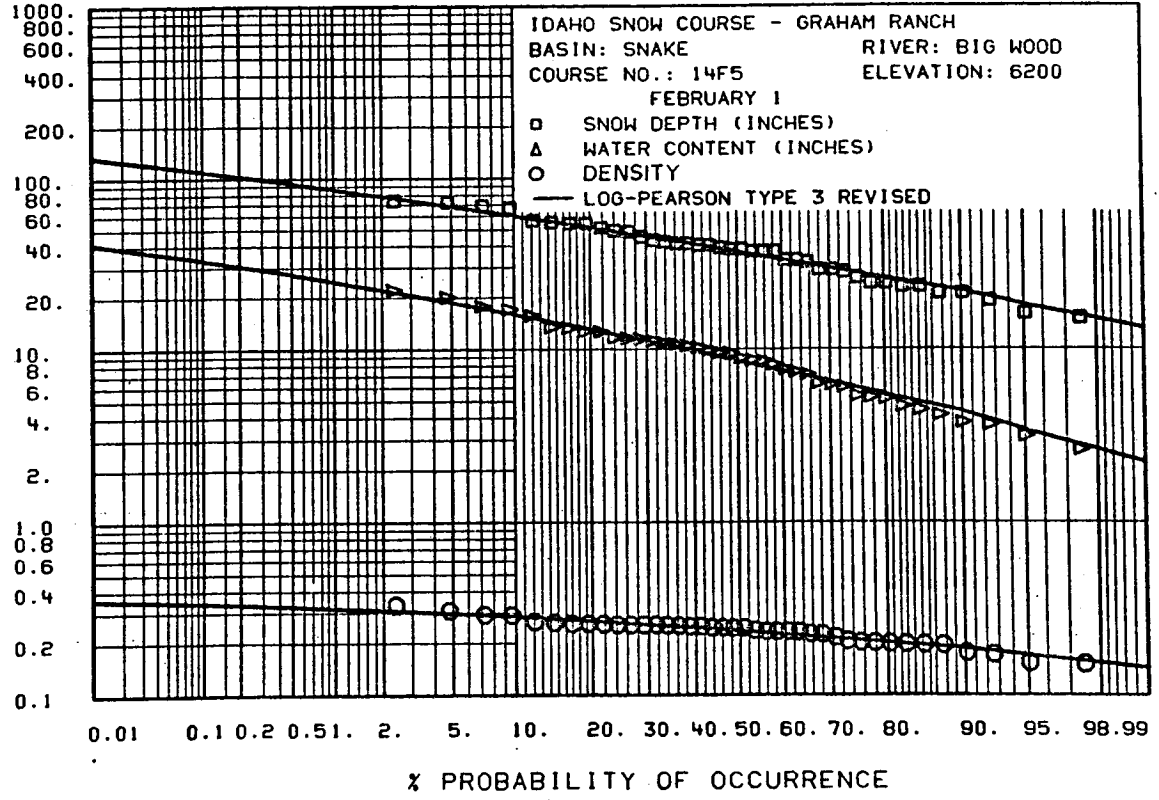
DENSITY, WATER CONTENT, SNOW DEPTH



DENSITY, WATER CONTENT, SNOW DEPTH

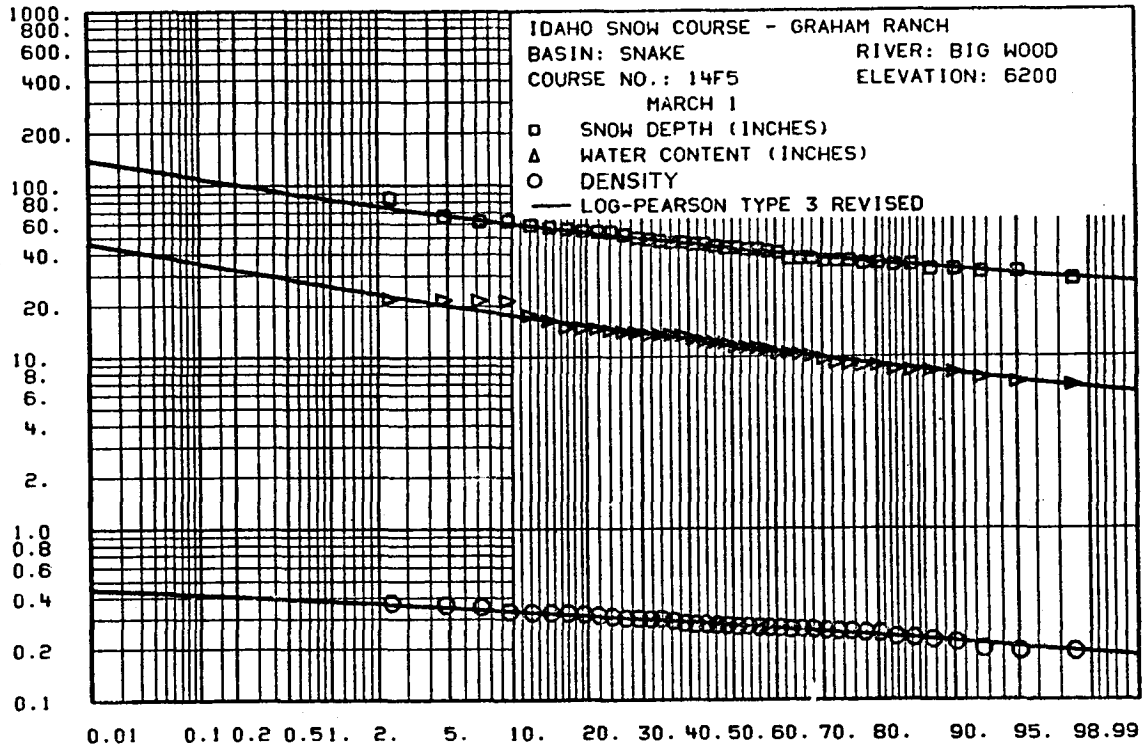


DENSITY, WATER CONTENT, SNOW DEPTH

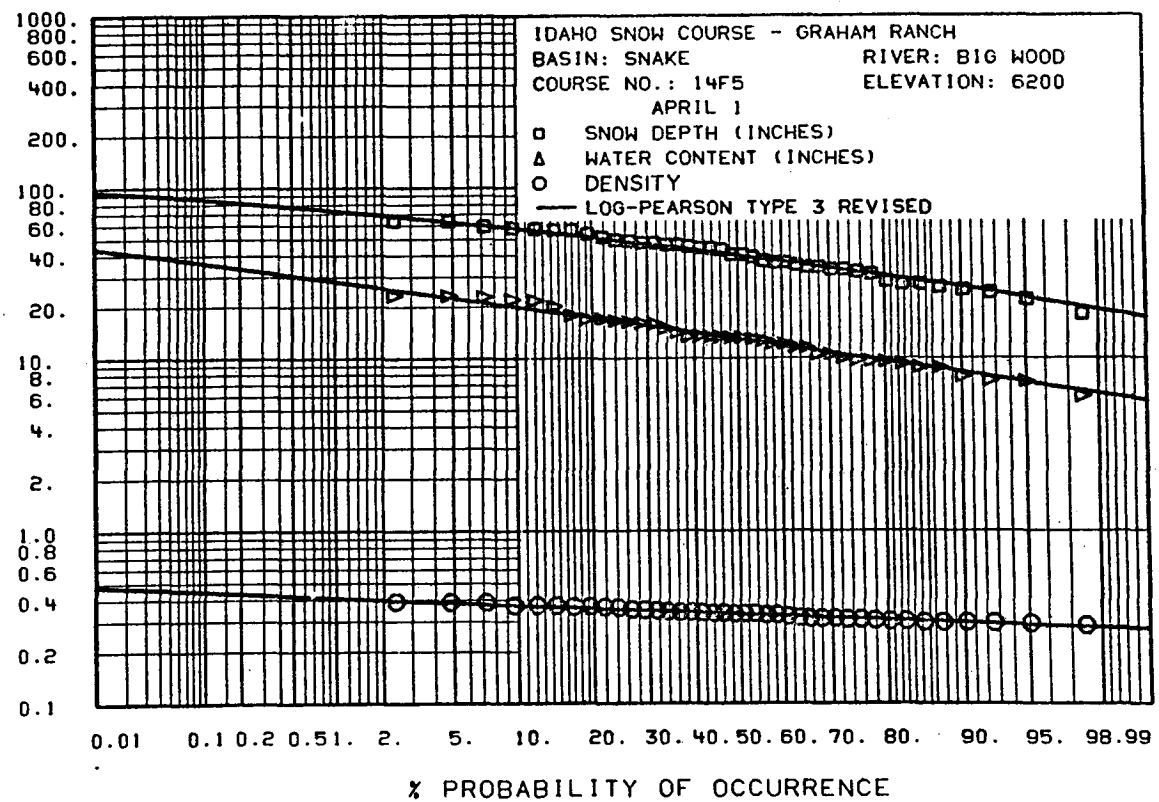


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DENSITY, WATER CONTENT, SNOW DEPTH

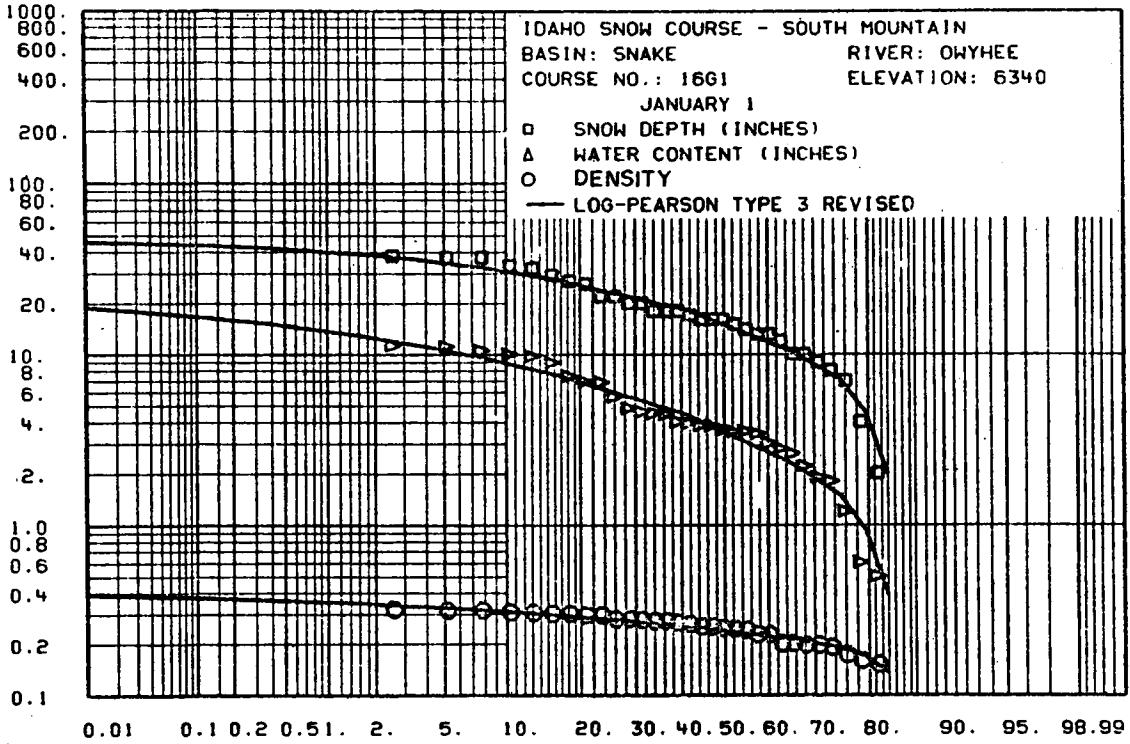


DENSITY, WATER CONTENT, SNOW DEPTH

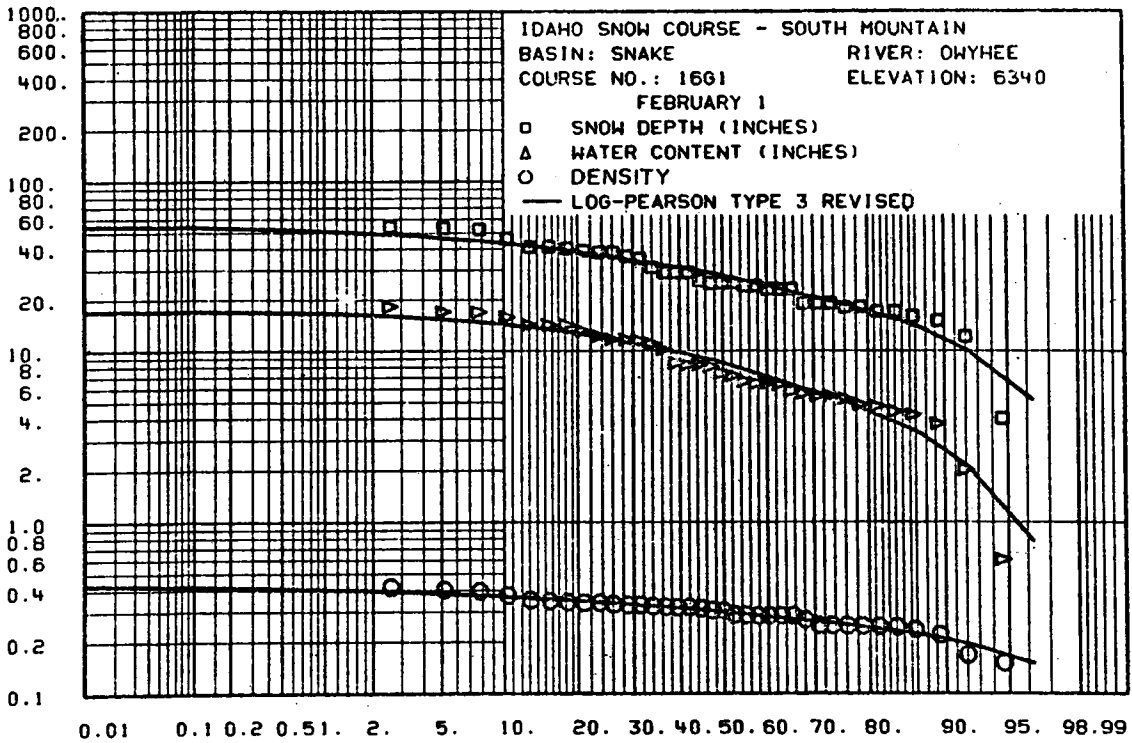


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DENSITY, WATER CONTENT, SNOW DEPTH

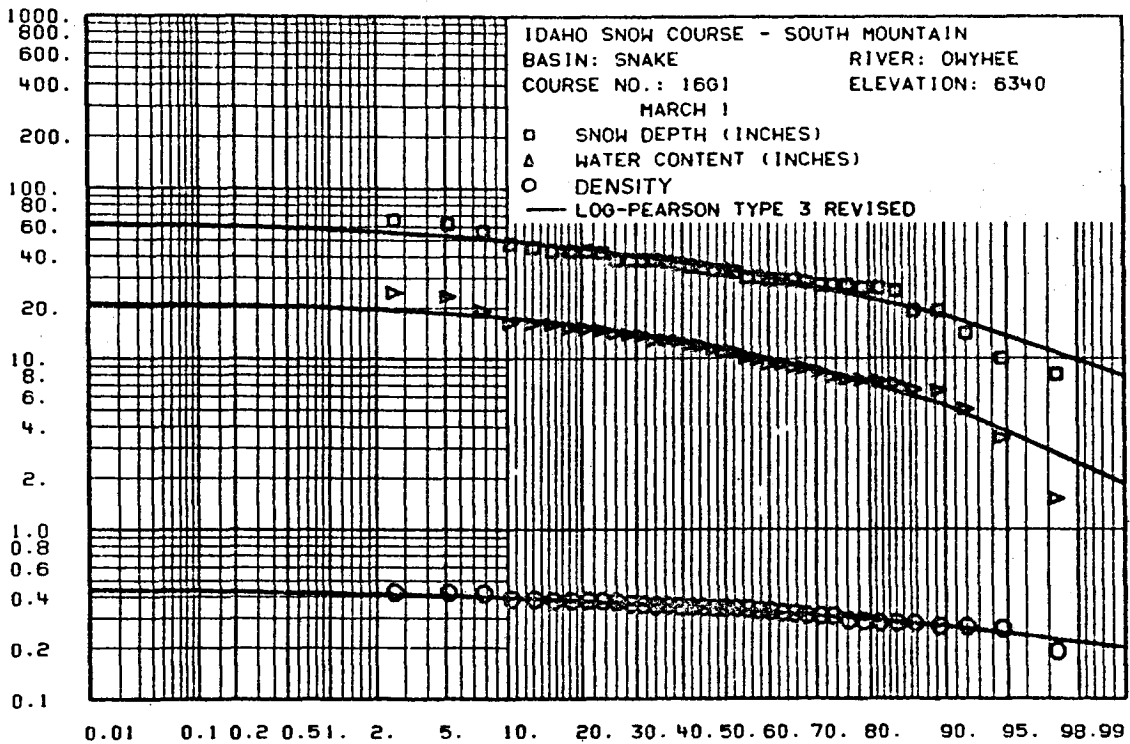


DENSITY, WATER CONTENT, SNOW DEPTH

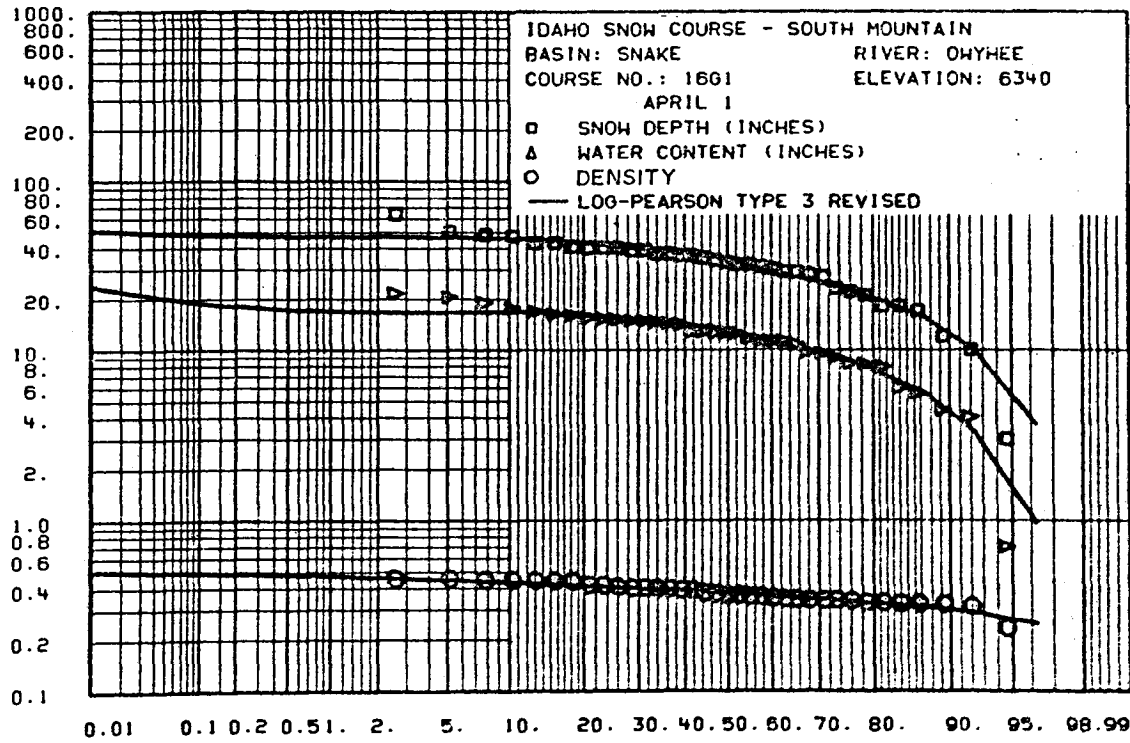


% PROBABILITY OF OCCURRENCE

DENSITY, WATER CONTENT, SNOW DEPTH

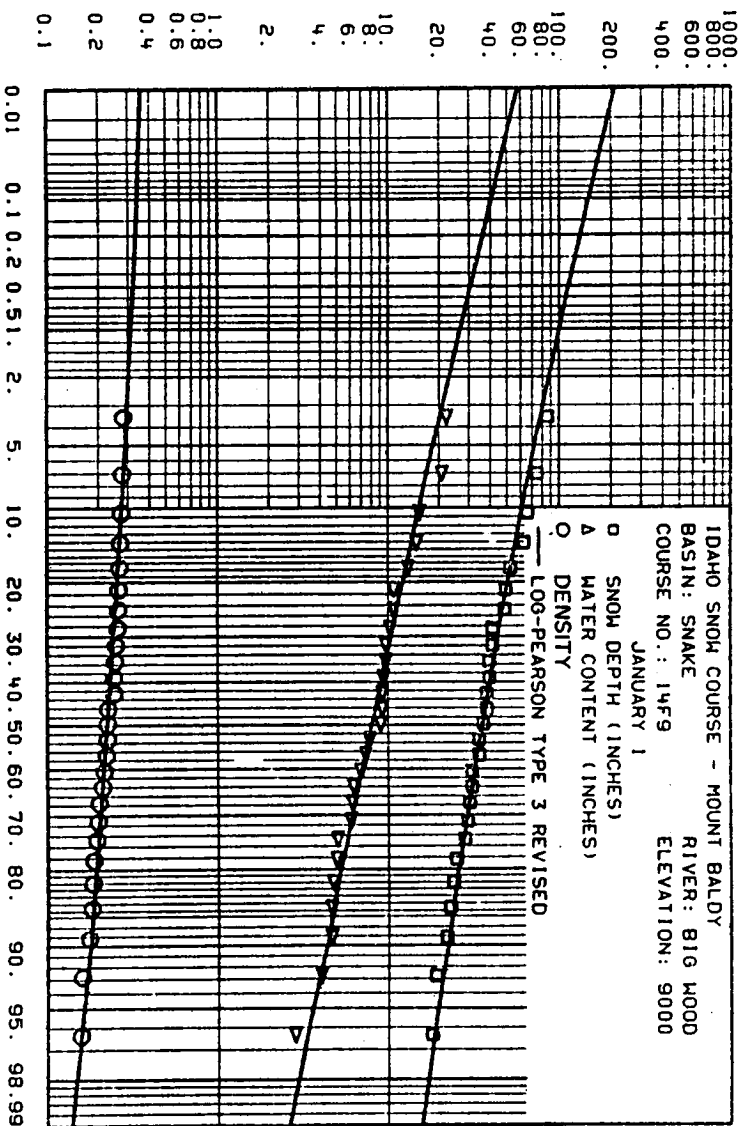


DENSITY, WATER CONTENT, SNOW DEPTH

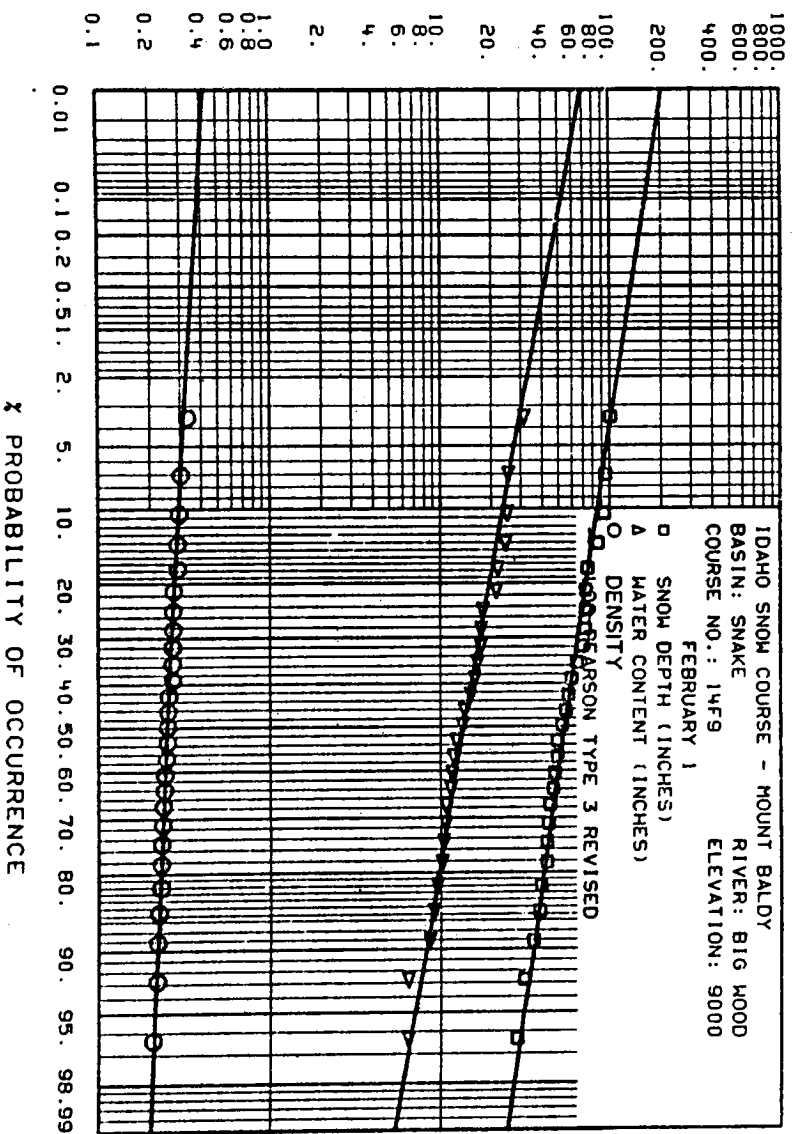


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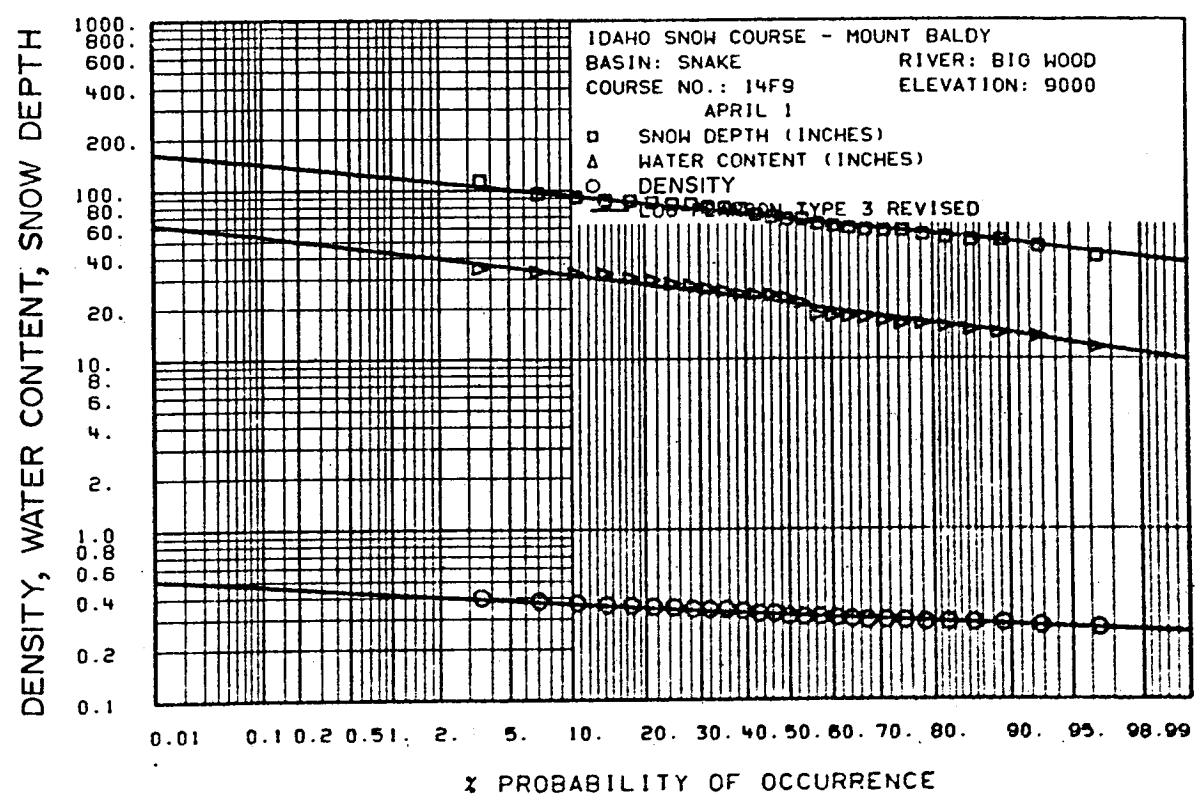
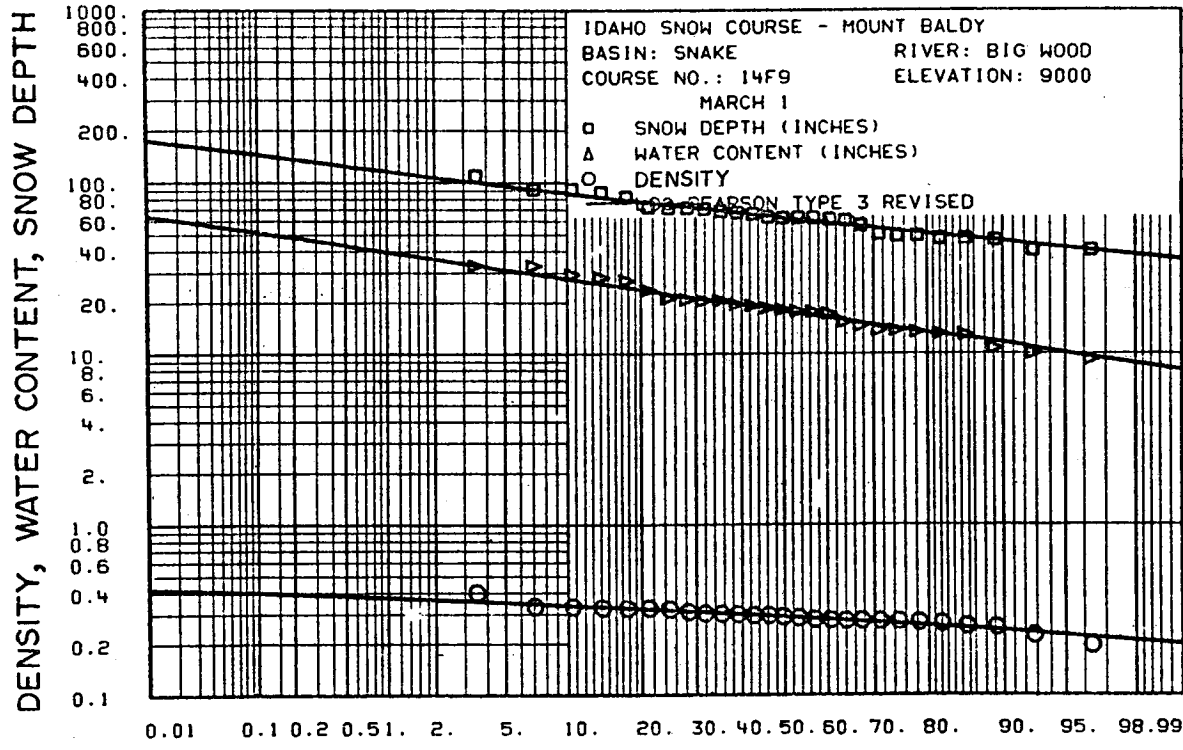
DENSITY, WATER CONTENT, SNOW DEPTH



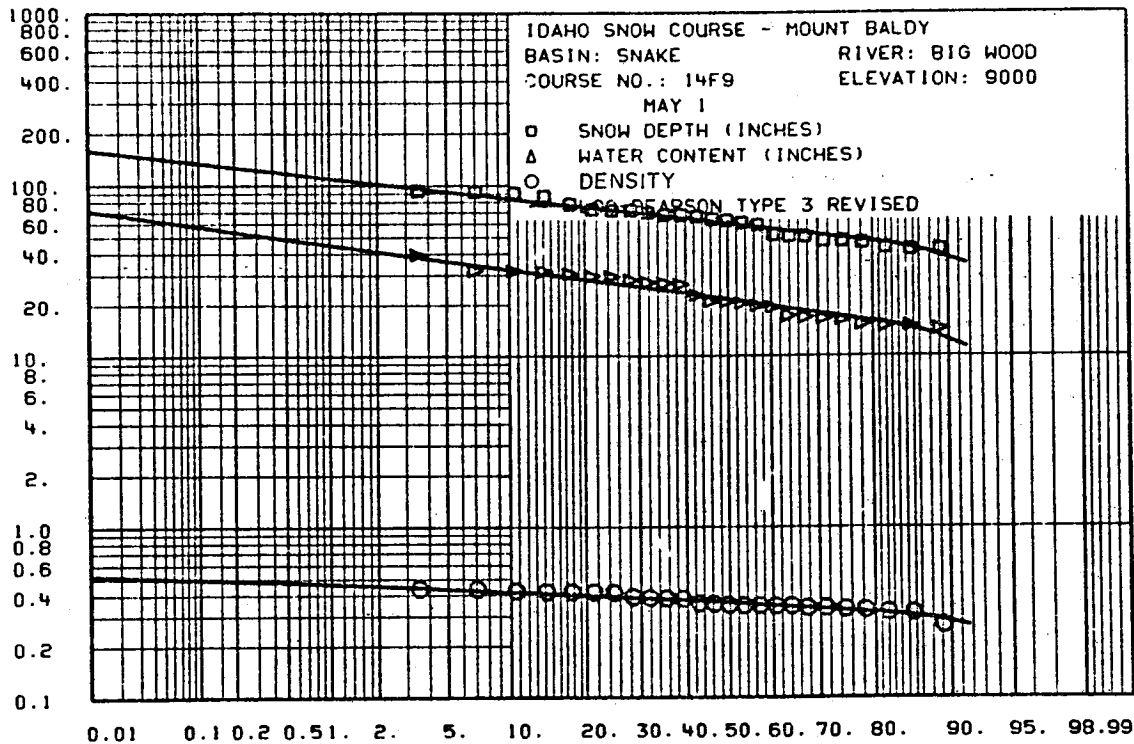
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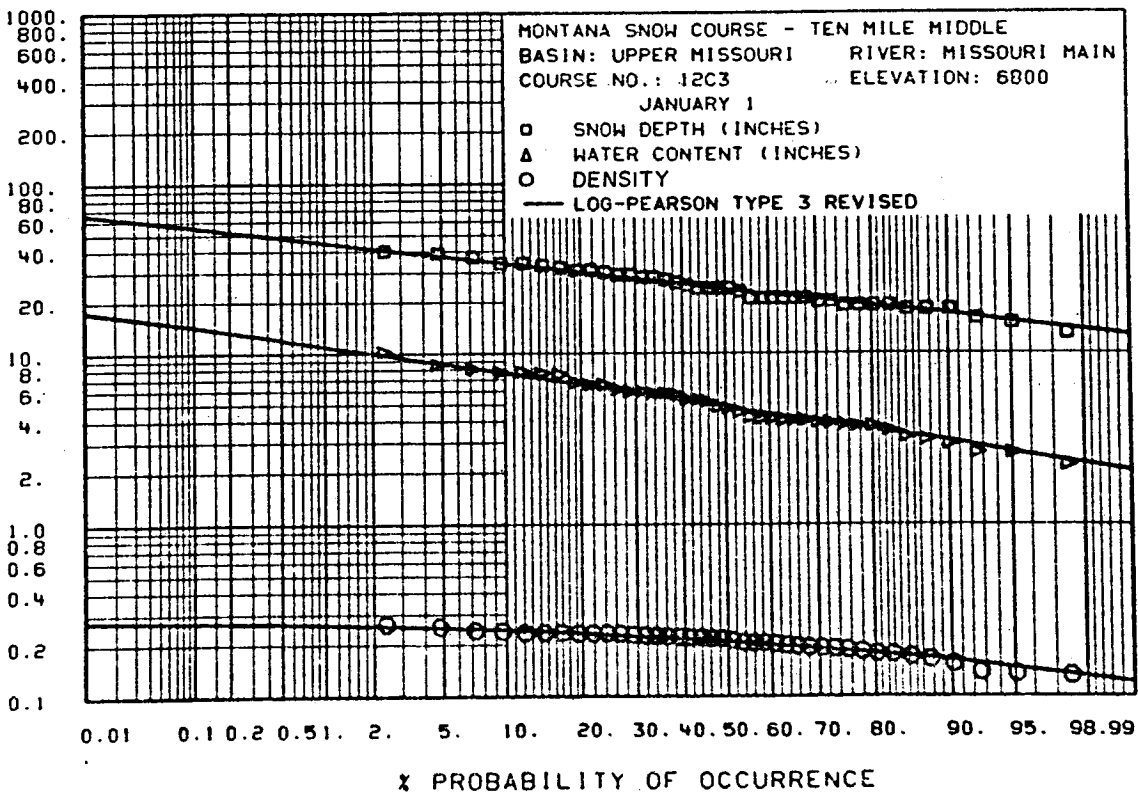
X PROBABILITY OF OCCURRENCE



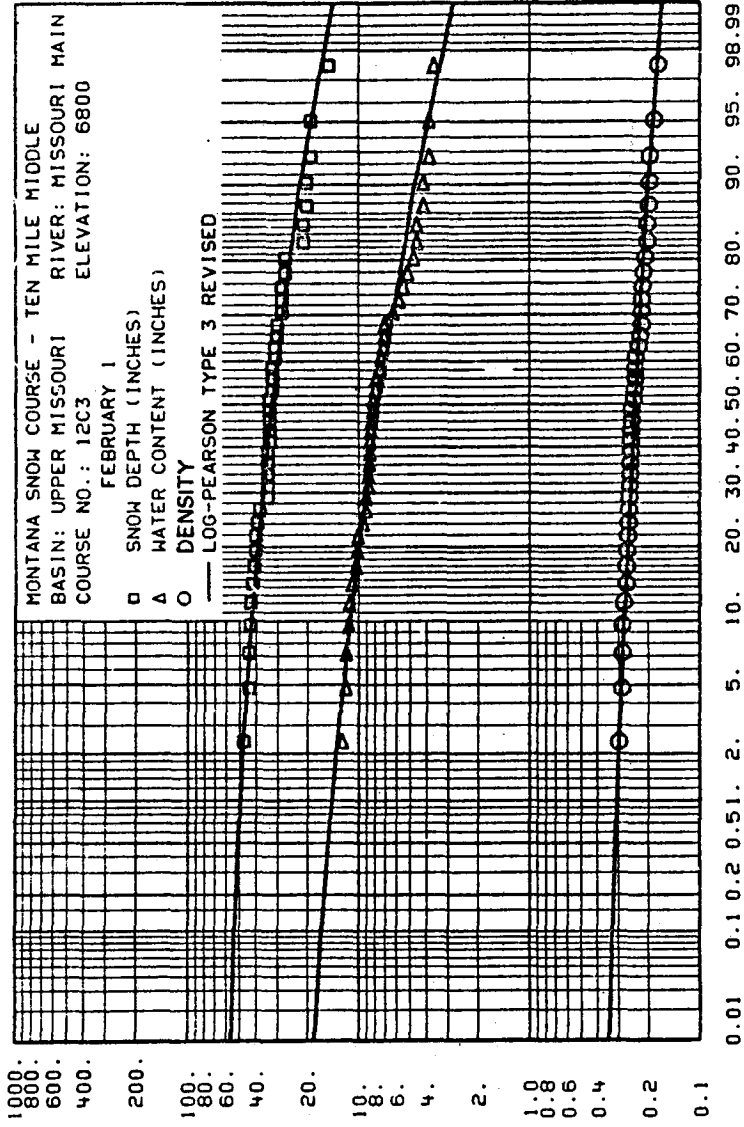
DENSITY, WATER CONTENT, SNOW DEPTH



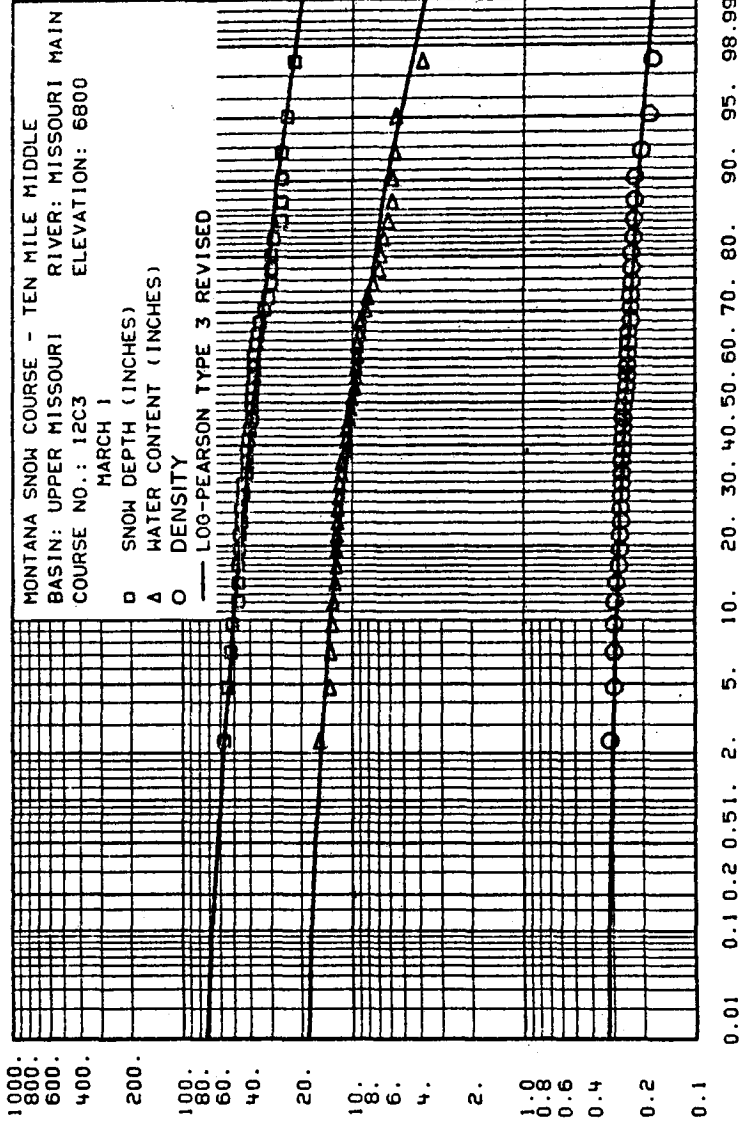
DENSITY, WATER CONTENT, SNOW DEPTH



DENSITY, WATER CONTENT, SNOW DEPTH

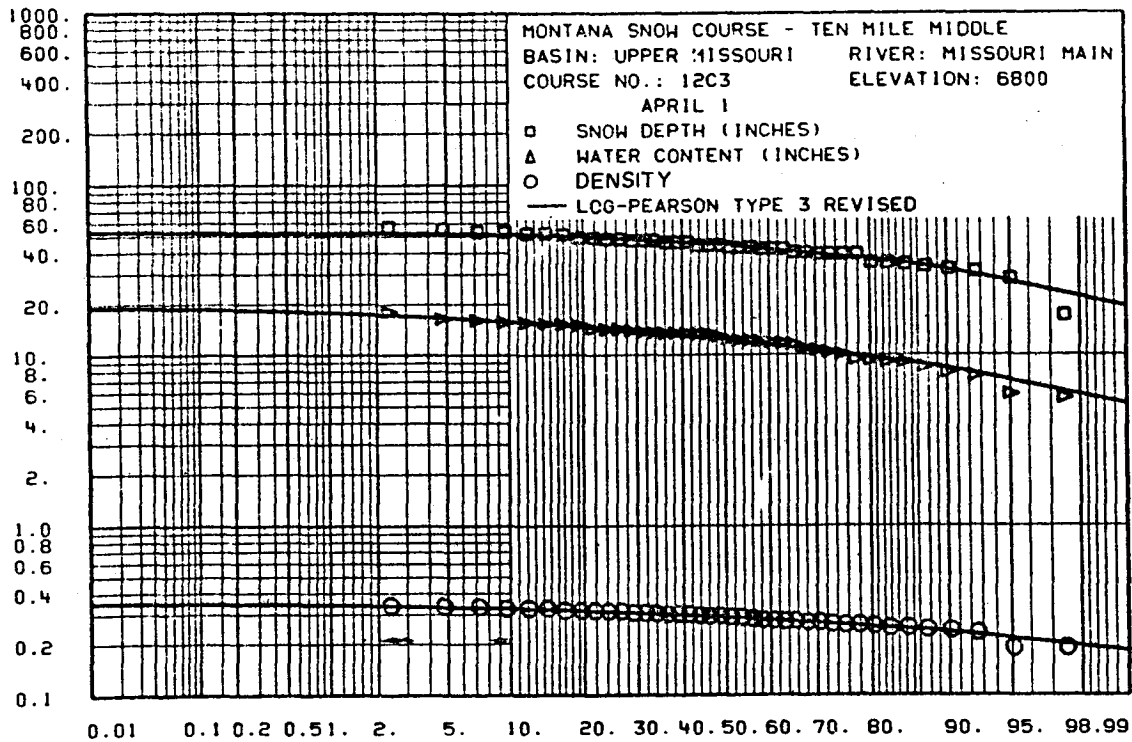


DENSITY, WATER CONTENT, SNOW DEPTH

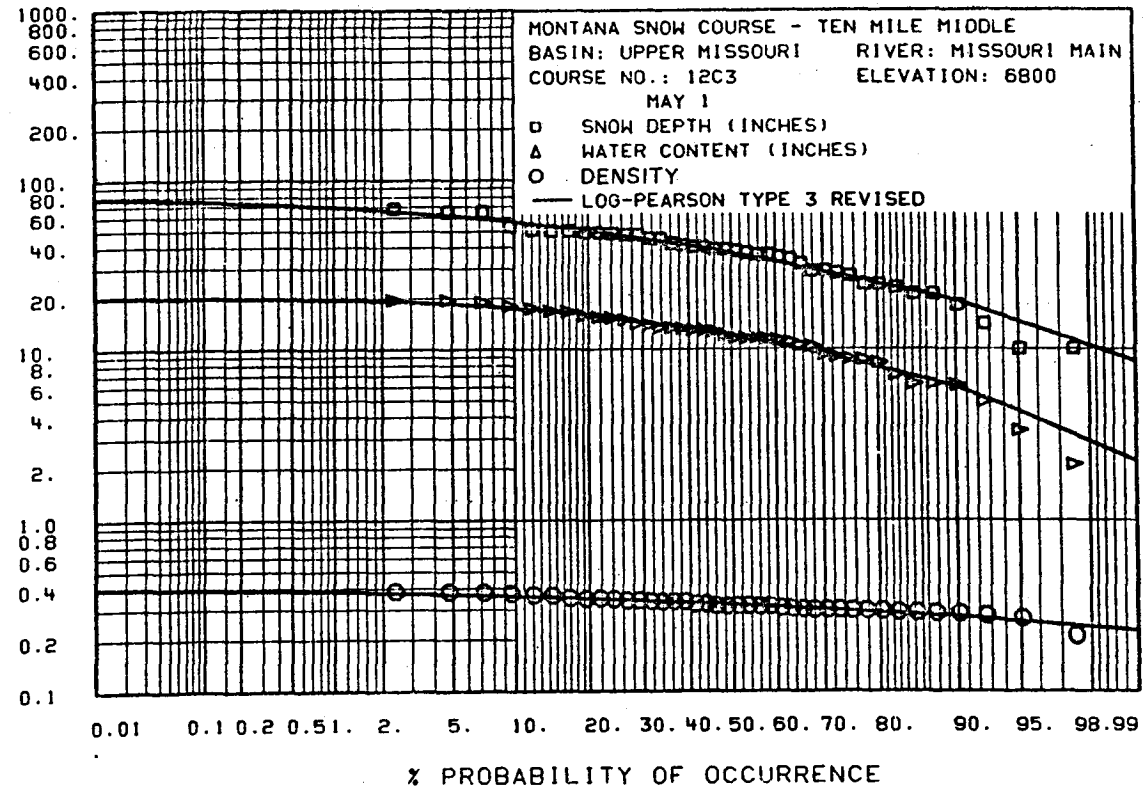


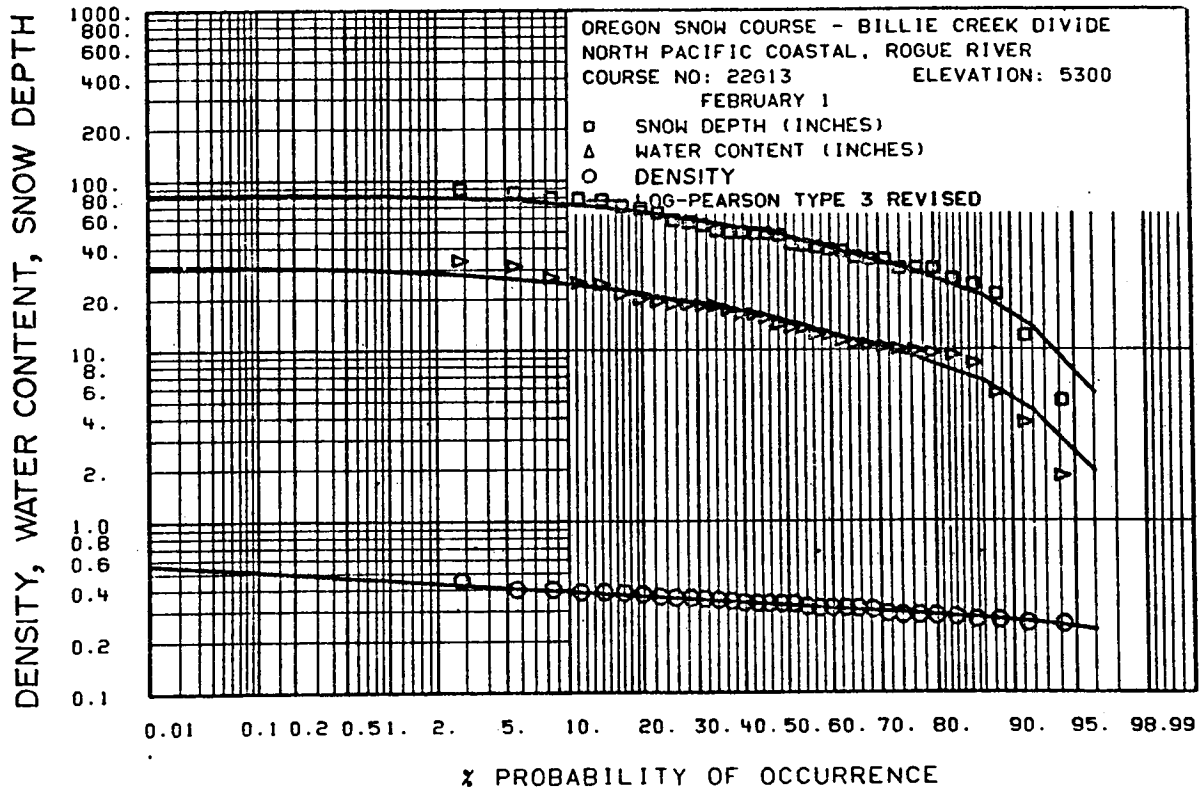
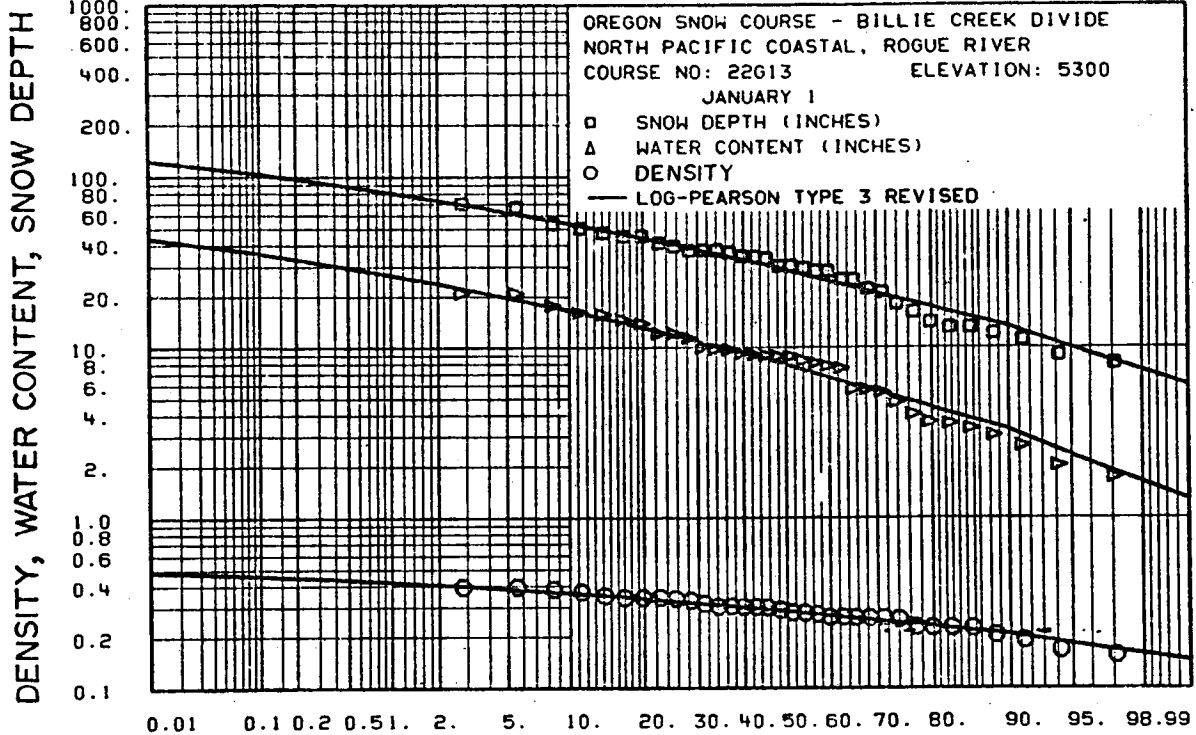
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DENSITY, WATER CONTENT, SNOW DEPTH

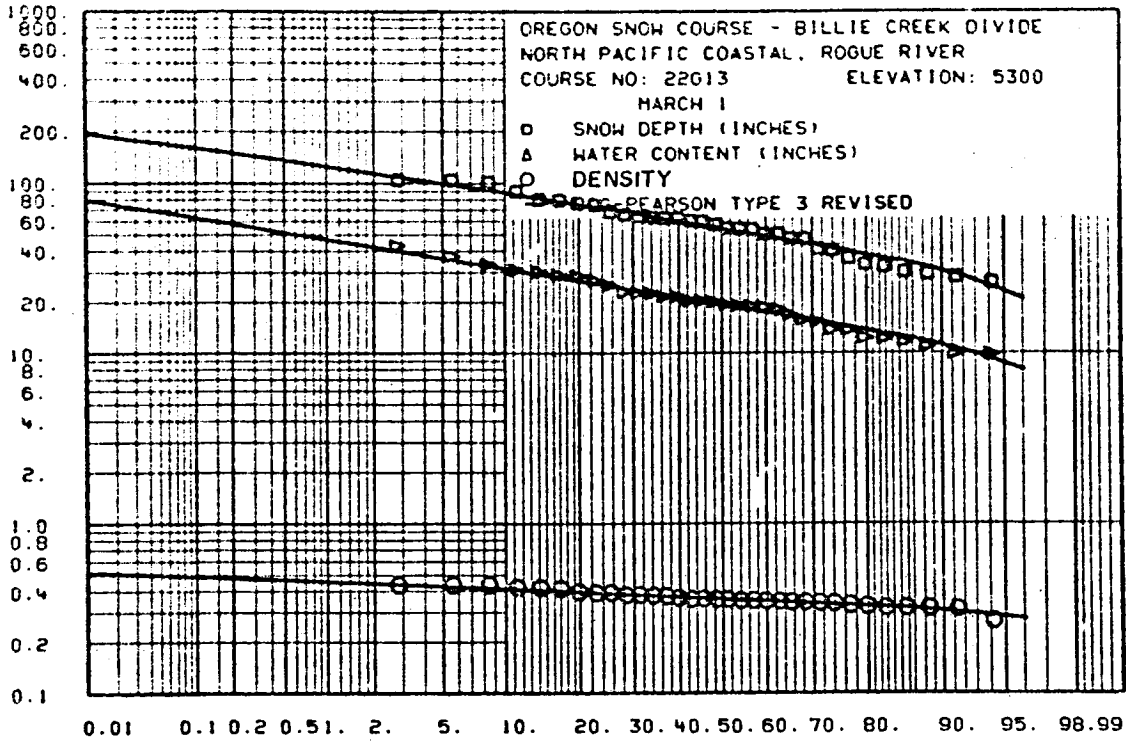


DENSITY, WATER CONTENT, SNOW DEPTH

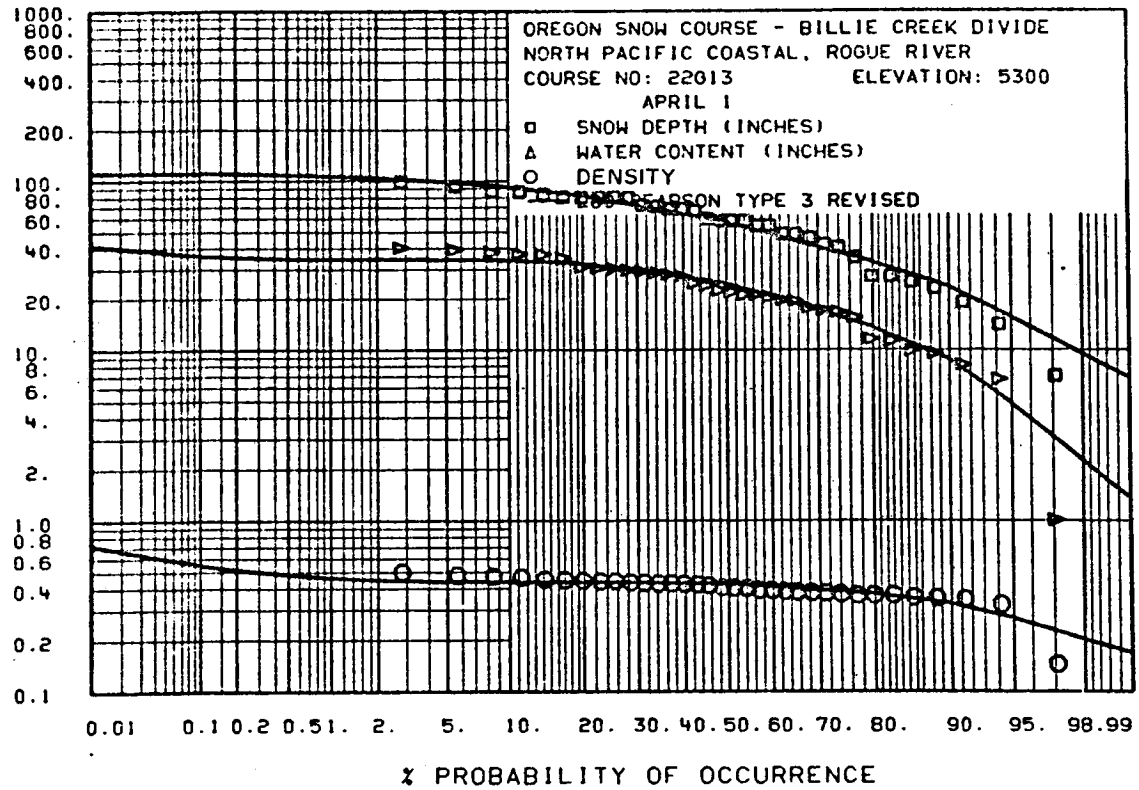




DENSITY, WATER CONTENT, SNOW DEPTH

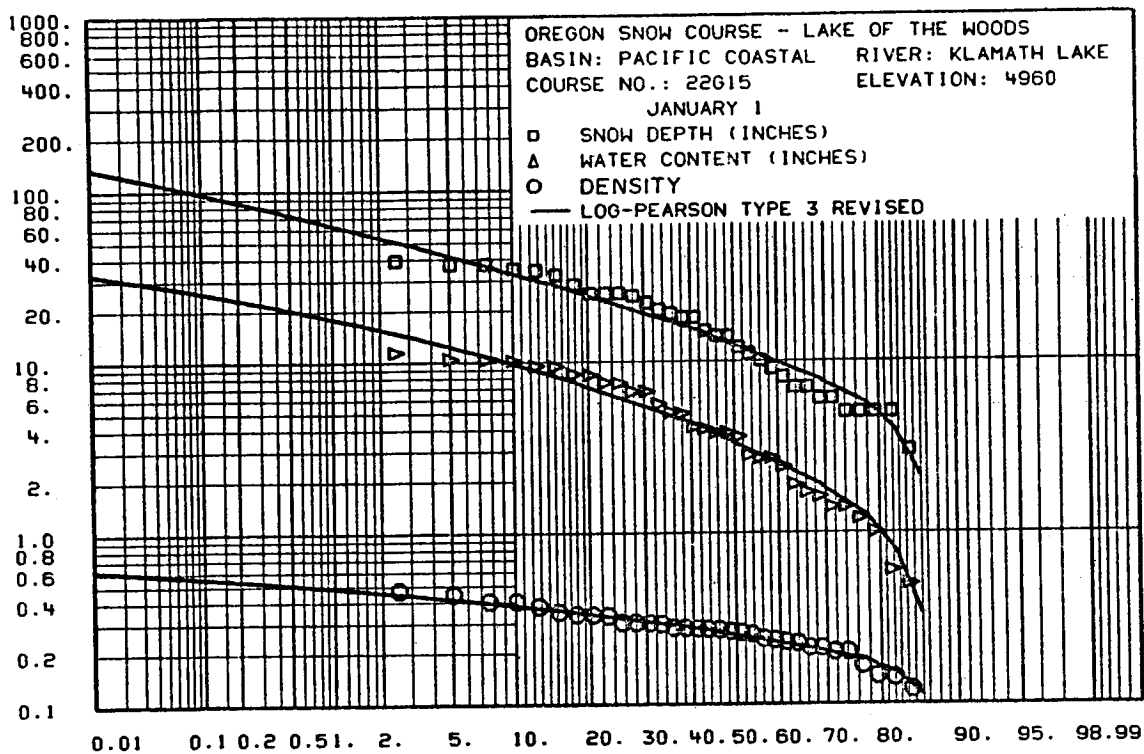


DENSITY, WATER CONTENT, SNOW DEPTH

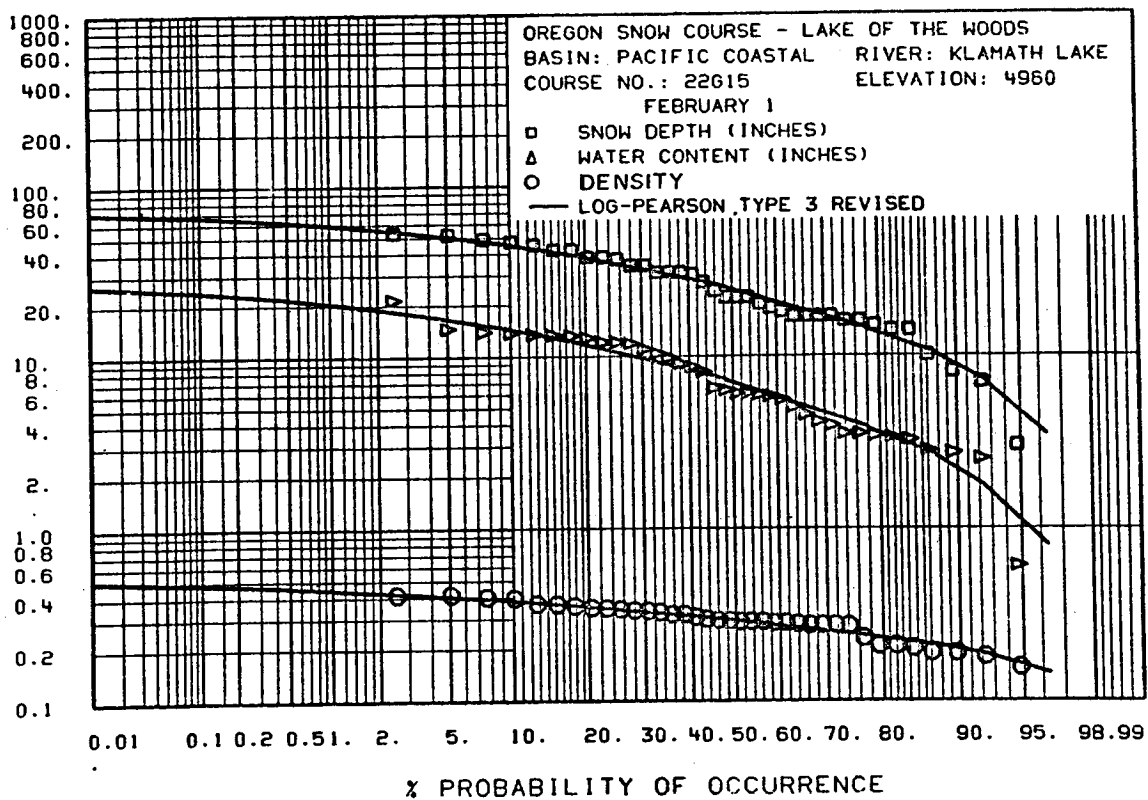


% PROBABILITY OF OCCURRENCE

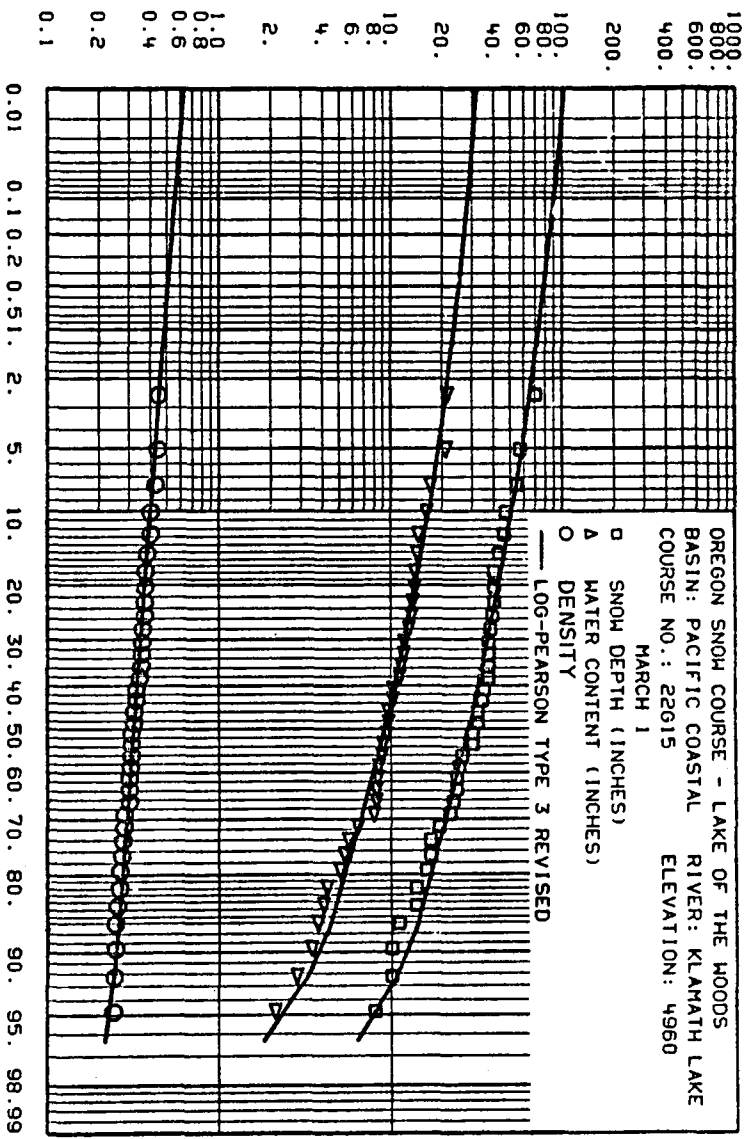
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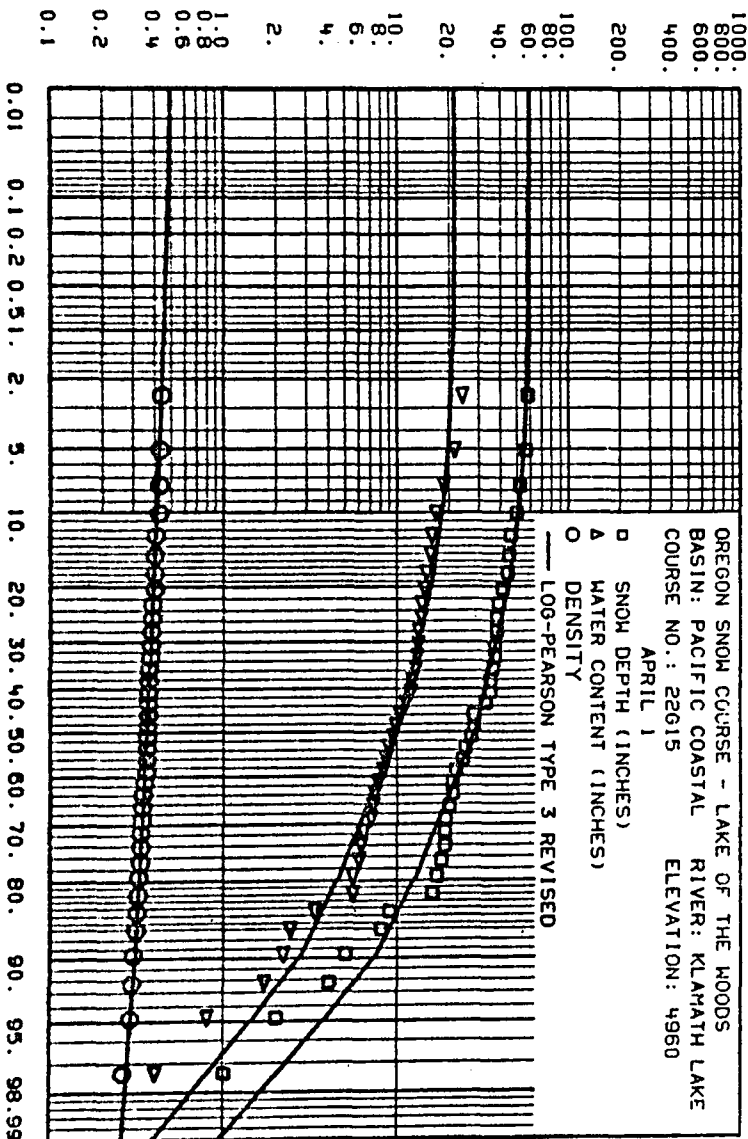
DENSITY, WATER CONTENT, SNOW DEPTH



DENSITY, WATER CONTENT, SNOW DEPTH

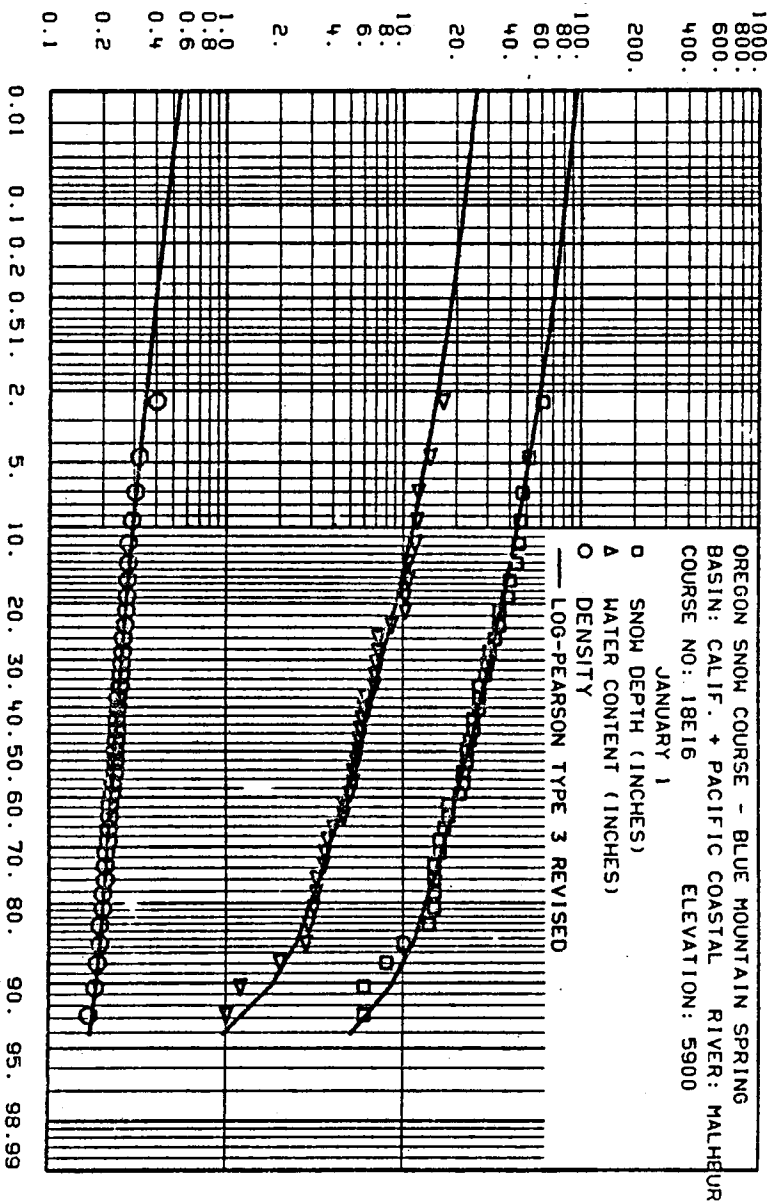


DENSITY, WATER CONTENT, SNOW DEPTH

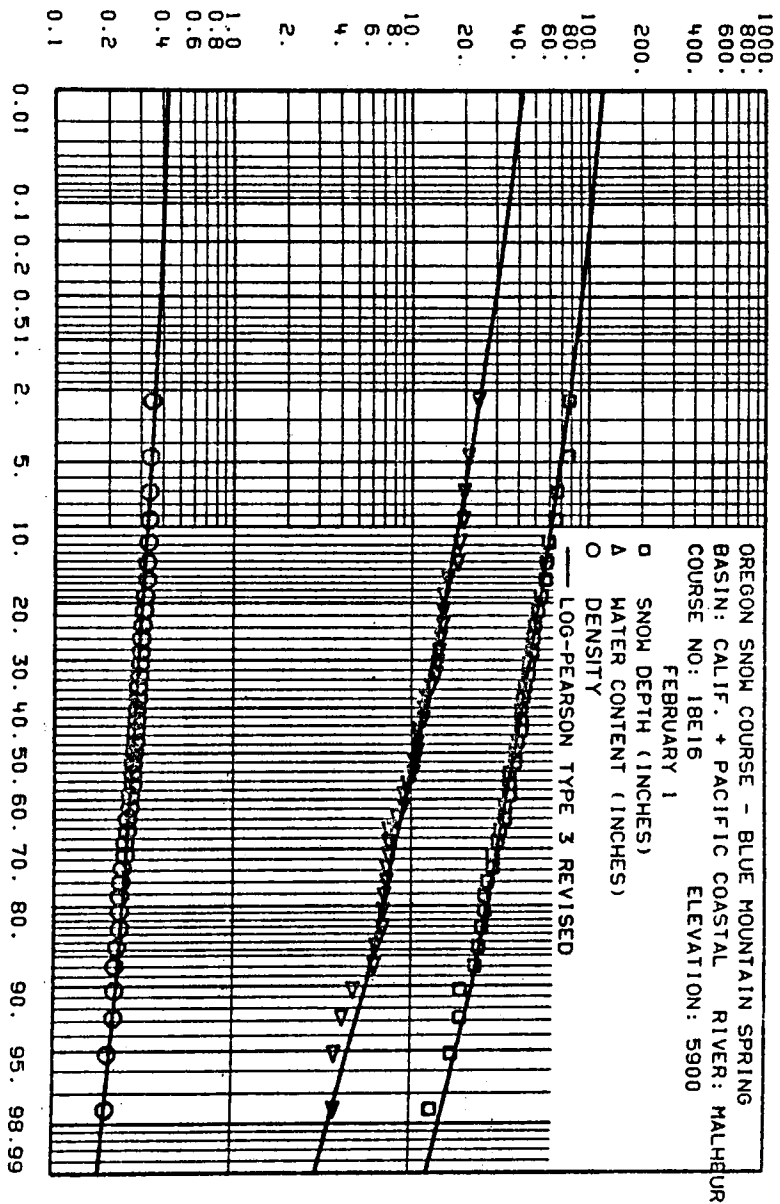


X PROBABILITY OF OCCURRENCE

DENSITY, WATER CONTENT, SNOW DEPTH

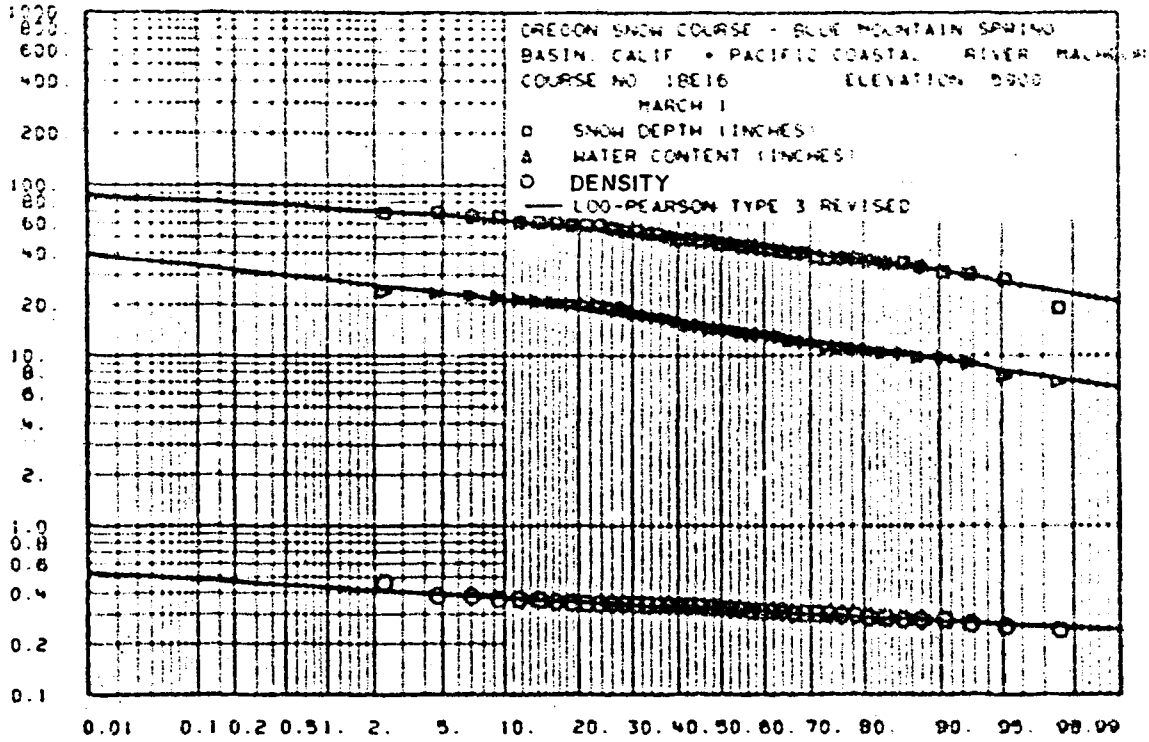


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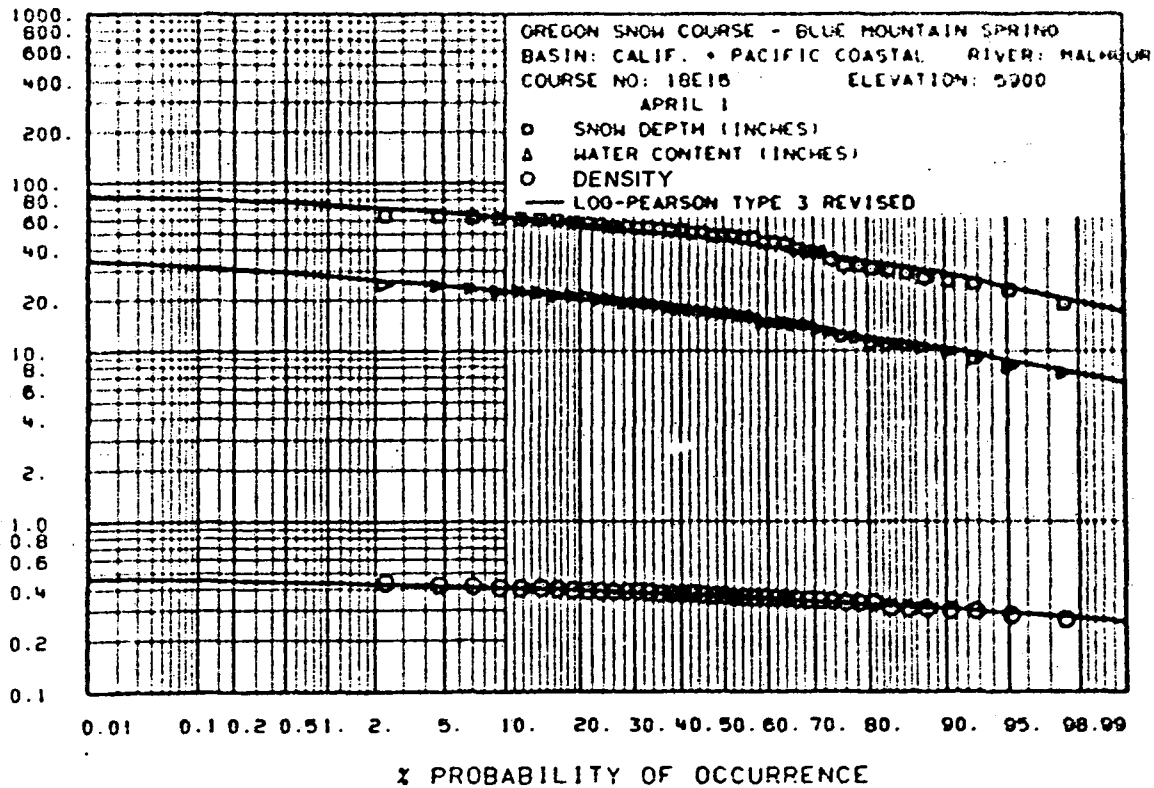


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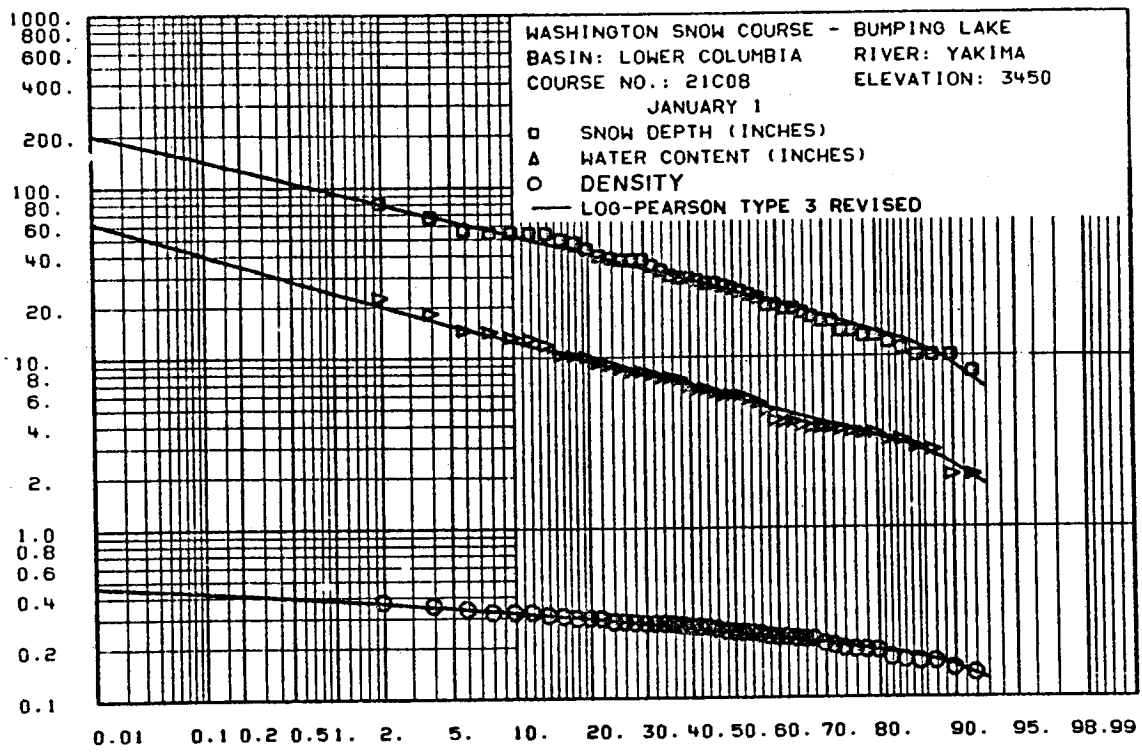
DENSITY, WATER CONTENT, SNOW DEPTH



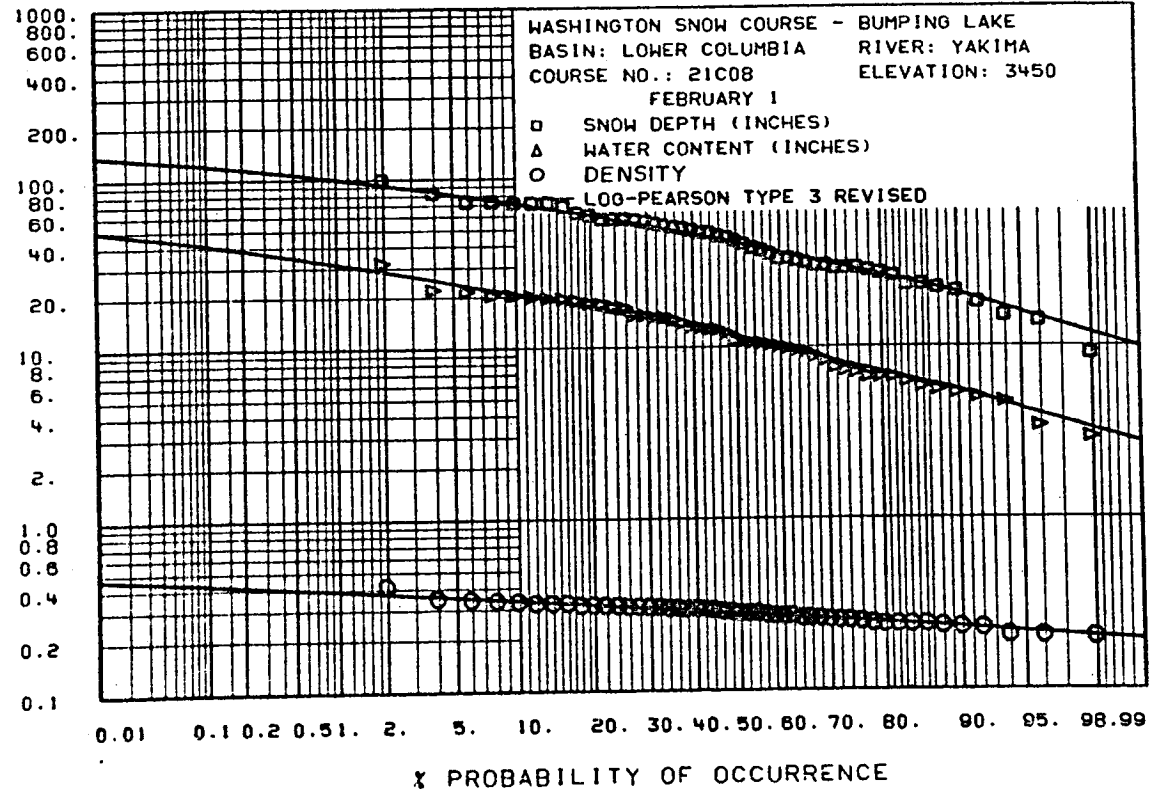
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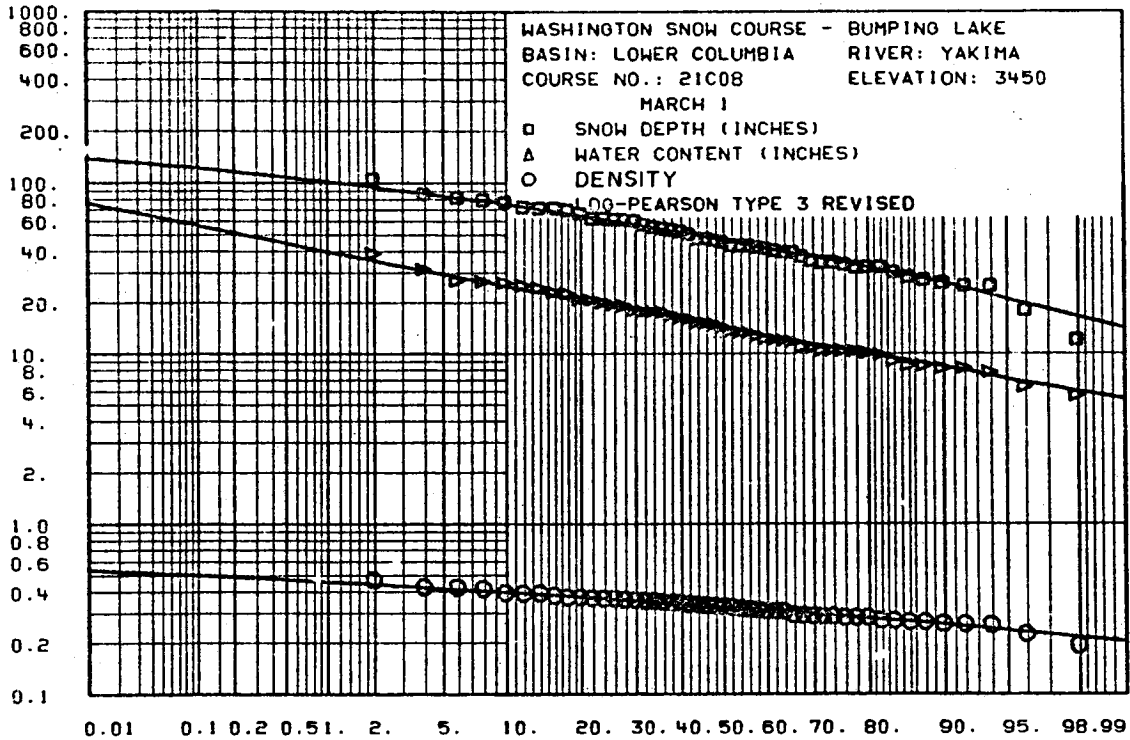
DENSITY, WATER CONTENT, SNOW DEPTH



DENSITY, WATER CONTENT, SNOW DEPTH



DENSITY, WATER CONTENT, SNOW DEPTH



DENSITY, WATER CONTENT, SNOW DEPTH

