A STUDY OF THE EFFECT OF TIME OF SERVICE AND TOTAL REGISTRATION ON 5/8" METER ACCURACY AT ST. LOUIS COUNTY WATER COMPANY ST. LOUIS COUNTY, MISSOURI 1972

1972 METER STUDY

Purpose

The purpose of this study was to substantiate the data obtained in previous accuracy studies by testing an increased number of 5/8" meters in the higher years' service period. This study includes meters having service periods between 15 through 23 years and of registration over 200,000 cubic feet.

Conclusion

The study made in 1972 corresponds very closely to the previous studies made by this Company. From these data it can be concluded that, for the conditions at the St. Louis County Water Company, the service period of meters may be extended from 10 years to 15 years with no significant loss of meter accuracy. In fact, based on our operating conditions, it appears that on the average, meters retain acceptable accuracy through the 20th year of service life.

Presentation of Data

In order to more easily compare data, the presentation of the results of this study was tabulated in the same manner as the previous studies. The test standards of 98.5 to 101% at 2 GPM and 65% at 1/8 GPM were again used as standards in order to compare with past studies and are comparable to AWWA meter standards.

Chart I is a plotting of the duration curves for 15, 18 and 20 years of service and for high registration. The curves were plotted for each test rate so that any point on the curve may be read "X% of total meters registered more than Y%".

Charts II & III show average percentage registration for all meters in each of the year groups studied at the flow rates indicated.

Table A is the tabulation of information for Charts II & III.

Charts IV & V show the distribution of meter performance broken down into the percent of meters in each specific group that registered less than the minimum standard, more than the maximum standard, and within an acceptable range.

Charts VI & VII show the distribution of meter performance for those age groups of meters available that allowed direct comparison between the 1968 and 1972 studies.

Charts 1 through 10 and Tables 1 through 20 represent the duration curves for each of the two flow rates and the tabulated data for each year group studied.

Summary of Data Presented

1 - Chart I, as stated earlier, is the plotting of duration curves for meters with 15 years, 18 years, 20 years service life and registration over 200,000 cubic feet.

The sensitivity or 1/8 GPM test results indicate that the meters within 15 through 18 years of service and the high registration group maintain approximately the same accuracy. Sensitivity drops rather sharply when the 20 years of service age is reached, probably due to increased wear or friction.

At the standard rate of 2 GPM, the accuracy is approximately the same for all ages tested.

2 - Charts II & III are bar graphs illustrating the average percent of registration of each age group. In the sensitivity test the average age group registration accuracy ranged from 90% to 91.3% and at the standard rate from 99.3% to 100%.

3 - Charts IV & V are bar graphs representing the percentage of tested meters falling outside of established performance limits; Chart IV, representing test performance at a 2 GPM rate, and Chart V, 1/8 GPM rate.

Chart IV shows that 90% or more of the meters tested through a service life of 20 years fell within the limits established.

The last bar on Charts IV and V shows the precent of acceptable meters out of all 5/8" meters that were processed through our Meter Shop in the fiscal month January 25 - February 24, 1970. The data showed that 94% of the meters were acceptable at the 2 GPM test and 85% acceptable at the 1/8 GPM test.

HISTORICAL RECORD

SYSTEM GROWTH - SCHEDULED METER CHANGE PROGRAM

(All Meter Sizes)

Year	No. Meters In Service As of Jan. 1	Meter Growth During Year	Scheduled Changes Made During Year
1948	66,224	4,366	5,240
1949	70,590	5,109	4,900
1950	75,699	6,369	6,045
1951	82,068	6,658	5,225
1952	88,726	6,734	4,700
1953	95,460	6,590	3,335
1954	102,050	9,279	3,760
1955	111,329	9,452	4,770
1956	120,781	8,230	4,640
1957	129,011	6,523	3,057
1958	135,534	6,266	5,212
1959	141,800	7,674	6,973
1960	149,474	7,861	7,992
1961	157,335	6,097	9,058
1962	163,432	5,914	11,543
1963	169,346	6,263	8,215
1964	175,609	7,229	9,214
1965	182,838	7,361	7,596
1966	190,199	6,707	6,734
1967	196,906	5,606	11,008
1968	202,512	6,621	10,166
1969	209,133	5,914	6,577
1970	215,047	3,358	4,194
1971	218,405	4,726	1,914
1972	223,131	4,919	2,206

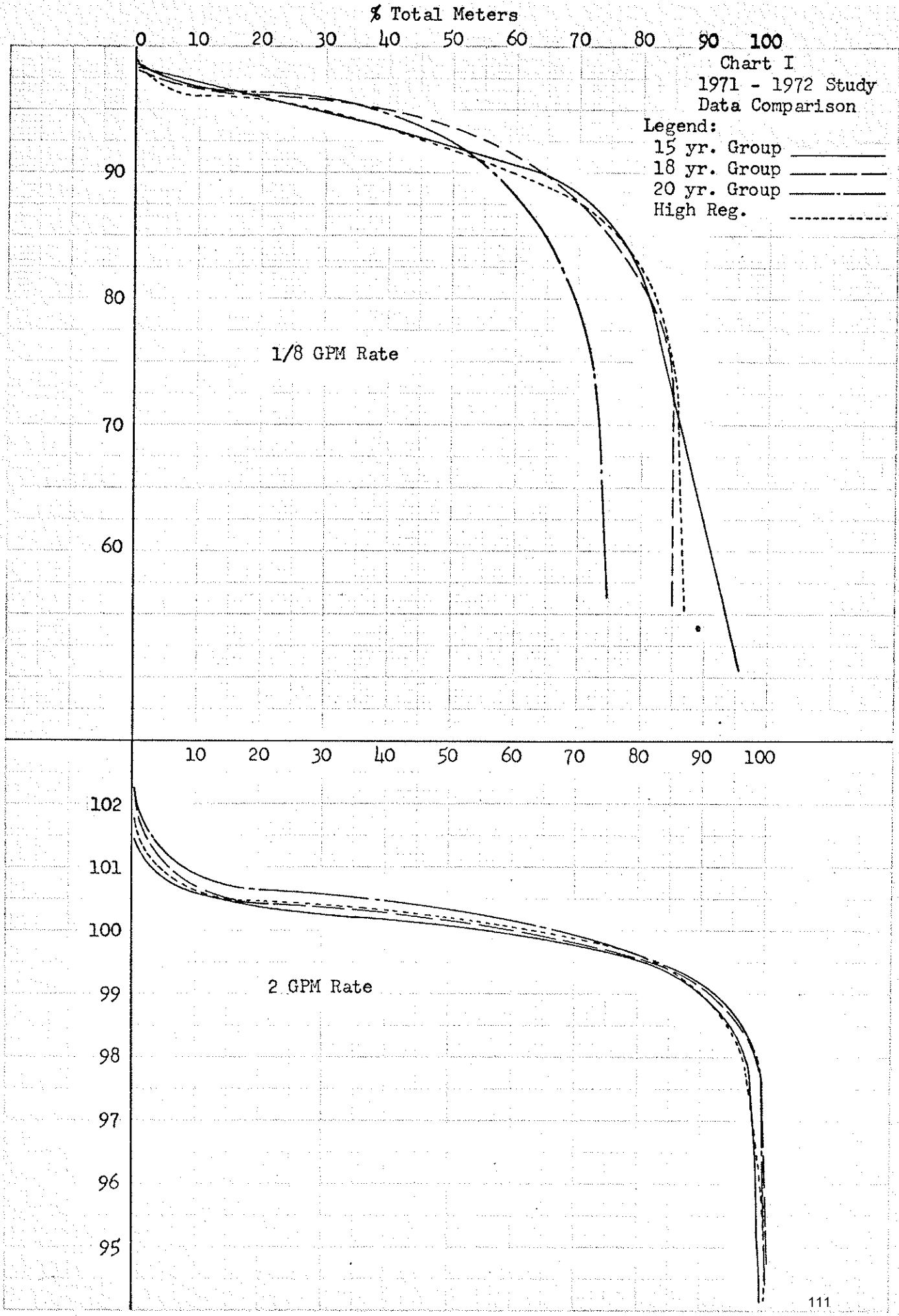

% Total Meters
0 10 20 30 40 50 60 70 80 90 100
Chart I
1971 - 1972 Study
Data Comparison
Legend:
15 yr. Group
18 yr. Group
20 yr. Group
High Reg.
Registration More Than - %
90
80
70
60
1/8 GPM Rate
10 20 30 40 50 60 70 80 90 100
102
101
100
99
98
97
96
95
Registration More Than - %
2 GPM Rate
111

Chart II

AVERAGE % REGISTRATION FOR GROUPS 1/8 GPM

Age - Years		
15	854 Meters	
16	436 Meters	
17	232 Meters	
18	181 Meters	
19	121 Meters	
20	94 Meters	
21	144 Meters	
22	109 Meters	
23	31 Meters	
High Reg.	513 Meters	

Percent - Registration

100 95 90 85 80 9

Chart III

AVERAGE % REGISTRATION FOR GROUPS - 2 GPM

Percent - Registration

100 66

Age - Years

15 996 Meters

16 506 Meters

17 262 Meters

18 212 Meters

19 155 Meters

20 125 Meters

21 100 Meters

22 1Lj3 Meters

23 Lj3 Meters

High Reg. 595 Meters

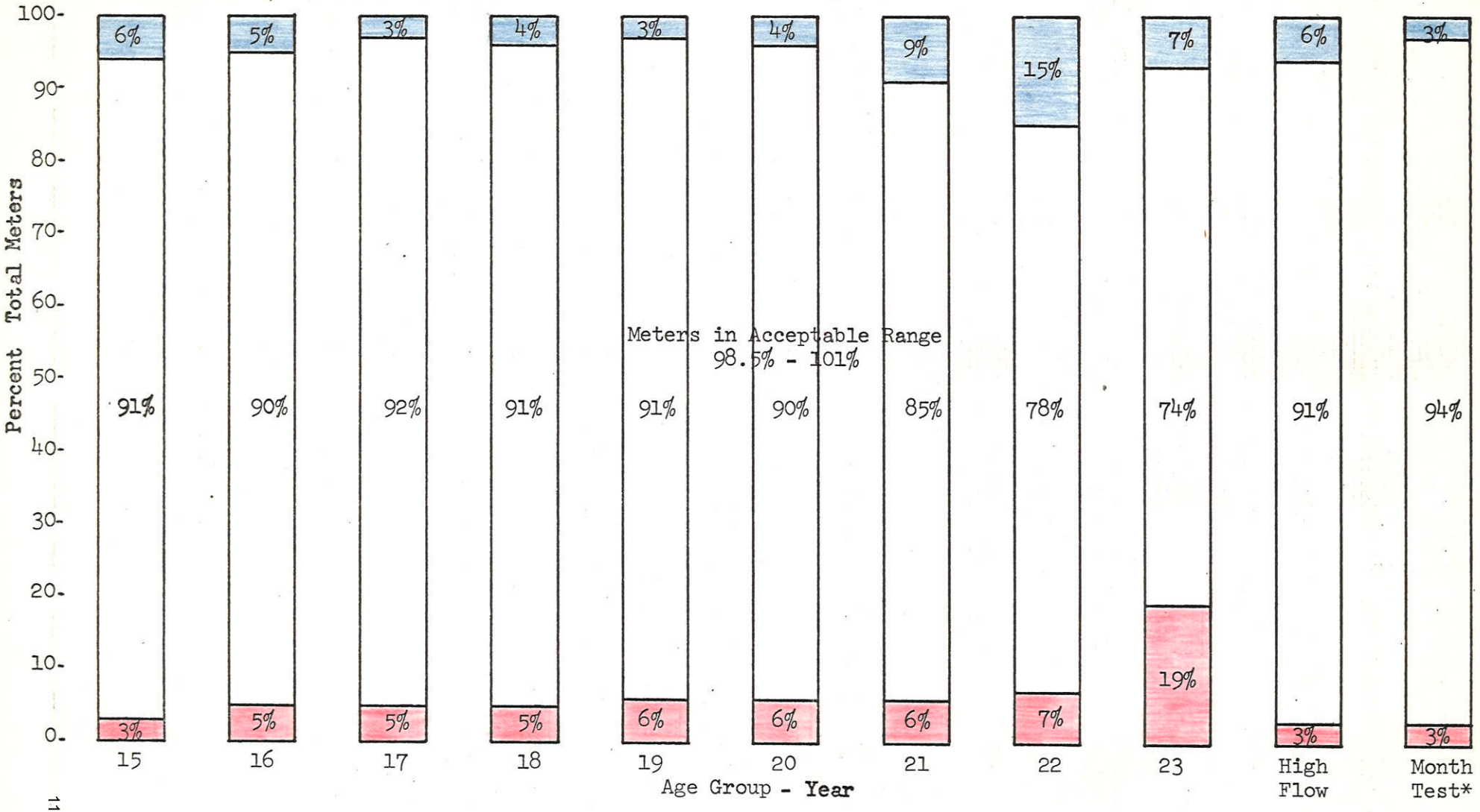
REGISTRATION ACCURACY AVERAGES

Years in Service	No. Meters*	1/8 GPM Flow	No. Meters	2 GPM Flow
15	854	90.6	996	99.8
16	436	90.9	506	100.0
17	232	90.1	262	99.8
18	181	91.0	212	99.9
19	121	90.3	155	100.0
20	94	91.3	128	100.0
21	144	90.1	209	99.6
22	109	90	143	99.7
23	31	91.3	43	100.0
High Usage 200,000 Cu.Ft. or More	513	91.1	595	99.3

*A lesser number of meters registered at 1/8 GPM than did at 2 GPM.

1972 Study
2 GPM Test - Distribution of Meter Performance
% of Meters Acceptable - Not Acceptable

Chart IV
- Blue over 101%
- Red under 98.5%

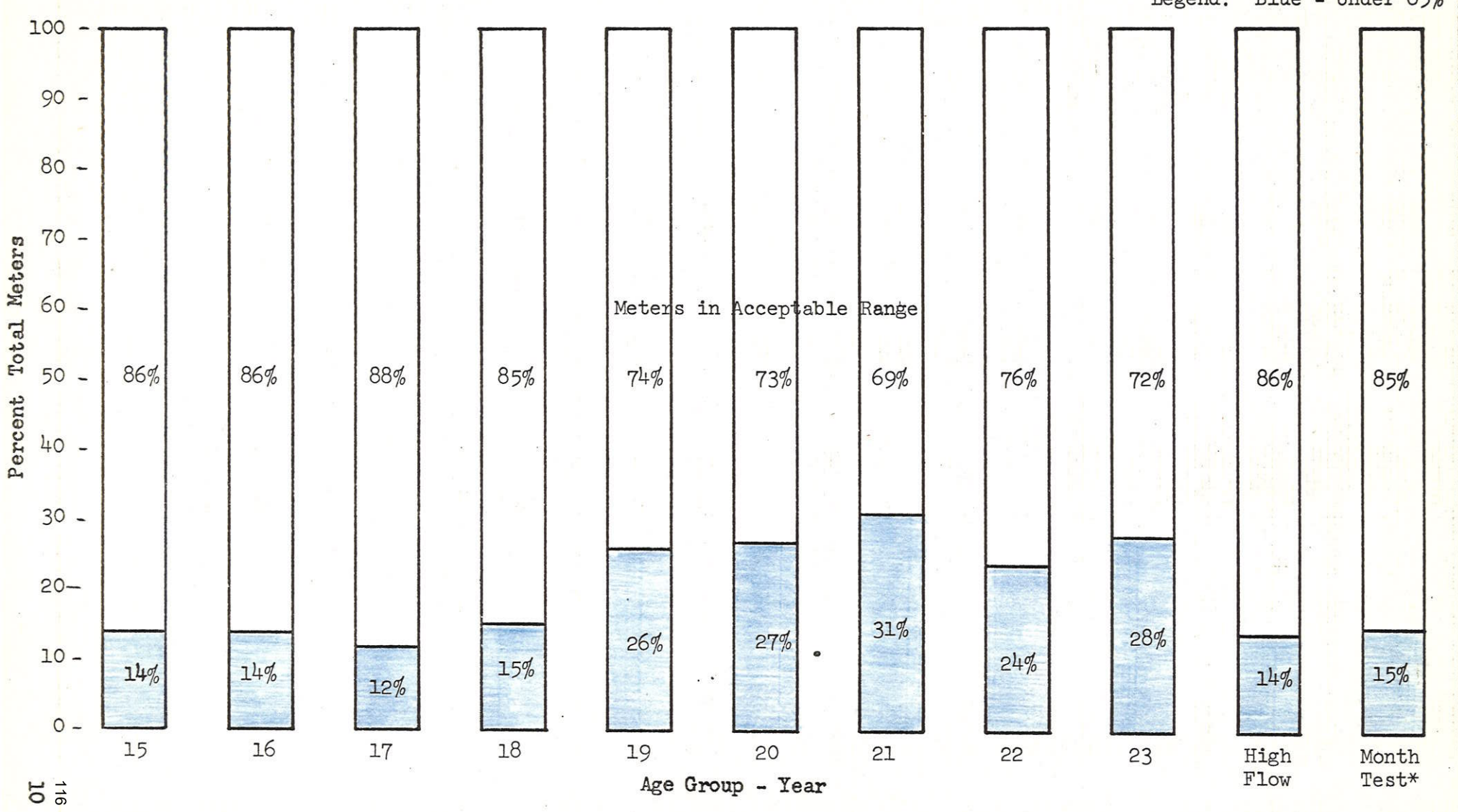


* All 5/8" meters passing through Shop - Jan. 25 - Feb. 24, 1970

1972 Study

Chart V

1/8 GPM Test - Distribution of Meter Performance
% of Meters Acceptable - Not Acceptable



* All 5/8" meters passing through shop - Jan. 25-Feb. 24, 1970

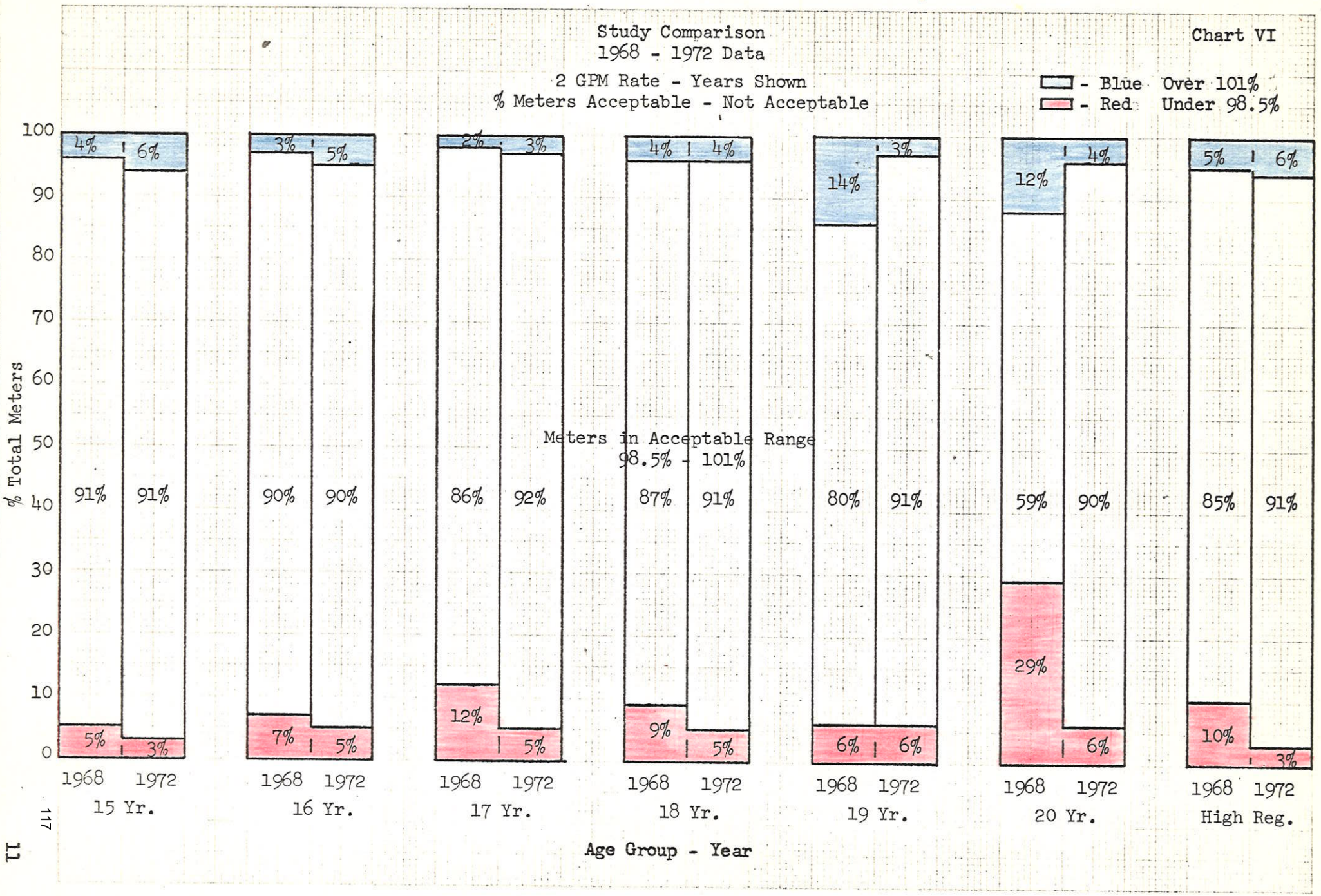

Study Comparison
1968 - 1972 Data
2 GPM Rate - Years Shown
% Meters Acceptable - Not Acceptable
Chart VI
- Blue Over 101%
- Red Under 98.5%
Meters in Acceptable Range
98.5% - 101%
% Total Meters
100
90
80
70
60
50
40
30
20
10
0
4% 6%
91% 91%
5% 3%
3% 5%
90% 90%
7% 5%
2% 3%
86% 92%
12% 5%
4% 4%
87% 91%
9% 5%
14% 3%
80% 91%
6% 6%
12% 4%
59% 90%
29% 6%
5% 6%
85% 91%
10% 3%
1968 1972
15 Yr.
16 Yr.
17 Yr.
18 Yr.
19 Yr.
20 Yr.
High Reg.
Age Group - Year

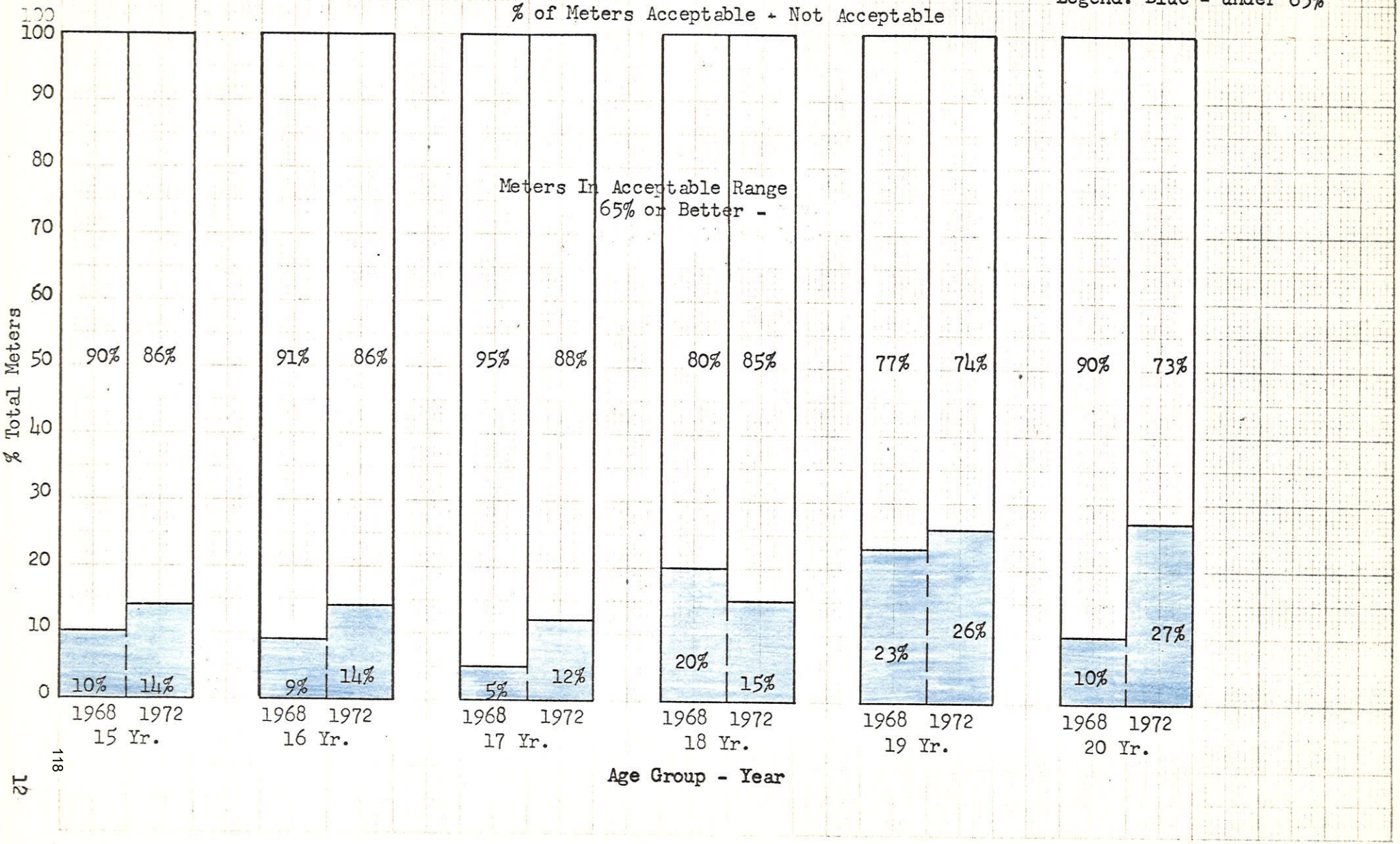
Chart VII

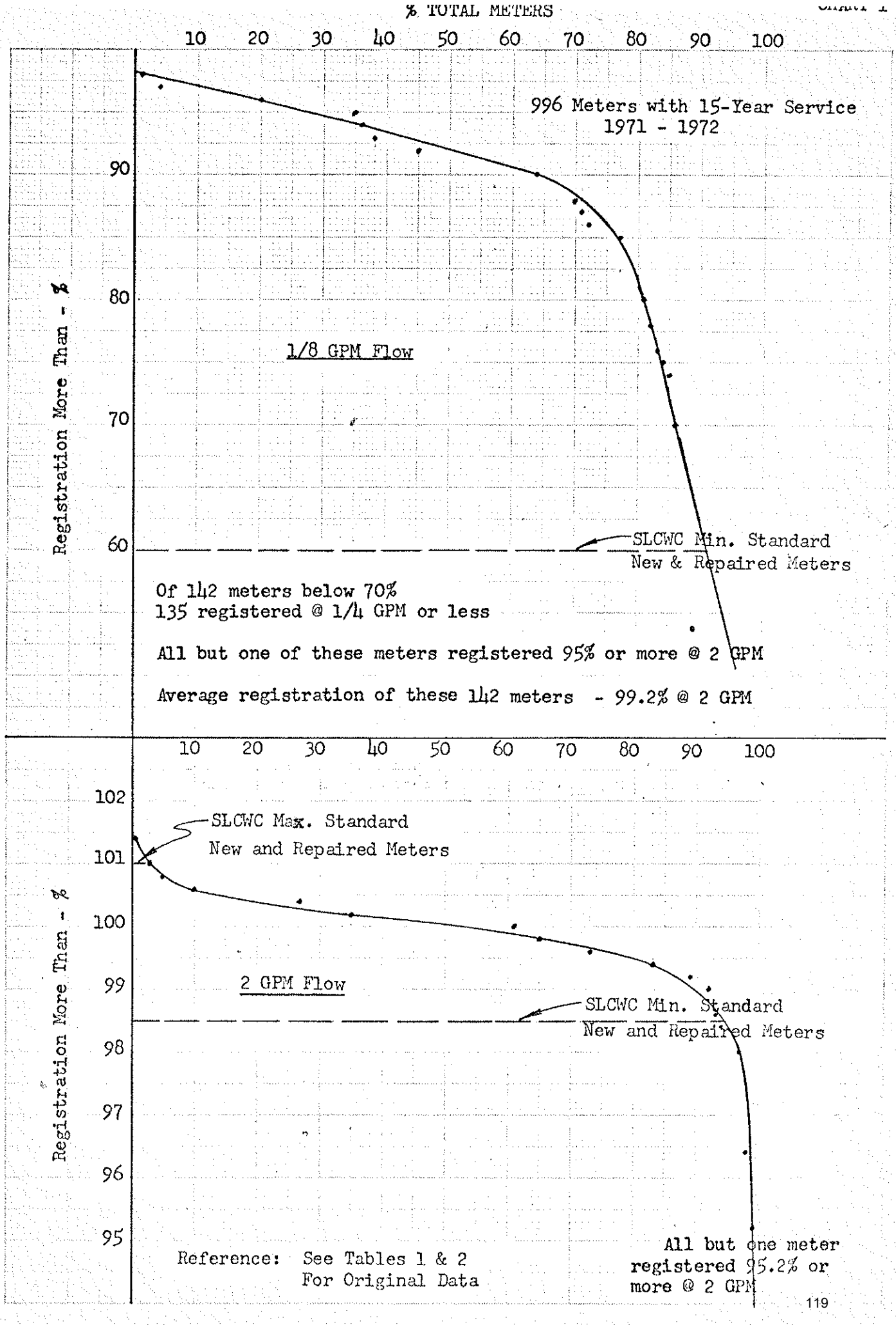
Study Comparison
1968 - 1972 Data

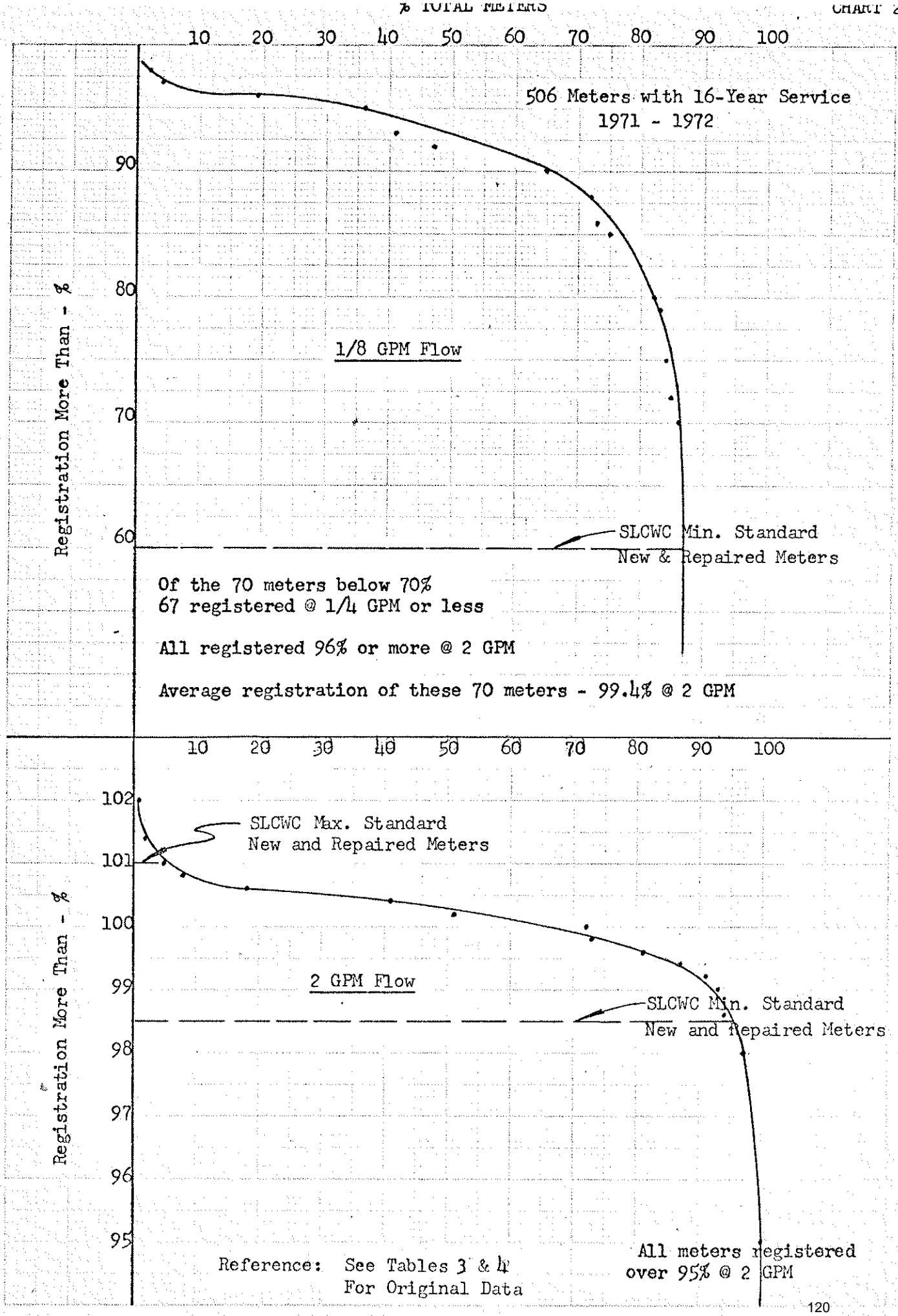
1/8 GPM Rate - Years Shown

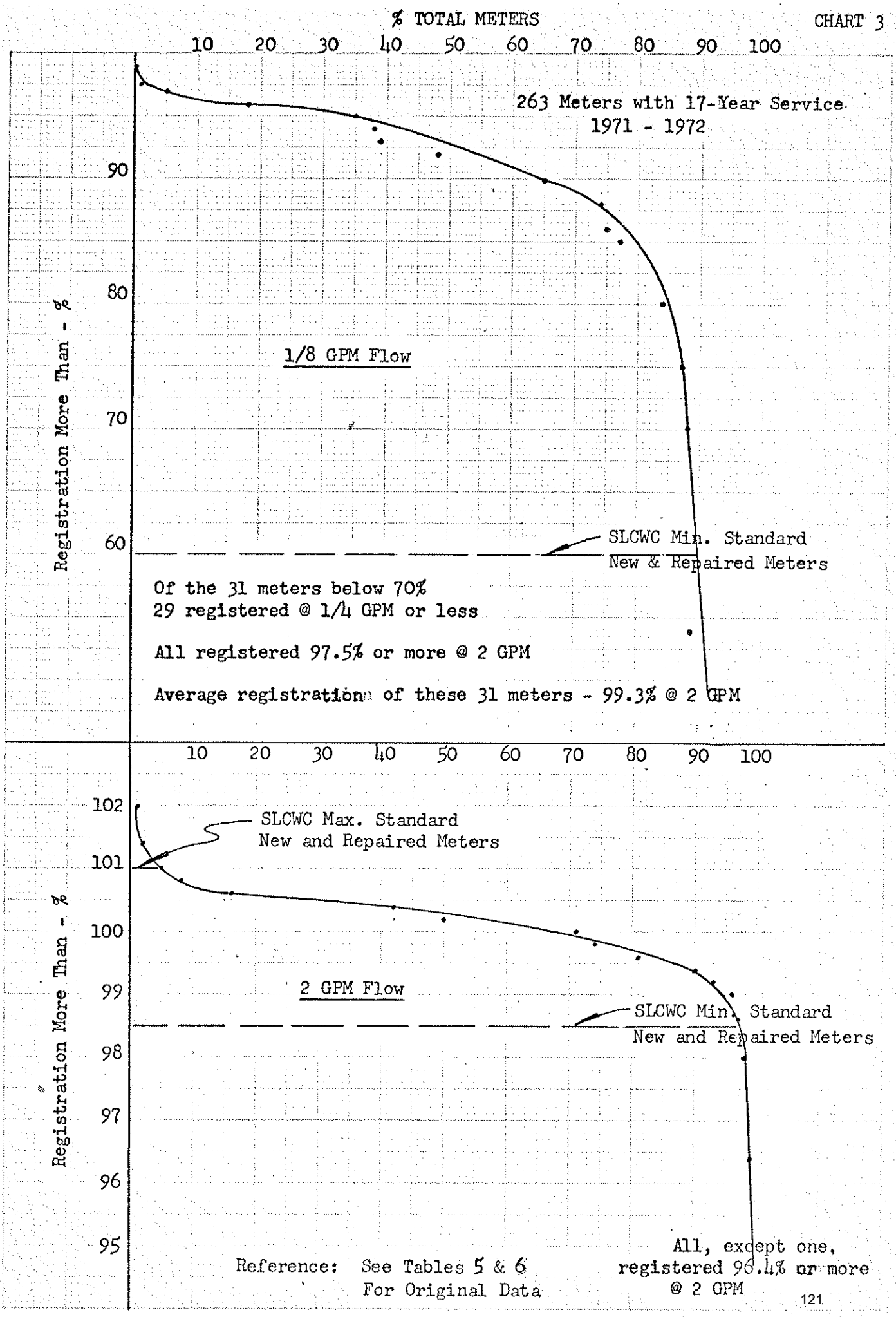
% of Meters Acceptable + Not Acceptable

Legend: Blue - under 65%



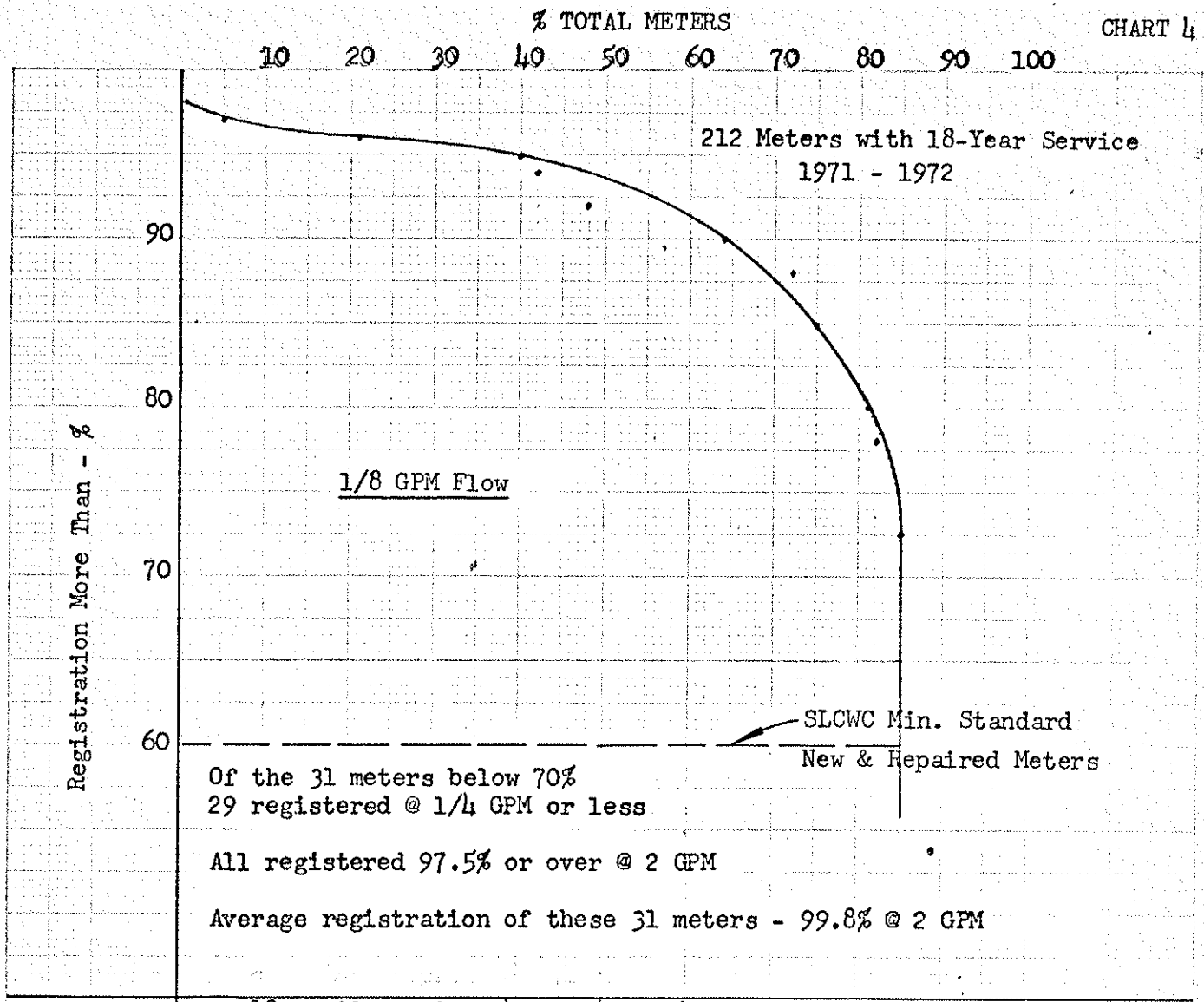

% TOTAL METERS
10 20 30 40 50 60 70 80 90 100
996 Meters with 15-Year Service
1971 - 1972
Registration More Than - %
90
80
70
60
1/8 GPM Flow
SLCWC Min. Standard
New & Repaired Meters
Of 142 meters below 70%
135 registered @ 1/4 GPM or less
All but one of these meters registered 95% or more @ 2 GPM
Average registration of these 142 meters - 99.2% @ 2 GPM
10 20 30 40 50 60 70 80 90 100
Registration More Than - %
102
101
100
99
98
97
96
95
SLCWC Max. Standard
New and Repaired Meters
2 GPM Flow
SLCWC Min. Standard
New and Repaired Meters
Reference: See Tables 1 & 2
For Original Data
All but one meter
registered 95.2% or
more @ 2 GPM

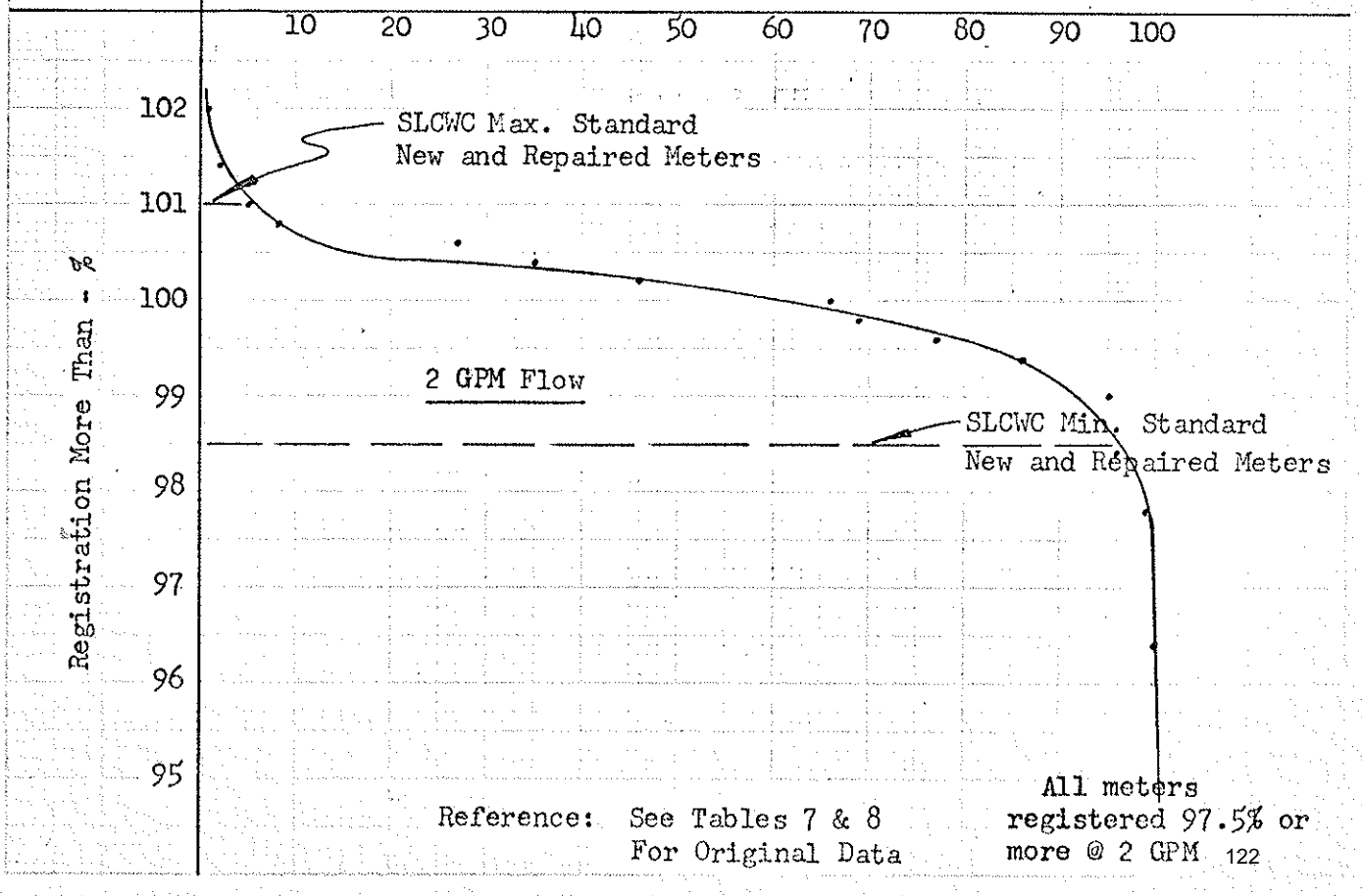

% TOTAL METERS
10 20 30 40 50 60 70 80 90 100
506 Meters with 16-Year Service
1971 - 1972
Registration More Than - %
90
80
70
60
1/8 GPM Flow
SLCWC Min. Standard
New & Repaired Meters
Of the 70 meters below 70%
67 registered @ 1/4 GPM or less
All registered 96% or more @ 2 GPM
Average registration of these 70 meters - 99.4% @ 2 GPM
10 20 30 40 50 60 70 80 90 100
102
101
100
99
98
97
96
95
SLCWC Max. Standard
New and Repaired Meters
2 GPM Flow
SLCWC Min. Standard
New and Repaired Meters
All meters registered
over 95% @ 2 GPM
Reference: See Tables 3 & 4
For Original Data



Reference: See Tables 5 & 6
For Original Data

CHART 4

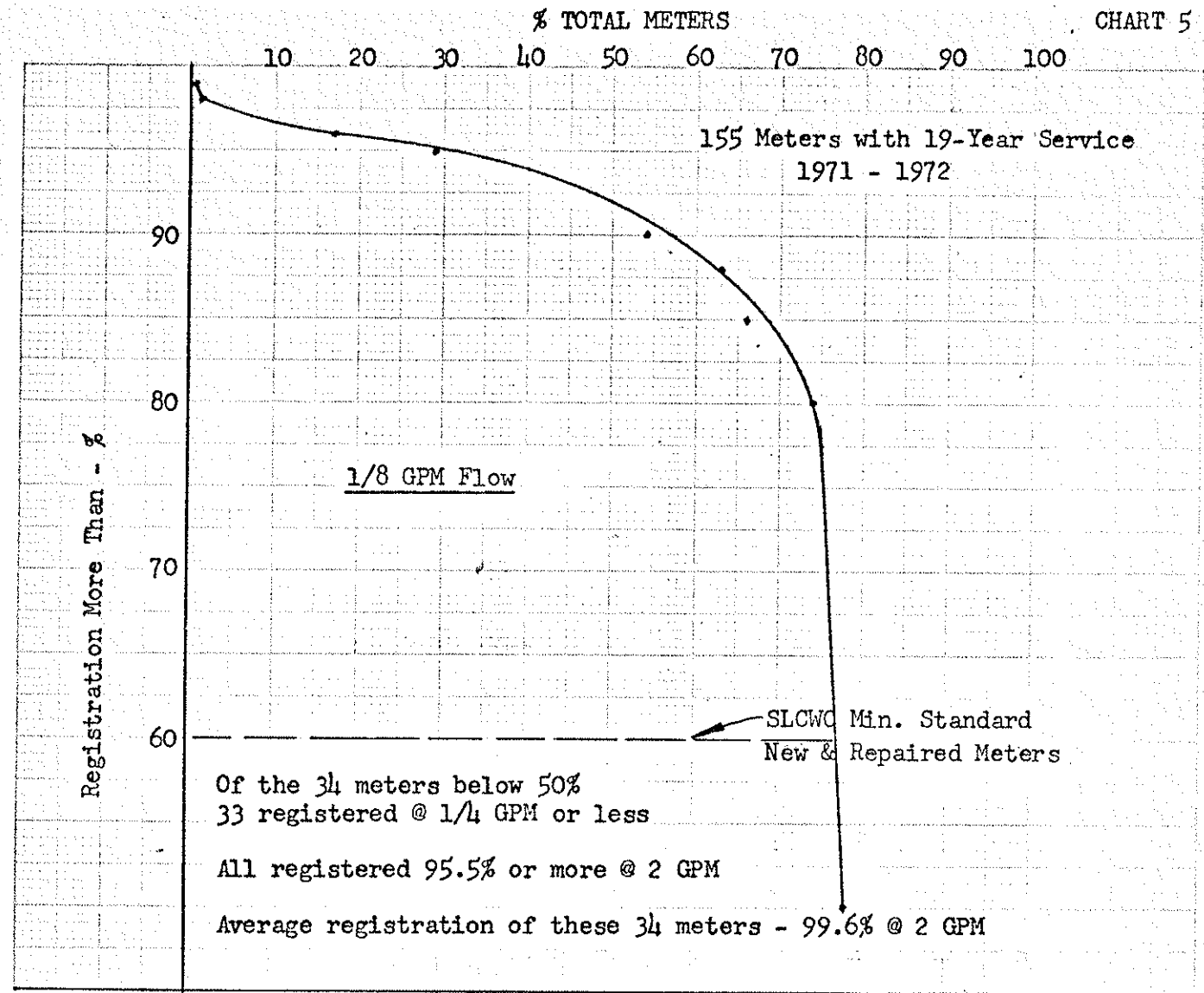


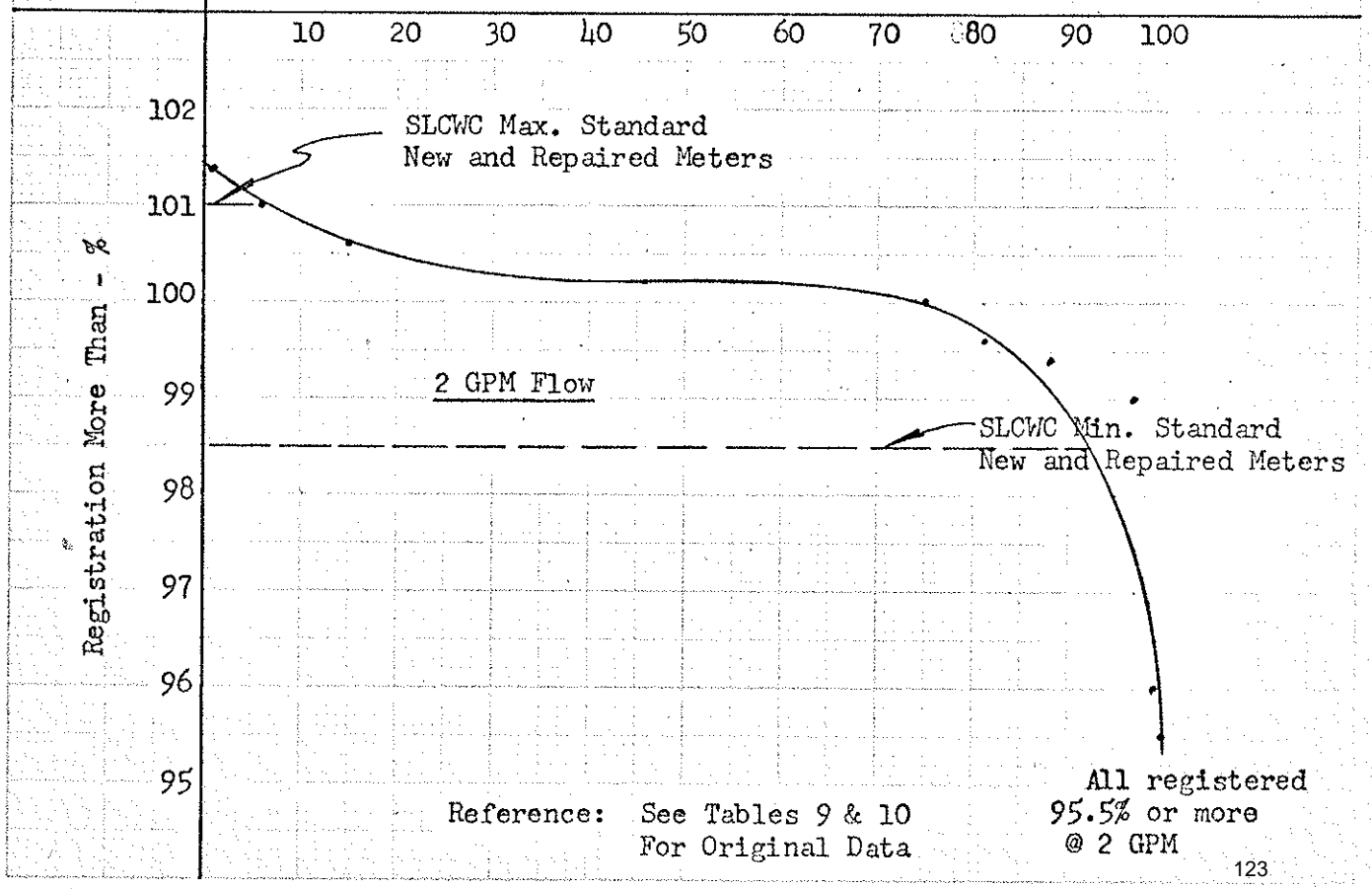


Reference: See Tables 7 & 8
For Original Data

122

CHART 5

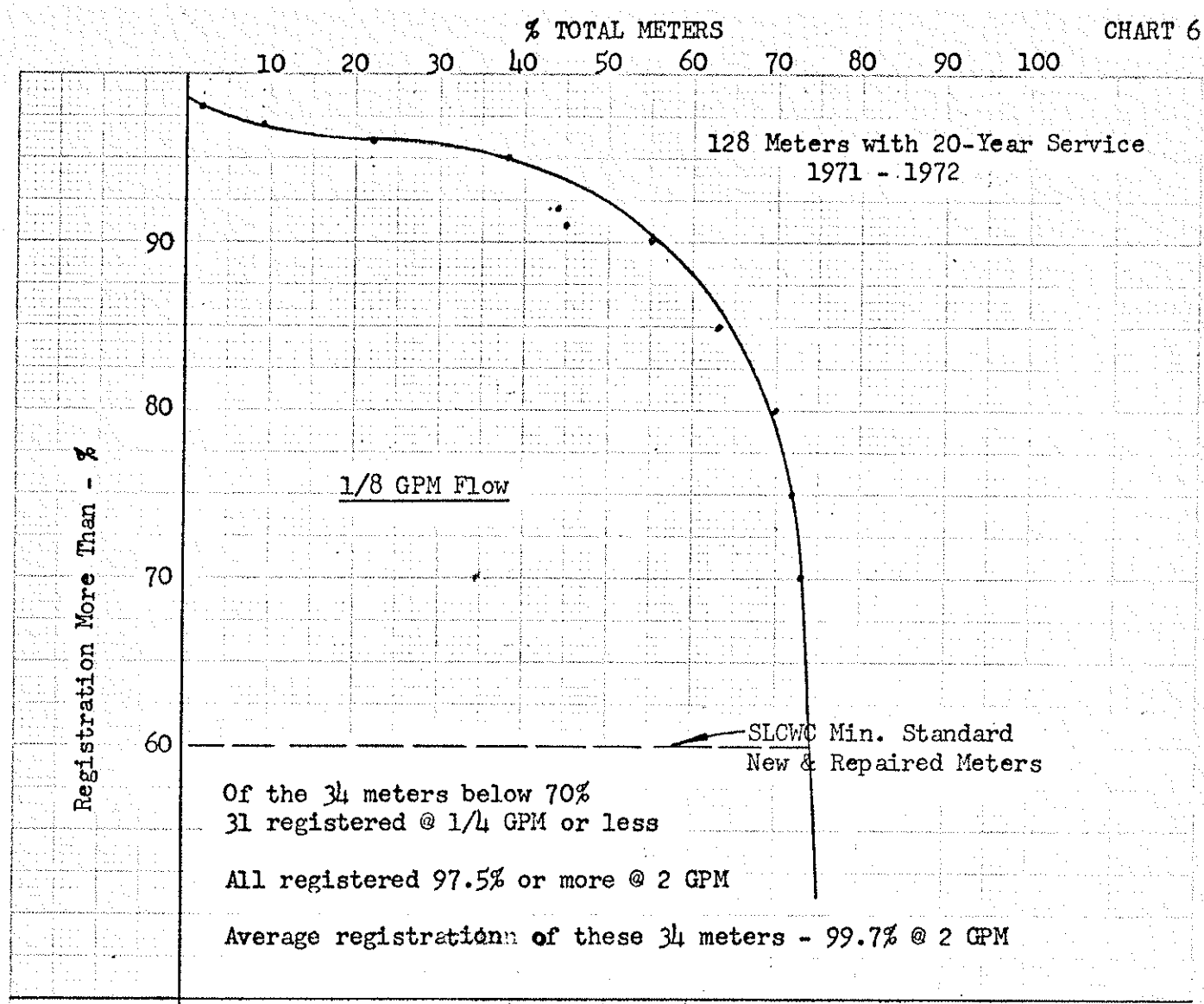




Reference: See Tables 9 & 10
For Original Data

123

CHART 6


% TOTAL METERS
10 20 30 40 50 60 70 80 90 100
128 Meters with 20-Year Service
1971 - 1972
Registration More Than - %
90
80
70
60
1/8 GPM Flow
SLCWC Min. Standard
New & Repaired Meters
Of the 34 meters below 70%
31 registered @ 1/4 GPM or less
All registered 97.5% or more @ 2 GPM
Average registration of these 34 meters - 99.7% @ 2 GPM

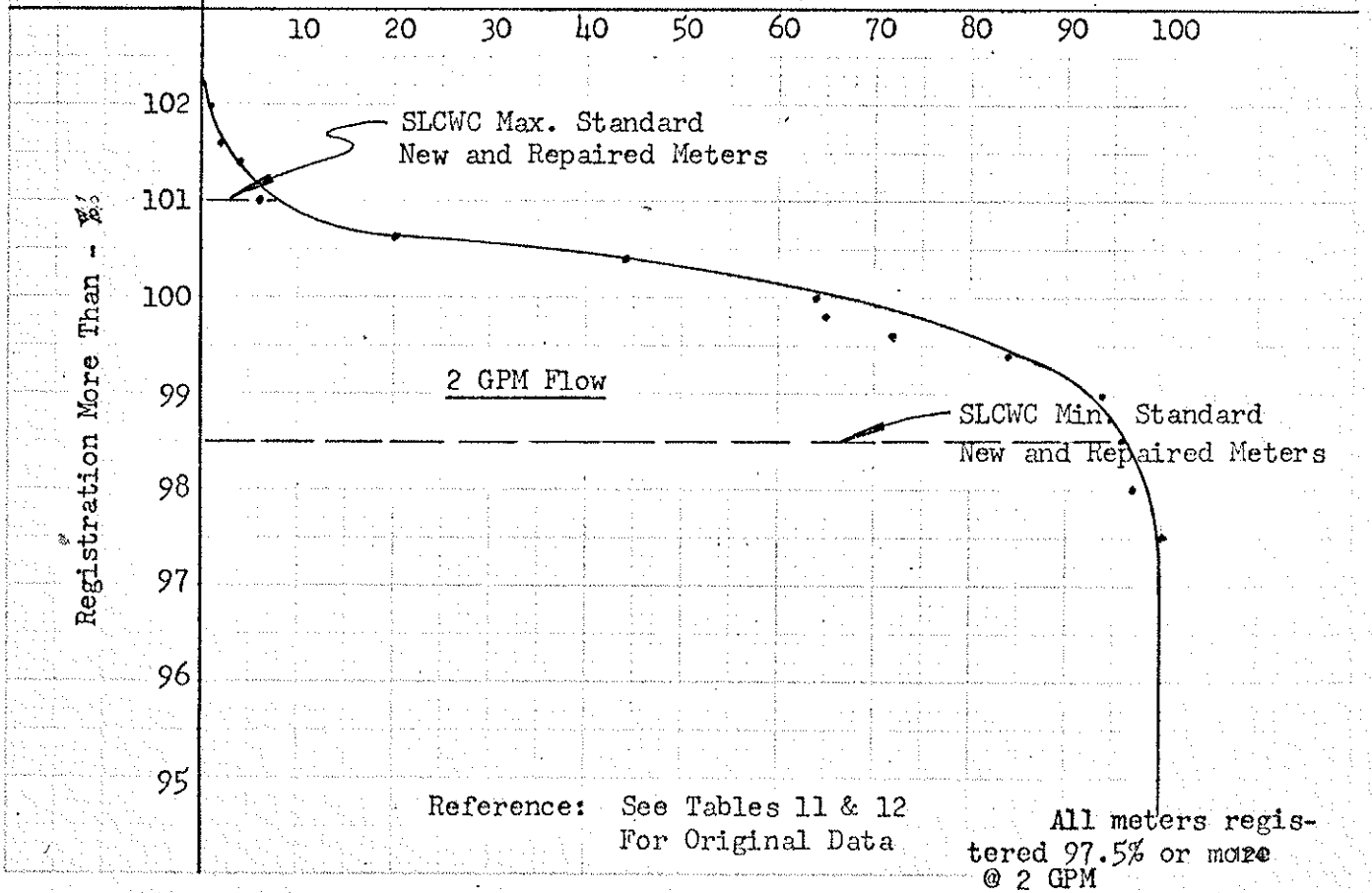
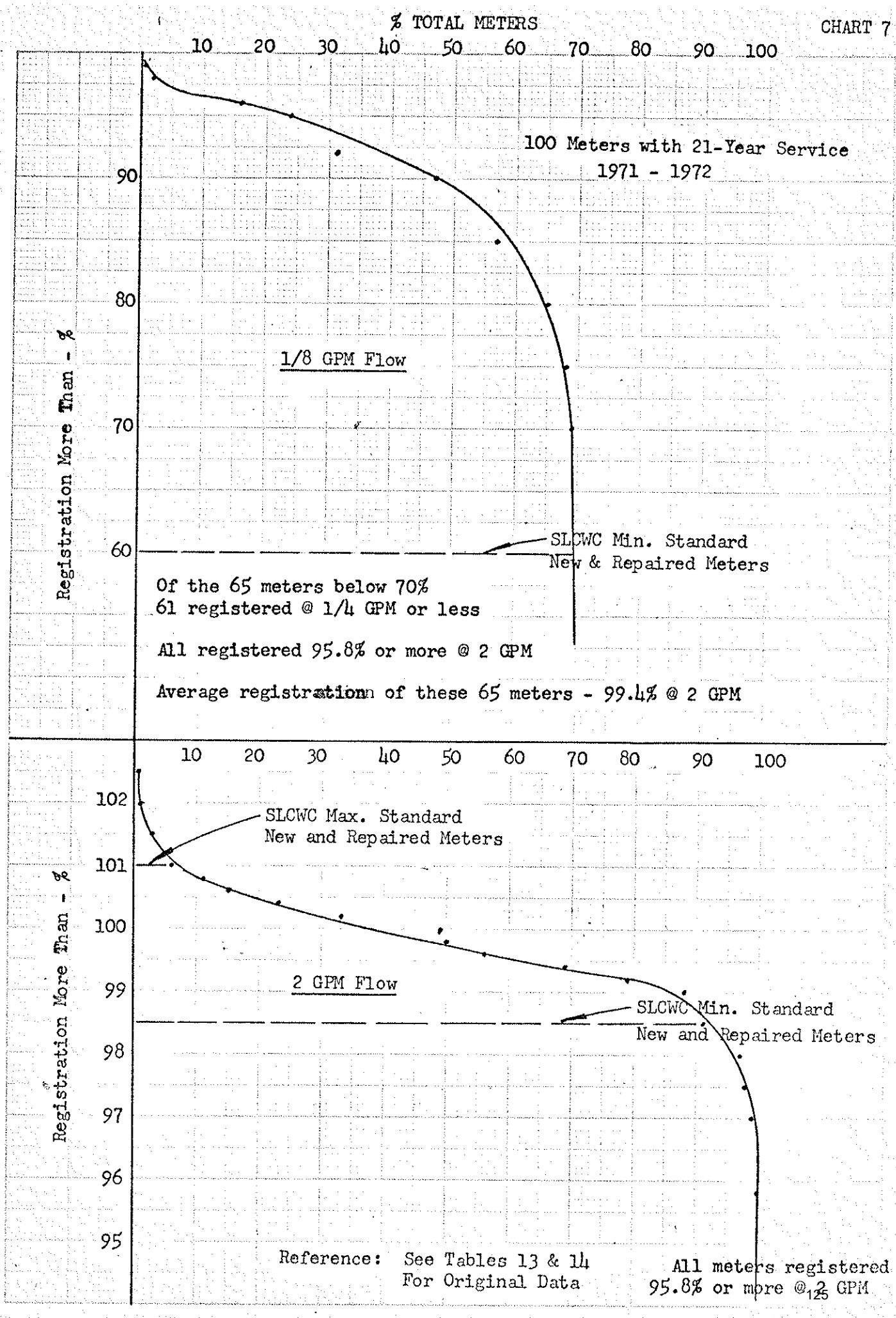
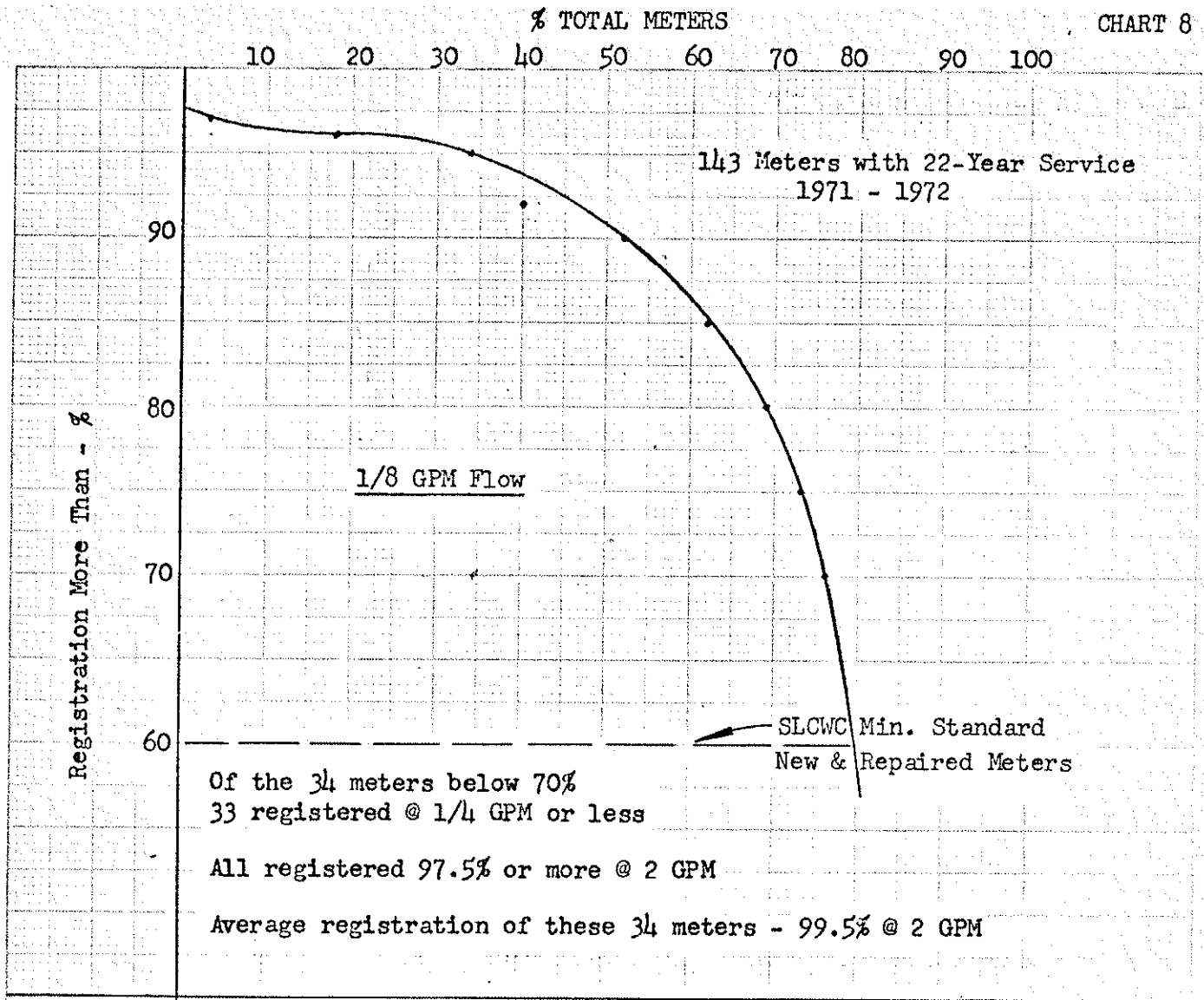

10 20 30 40 50 60 70 80 90 100
102
101
100
99
98
97
96
95
SLCWC Max. Standard
New and Repaired Meters
2 GPM Flow
SLCWC Min. Standard
New and Repaired Meters
Reference: See Tables 11 & 12
For Original Data
All meters registered 97.5% or more
@ 2 GPM

CHART 7


% TOTAL METERS
10 20 30 40 50 60 70 80 90 100
100 Meters with 21-Year Service
1971 - 1972
Registration More Than - %
90
80
70
60
1/8 GPM Flow
SLCWC Min. Standard
New & Repaired Meters
Of the 65 meters below 70%
61 registered @ 1/4 GPM or less
All registered 95.8% or more @ 2 GPM
Average registration of these 65 meters - 99.4% @ 2 GPM
10 20 30 40 50 60 70 80 90 100
102
101
100
99
98
97
96
95
SLCWC Max. Standard
New and Repaired Meters
2 GPM Flow
SLCWC Min. Standard
New and Repaired Meters
Reference: See Tables 13 & 14
For Original Data
All meters registered
95.8% or more @ 2 GPM


% TOTAL METERS
10 20 30 40 50 60 70 80 90 100
143 Meters with 22-Year Service
1971 - 1972
Registration More Than - %
90
80
70
60
1/8 GPM Flow
SLCWC Min. Standard
New & Repaired Meters
Of the 34 meters below 70%
33 registered @ 1/4 GPM or less
All registered 97.5% or more @ 2 GPM
Average registration of these 34 meters - 99.5% @ 2 GPM

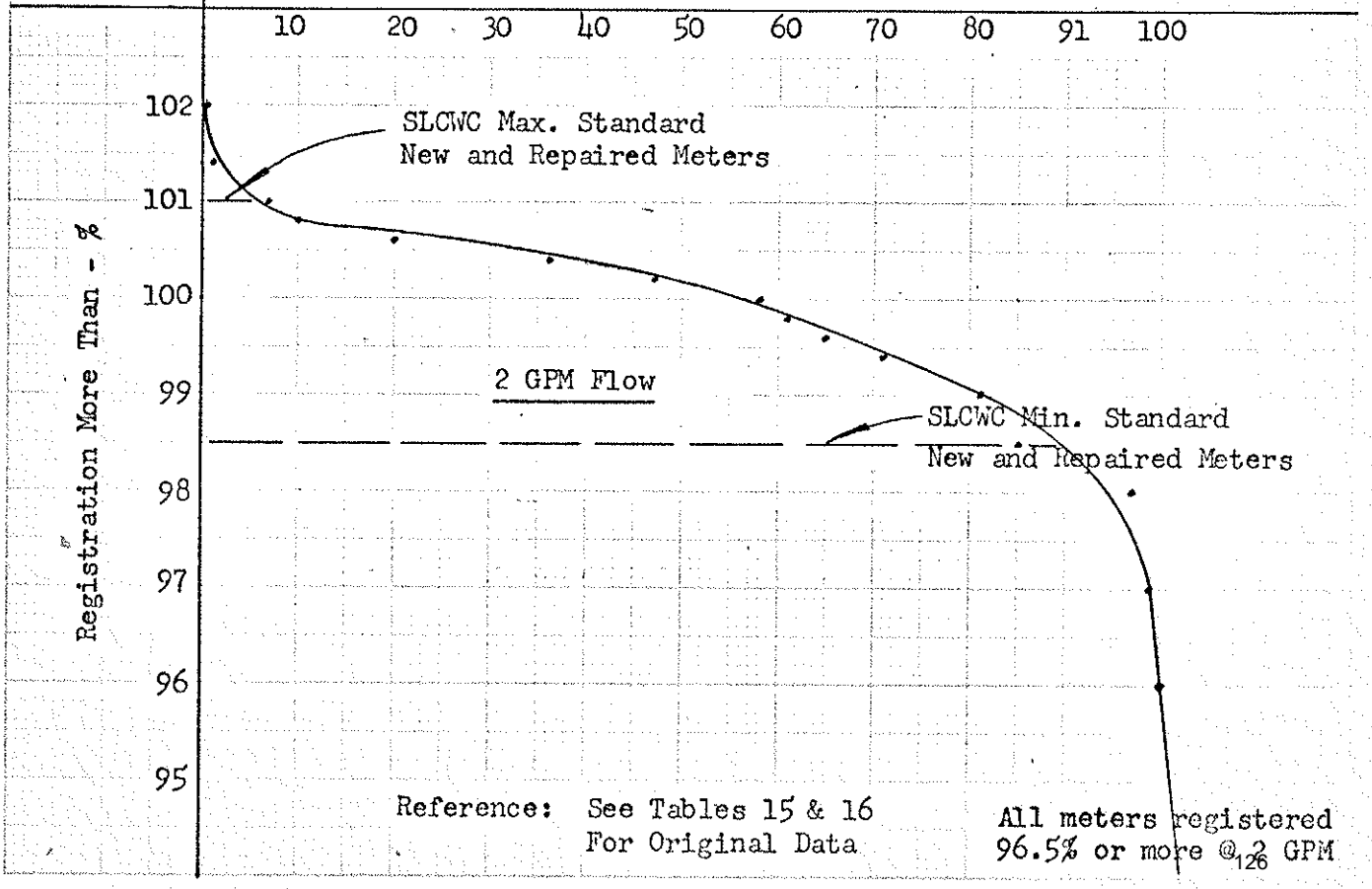
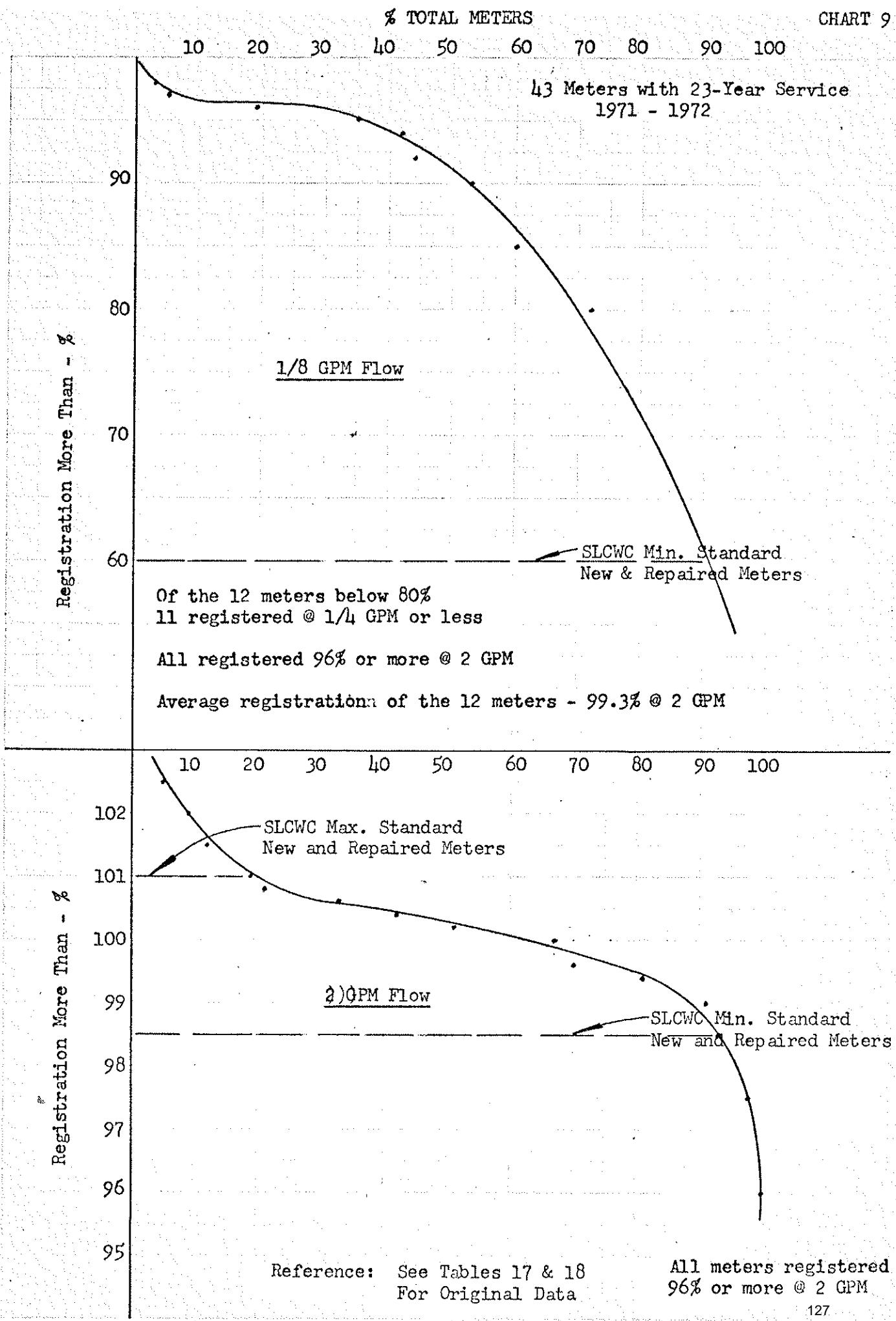

10 20 30 40 50 60 70 80 91 100
102
101
100
99
98
97
96
95
Registration More Than - %
SLCWC Max. Standard
New and Repaired Meters
2 GPM Flow
SLCWC Min. Standard
New and Repaired Meters
Reference: See Tables 15 & 16
For Original Data
All meters registered
96.5% or more @ 2 GPM

CHART 9



Reference: See Tables 17 & 18 For Original Data

All meters registered 96% or more @ 2 GPM

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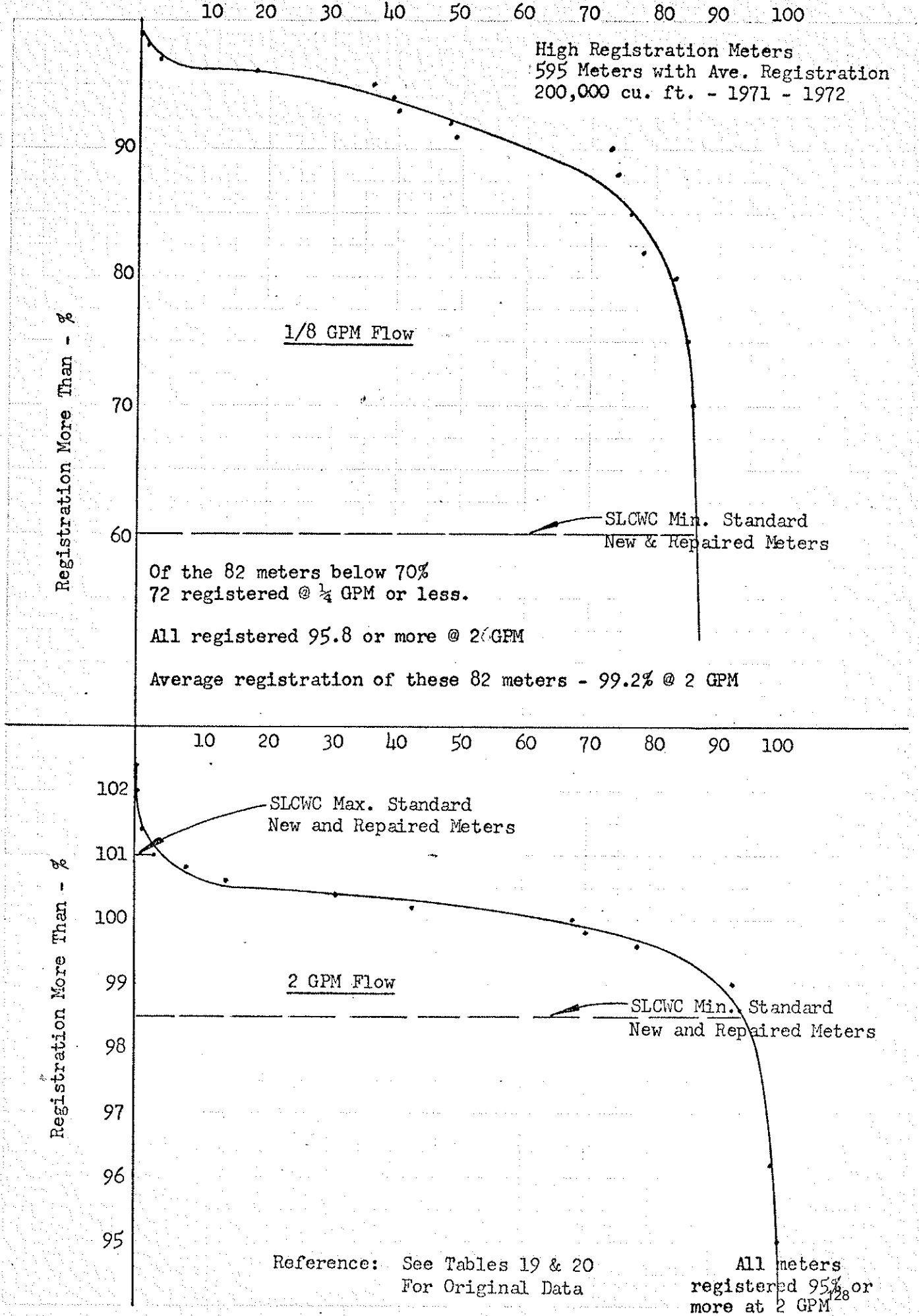
CHART 10


% TOTAL METERS
10 20 30 40 50 60 70 80 90 100
High Registration Meters
595 Meters with Ave. Registration
200,000 cu. ft. - 1971 - 1972
Registration More Than - %
90
80
70
60
1/8 GPM Flow
SLCWC Min. Standard
New & Repaired Meters
Of the 82 meters below 70%
72 registered @ ¼ GPM or less.
All registered 95.8 or more @ 2 GPM
Average registration of these 82 meters - 99.2% @ 2 GPM
10 20 30 40 50 60 70 80 90 100
102
101
100
99
98
97
96
95
SLCWC Max. Standard
New and Repaired Meters
2 GPM Flow
SLCWC Min. Standard
New and Repaired Meters
Registration More Than - %
Reference: See Tables 19 & 20
For Original Data
All meters
registered 95% or
more at 2 GPM

15-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
142	996	100	*
12	854	86	70
2	842	85	74
23	840	84	75
1	817	83	76
3	816	82	78
49	813	81	80
48	764	77	85
4	716	72	86
3	712	71	87
75	709	70	88
186	634	64	90
69	448	45	92
16	379	38	93
19	363	36	94
149	344	35	95
156	195	20	96
26	39	4	97
11	13	1	98
2	2	.2	99

* 111 meters reg. @ 1/6 gpm
24 meters reg. @ 1/4 gpm
3 meters reg. @ 1/2 gpm
1 meter reg. @ 3/4 gpm
1 meter reg. @ 1 gpm
2 meters reg. @ 2 gpm

15-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
1	996	100	90.4
7	995	99	95.2
23	988	98	96.4
37	965	97	98
2	928	94	98.4
7	926	93	98.6
37	919	92	99
58	882	89	99.2
96	824	83	99.4
84	728	73	99.6
39	644	65	99.8
254	605	61	100
84	351	35	100.2
166	267	27	100.4
53	101	10	100.6
23	48	5	100.8
21	25	3	101
1	4	.4	101.4
3	3	.3	102

16-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
70	506	100	*
8	436	86	70
2	428	85	72
5	426	84	75
4	421	83	78
40	417	82	80
9	377	75	85
1	368	73	86
37	367	72	88
91	330	65	90
34	239	47	92
22	205	41	93
89	183	36	95
75	94	19	96
11	19	4	97
8	8	2	98

* 50 meters reg. @ 1/6 gpm
17 meters reg. @ 1/4 gpm
1 meter reg. @ 1/2 gpm
1 meter reg. @ 3/4 gpm
1 meter reg. @ 1 gpm

16-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
14	506	100	95
11	492	97	98
5	481	95	98.4
7	476	94	98.6
11	469	93	99
19	458	91	99.2
31	439	87	99.4
39	408	81	99.6
5	369	73	99.8
104	364	72	100
54	260	51	100.2
117	206	41	100.4
47	89	18	100.6
18	42	8	100.8
16	24	5	101
4	8	2	101.4
4	4	1	102

17-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
31	263	100	*
4	232	88	70
8	228	87	75
17	220	84	80
7	203	77	85
1	196	75	86
24	195	74	88
46	171	65	90
23	125	48	92
2	102	39	93
7	100	38	94
45	93	35	95
34	48	18	96
11	14	5	97
2	3	1	98
1	1	.4	99

* 26 meters reg. @ 1/6 gpm
3 meters reg. @ 1/4 gpm
1 meter reg. @ 3/4 gpm
1 meter reg. 1 gpm

17-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
1	263	100	*
3	262	99	96.4
4	259	98	98
2	255	97	98.6
8	253	96	99
8	245	93	99.2
25	237	90	99.4
17	212	81	99.6
8	195	74	99.8
55	187	71	100
22	132	50	100.2
69	110	42	100.4
19	41	16	100.6
9	22	8	100.8
9	13	5	101
1	4	2	101.4
3	3	1	102

* 1 meter reg. @ 40%

18-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation Of Total Tested - %	% Reg. More Than
31	212	100	*
8	181	85	70
2	173	82	78
13	171	81	80
6	158	75	85
17	152	72	88
33	135	64	90
13	102	48	92
4	89	42	94
41	85	40	95
34	44	21	96
9	10	5	97
1	1	.5	98

* 21 meters reg. @ 1/6 gpm
8 meters reg. @ 1/4 gpm
1 meter reg. @ 1/2 gpm
1 meter reg. @ 3/4 gpm

18-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
3	212	100	96.4
6	209	99	97.8
2	203	96	98.4
18	201	95	99
19	183	86	99.4
17	164	77	99.6
7	147	69	99.8
42	140	66	100
23	98	46	100.2
38	75	35	100.4
20	37	17	100.6
7	17	8	100.8
6	10	5	101
1	4	2	101.4
3	3	1	102

19-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
34	155	100	*
6	121	78	50
13	115	74	80
5	102	66	85
14	97	63	88
38	83	54	90
19	45	29	95
24	26	17	96
1	2	1	98
1	1	.6	99

* 23 meters reg. @ 1/6 gpm
10 meters reg. @ 1/4 gpm
1 meter reg. @ 3/4 gpm

19-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
1	155	100	95.5
4	154	99	96
13	150	97	99
11	137	88	99.4
10	126	81	99.6
45	116	75	100
47	71	46	100.2
15	24	15	100.6
7	9	6	101
2	2	1	101.4

20-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
34	128	100	*
2	94	73	70
2	92	72	75
9	90	70	80
11	81	63	85
12	70	55	90
1	58	45	91
9	57	44	92
20	48	38	95
16	28	22	96
10	12	9	97
2	2	2	98

* 23 meters reg. @ 1/6 gpm
8 meters reg. @ 1/4 gpm
1 meter reg. @ 1/2 gpm
2 meters reg. @ 3/4 gpm

20-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
4	128	100	97.5
1	124	97	98
3	123	96	98.5
13	120	94	99
15	107	84	99.4
9	92	72	99.6
1	83	65	99.8
26	82	64	100
30	56	44	100.4
18	26	20	100.6
3	8	6	101
3	5	4	101.4
1	2	2	101.6
1	1	1	102

21-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
65	209	100	*
1	144	69	70
7	143	68	75
16	136	65	80
21	120	57	85
34	99	47	90
15	65	31	92
17	50	24	95
29	33	16	96
3	4	2	98
1	1	.5	99

* 48 meters reg. @ 1/6 gpm
13 meters reg. @ 1/4 gpm
4 meters reg. @ 1/2 gpm

21-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
2	209	100	95.8
1	207	99	97
4	206	98	97.5
12	202	97	98
7	190	91	98.5
17	183	88	99
21	166	79	99.2
29	145	69	99.4
11	116	56	99.6
3	105	50	99.8
33	102	49	100
20	69	33	100.2
17	49	23	100.4
10	32	15	100.6
9	22	11	100.8
7	13	6	101
4	6	3	101.5
1	2	1	102
1	1	.5	102.5

22-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
34	143	100	*
5	109	76	70
6	104	73	75
10	98	69	80
13	88	62	85
18	75	52	90
9	57	40	92
22	48	34	95
21	26	18	96
5	5	3	97

* 26 meters reg. @ 1/6 gpm
7 meters reg. @ 1/4 gpm
1 meter reg. @ 3/4 gpm

22-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
2	143	100	96
3	141	99	97
16	138	97	98
6	122	85	98.5
14	116	81	99
9	102	71	99.4
6	93	65	99.6
4	87	61	99.8
16	83	58	100
16	67	47	100.2
22	51	36	100.4
14	29	20	100.6
5	15	10	100.8
8	10	7	101
1	2	1	101.4
1	1	.7	102

23-YEAR STUDY GROUP - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
12	43	100	*
5	31	72	80
3	26	60	85
4	23	53	90
1	19	44	92
3	18	42	94
7	15	35	95
6	8	19	96
1	2	5	97
1	1	3	98

* 7 meters reg. @ 1/6 gpm
4 meters reg. @ 1/4 gpm
1 meter reg. @ 1/2 gpm

23-YEAR STUDY GROUP - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
1	43	100	96
2	42	98	97.5
1	40	93	98.5
4	39	91	99
5	35	81	99.4
1	30	70	99.6
7	29	67	100
4	22	51	100.2
4	18	42	100.4
5	14	33	100.6
1	9	21	100.8
3	8	19	101
1	5	12	101.5
2	4	9	102
2	2	5	102.5

HIGH REGISTRATION GROUP - 200,000 CU. FT. AVG. - 1971-1972
1/8 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
82	595	100	*
6	513	86	70
16	507	85	75
28	491	83	80
8	463	78	82
13	455	76	85
42	442	74	88
106	440	73	90
6	294	49	91
51	288	48	92
5	237	40	93
20	232	39	94
104	212	36	95
93	108	18	96
7	15	3	97
7	8	1	98
1	1	.2	99

* 56 meters reg. @ 1/6 gpm
17 meters reg. @ 1/4 gpm
5 meters reg. @ 1/2 gpm
1 meter reg. @ 3/4 gpm
3 meters reg. @ 2 gpm

HIGH REGISTRATION GROUP - 200,000 CU. FT. AVG. - 1971-1972
2 GPM FLOW

Number of Meters	Cumulative No. Meters	Summation of Total Tested - %	% Reg. More Than
3	595	100	95
30	592	99	96.2
3	562	94	98.6
95	559	93	99
46	464	78	99.6
16	418	70	99.8
147	402	68	100
73	255	43	100.2
99	182	31	100.4
37	83	14	100.6
26	46	8	100.8
15	20	3	101
2	5	1	101.4
2	3	.5	102
1	1	.2	102.4

APPENDIX A

Collection of Data

The data for this study was collected differently from that of the 1968 study. The 1969, routine procedures were established to record certain information about all meters with 15 years or more service life and with 200,000 or more cubic foot registration that passed through our shop.

This information was recorded by years of service and consisted of -

1 - Meter Number

2 - Date of Removal

3 - Length of Service

4 - Test Performance at 1/8 GPM & 2 GPM

No effort was made to control the number of meters coming into the shop for any specified service span. All meters were accepted as normal, routine, everyday operating procedures dictated.

The 1972 study covered meters returned to our Meter Department from January 1970 through June 1972, a period of approximately 2½ years.

Since all meters that came into the meter shop and fell into the service periods of the study were used, the sampling distribution is unbiased and random.

Because of the method and span of time allowed for gathering data, this study enabled the review of many more meters than in the 1968 study.

Listed below is the number of meters tested within each service group for each study year and the percent of increase over the 1968 study.

Service Years	15	16	17	18	19	20	21	22	23	High Registration
No. Meters 1968	155	132	141	79	35	48				449
No. Meters 1972	996	506	263	212	155	128	209	143	43	559
% Increase over 1968	543	283	87	168	343	167				24

Test Standards

The St. Louis County Water Company uses 1/8 GPM, instead of the normal 1/4 GPM, for its sensitivity test.

In 1968 the test standards used were -

98.5% to 101% @ 2 GPM
over 60% @ 1/8 GPM

These standards were shown on the Duration Curves of the 1972 test, Charts 1 through 10. This was done in order to more easily compare the two sets of test data.

For the 1968 test, the sensitivity percentage of 65% was used as acceptable on Charts V and VII, since very few meters fell below that figure.

Again, the 1968 test percentage of 65% was used in the 1972 test for comparison purposes. However, of the meters that registered, only 6 fell beow 70%.