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February 22, 2023

**VIA ELECTRONIC FILING**

Public Utility Commission of Oregon  
201 High Street SE, Suite 100  
Post Office Box 1088  
Salem, OR 7308-1088

**Re: RG 41: Meter Sampling Program Report for 2022**

At the request of Commission Staff, Northwest Natural Gas Company, dba NW Natural, submits herewith its 2022 Meter Sampling Program Report.

As required by our Meter Testing Standards and Procedures document, the accuracies of all operating families of diaphragm meters with capacities 1000 ft<sup>3</sup>/hr and below have been statistically analyzed for the year 2022. This analysis utilized all relevant meter tests conducted during the five calendar years between January 1, 2017, and December 31, 2022. The results of this analysis are as follows:

- As of December 31, 2022, 791,368 meters are installed and covered under the Meter Sampling Program. Of these, 695,137 meters, forming 369 distinct meter families, are conforming. The remaining 96,231 meters forming 78 distinct meter families are non-conforming and are scheduled for replacement. 60 non-conforming meter families were identified in prior years and 18 new meter families were identified as non-conforming in 2022. The 96,231 non-conforming meters represent 12 percent of the total meter population.
- Over the course of 2022, the company tested 9,577 meters. Over the five-year period of 2017 through 2022, the company had a total of 37,442 meter samples from which to base its results.
- 369 meter families either had sufficient meter samples to establish statistical confidence in their accuracy, or are new for 2022. These meter families amount to 695,137 meters, or 88 percent of the total meter population. The performances of these families are exhibited in Appendix A.
- 1 meter family, Perf #572, the 2005 Sensus R-275, was previously declared PCC for PCC Year 2022. However, after performing and evaluating the results of 5,569 meter tests in 2021 and 2022, specific delivery lots of these meters were determined to be non-conforming, while other lots remained conforming. Due to this, a population of 6,673 meters were removed from the PCC schedule and will remain in the Meter Sampling Program. As of 12/31/2022, 4,424 meters from specific lots of Perf #572, 2005 Sensus R-275 remain listed for removal in the 2022 PCC program.
- 12 new meter families were added in 2022, reflecting new meters placed in service during the normal course of business, as well as meter replacements to replace non-conforming meters. 8 meter families were removed from service, due to small family size, during the normal course of business. 3 meter families were removed from service due to the number of supplementary samples required exceeding 50% of the family size, with a family size less than 100 meters.

- 18 meter families, consisting of a total of 70,251 meters at the time of declaration, were identified as not conforming in 2022. Due to the number of meters requiring change-out (8.9% of the total population), these meters have been put on the list to be removed over the course of the next four years, by December 2026, per Meter Sampling Program (MSP) guidelines outlined in NW Natural Engineering Procedure Z-1. The performance of these families is exhibited in Appendix B.
- A further breakdown of the 18 non-conforming meter families and associated meters described above are as follows, the performance of these families is exhibited in Appendix B:
  - 7 meter families, totaling 70,167 meters had sufficient meter tests available to have their accuracy determined statistically and determined non-conforming. Significant results include:
    - 42,486 meters from the 2006 & 2007 American AC-250 meter families make up the bulk of this lot, reflecting the last American AC-250 meters in service from the 2005-2010 timeframe.
    - 13,495 American AL-175 meters from 1987, 1989, 1991
    - 14,106 American AC-250 meters from 1998
  - 8 meter families, totaling 25 meters, will be removed from service due to their small population size and age.
  - 3 meter families, totaling 59 meters, will be removed from service due to a family size less than 100 meters, and sampling requirements exceeding 50% of the total family population.
- Compared to the results above, the Year 2021 report resulted in 35,677 meters being put on the list for removal by December 2025.
- Regarding the planned four year removal of meters determined non-conforming from 2019-2022, the following meters remain:
  - PCC Year 2020 (for removal 2020 to 2023): 2,583 remain out of 42,046 determined
  - PCC Year 2021 (for removal 2021 to 2024): 9,487 remain out of 27,204 determined
  - PCC Year 2022 (for removal 2022 to 2025): 14,977 remain out of 35,677 determined
  - PCC Year 2023 (for removal 2023 to 2026): 69,184 remain out of 70,251 determined
- Consistent with the NW Natural's tariff, bills for meters that are subject to the four year removal schedule and are later found to not meet the accuracy requirement are deemed subject to refund to customers based on the date when the meter family was determined to require change-out to the date the meter was replaced.

If you have any questions or comments, please contact me at 503-610-7494.

Sincerely,

*/s/ Michael J. McKenzie*

Michael J. McKenzie, PE  
Engineering Manager

cc:

Dan Kizer

Jon Huddleston

Joe Karney

Dave Weber

Kim Rush

**Appendix A  
Meter Families in Conformance**

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
120	0	1968	Rockwell	175	54	53	41	2	0	43
120	0	1969	Rockwell	175	53	157	72	5	0	77
120	0	1970	Rockwell	175	52	529	96	9	1	106
120	0	1972	Rockwell	175	50	759	104	8	1	113
120	0	1973	Rockwell	175	49	562	95	10	1	106
120	0	1974	Rockwell	175	48	2383	236	15	7	258
120	0	1975	Rockwell	175	47	1647	145	18	2	165
120	0	1976	Rockwell	175	46	1003	103	6	4	113
120	0	1977	Rockwell	175	45	1228	114	7	1	122
120	0	1978	Rockwell	175	44	1328	121	8	4	133
120	0	1979	Rockwell	175	43	1491	152	10	4	166
120	0	1980	Rockwell	175	42	951	93	9	1	103
120	0	1981	Rockwell	175	41	617	101	7	2	110
120	0	1982	Rockwell	175	40	1094	111	14	1	126
120	0	1983	Rockwell	175	39	1246	122	16	2	140
120	0	1984	Rockwell	175	38	1359	117	14	1	132
120	0	1985	Rockwell	175	37	1818	134	18	1	153
120	0	1986	Rockwell	175	36	1200	109	8	3	120
120	0	1987	Rockwell	175	35	2084	147	6	3	156
120	0	1988	Rockwell	175	34	2035	155	7	5	167
120	0	1989	Rockwell	175	33	3295	218	12	6	236
120	0	1990	Rockwell	175	32	3317	210	15	6	231
120	0	1991	Rockwell	175	31	3598	262	7	13	282
120	0	1992	Rockwell	175	30	6335	398	11	14	423
120	0	1993	Rockwell	175	29	2502	166	8	4	178
120	0	1994	Rockwell	175	28	1285	96	3	4	103
120	0	1995	Rockwell	175	27	268	79	8	0	87
120	0	1996	Rockwell	175	26	703	89	3	0	92
120	0	1997	Rockwell	175	25	123	58	5	1	64
120	0	1998	Rockwell	175	24	45	29	1	1	31
120	0	2012	Rockwell	175	10	1	0	0	0	0

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
120	0	2013	Rockwell	175	9	1	0	0	0	0
120	0	2014	Rockwell	175	8	1	0	0	0	0
120	0	2015	Rockwell	275	7	1	0	0	0	0
120	0	2021	Rockwell	175	1	1	6	0	0	6
125	0	1978	Rockwell	200	44	1454	139	3	1	143
125	0	1979	Rockwell	200	43	142	38	1	0	39
125	0	1980	Rockwell	200	42	1723	126	15	1	142
125	0	1981	Rockwell	200	41	2346	145	10	0	155
125	0	1982	Rockwell	200	40	2923	188	7	0	195
125	0	1983	Rockwell	200	39	1646	141	4	2	147
125	0	1984	Rockwell	200	38	1986	130	14	1	145
125	0	1986	Rockwell	200	36	326	75	3	0	78
125	0	1987	Rockwell	200	35	490	68	3	0	71
125	0	1988	Rockwell	200	34	333	93	4	0	97
125	0	1989	Rockwell	200	33	429	87	5	3	95
125	0	1990	Rockwell	200	32	276	73	10	0	83
125	0	1991	Rockwell	200	31	657	48	0	0	48
125	0	1992	Rockwell	200	30	580	52	2	1	55
125	0	1993	Rockwell	200	29	453	81	6	2	89
125	0	1994	Rockwell	200	28	375	83	6	1	90
125	0	1995	Rockwell	200	27	66	46	5	0	51
125	0	1996	Rockwell	200	26	221	35	0	0	35
125	0	1998	Rockwell	200	24	39	39	3	0	42
125	0	1999	Rockwell	200	23	129	22	0	0	22
125	0	2017	Rockwell	200	5	1	3	0	0	3
125	0	2019	Rockwell	200	3	1	3	0	0	3
130	0	1971	American	175	51	976	92	11	0	103
130	0	1973	American	175	49	686	87	10	2	99
130	0	1975	American	175	47	21	15	0	0	15
130	0	1977	American	175	45	3006	207	24	4	235
130	0	1979	American	175	43	5997	374	20	4	398
130	0	1980	American	175	42	5790	376	24	5	405
130	0	1984	American	175	38	4466	283	40	8	331
130	0	1985	American	175	37	1953	124	13	1	138

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
130	0	1986	American	175	36	3749	201	31	6	238
130	0	1988	American	175	34	2940	184	27	3	214
130	0	1992	American	175	30	1303	93	16	0	109
130	0	1994	American	175	28	2503	119	20	0	139
130	0	1995	American	175	27	459	79	11	0	90
130	0	1996	American	175	26	1010	47	1	2	50
130	0	1997	American	175	25	195	51	1	1	53
130	0	2013	American	175	9	1	0	0	0	0
130	0	2014	American	175	8	3	0	0	0	0
130	0	2016	American	175	6	2	1	0	0	1
130	0	2020	American	175	2	1	13	1	0	14
130	0	2022	American	175	0	1	10	4	1	15
140	0	1968	Sprague	175	54	917	100	0	15	115
140	0	1970	Sprague	175	52	313	47	0	3	50
140	0	1971	Sprague	175	51	884	92	0	11	103
140	0	1972	Sprague	175	50	144	25	0	2	27
140	0	1973	Sprague	175	49	2670	247	3	8	258
140	0	1974	Sprague	175	48	574	51	0	2	53
140	0	1975	Sprague	175	47	664	60	0	3	63
140	0	1976	Sprague	175	46	1009	87	2	5	94
140	0	1977	Sprague	175	45	281	41	0	3	44
140	0	1978	Sprague	175	44	226	39	0	3	42
140	0	1979	Sprague	175	43	121	41	1	1	43
140	0	1980	Sprague	175	42	258	66	5	7	78
140	0	1981	Sprague	175	41	589	47	1	2	50
140	0	1982	Sprague	175	40	514	73	2	3	78
140	0	1983	Sprague	175	39	731	94	3	3	100
140	0	1984	Sprague	175	38	632	66	1	9	76
140	0	1985	Sprague	175	37	1052	105	1	7	113
140	0	1986	Sprague	175	36	908	60	1	3	64
140	0	1987	Sprague	175	35	2754	236	0	13	249
140	0	1988	Sprague	175	34	691	88	3	2	93
140	0	1989	Sprague	175	33	713	51	0	3	54
140	0	1990	Sprague	175	32	960	72	0	2	74

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
140	0	1991	Sprague	175	31	411	42	0	1	43
140	0	1992	Sprague	175	30	528	34	0	3	37
140	0	1993	Sprague	175	29	600	54	0	3	57
140	0	1994	Sprague	175	28	529	61	2	3	66
140	0	1997	Sprague	175	25	449	31	0	0	31
140	0	2016	Sprague	175	6	1	0	0	0	0
270	0	1998	Schlumberger	1000	24	17	11	0	0	11
270	0	2000	Schlumberger	1000	22	17	13	0	0	13
270	0	2001	Schlumberger	1000	21	20	37	2	0	39
450	0	1993	Schlumberger	400	29	166	32	0	0	32
450	0	1996	Schlumberger	400	26	238	38	0	0	38
450	0	1997	Schlumberger	400	25	43	20	0	0	20
450	0	1998	Schlumberger	400	24	397	57	0	1	58
450	0	1999	Schlumberger	400	23	80	21	0	0	21
450	0	2003	Schlumberger	400	19	15	13	0	0	13
450	0	2013	Schlumberger	400	9	1	0	0	0	0
452	0	2003	Actaris	400	19	72	28	0	0	28
452	0	2004	Actaris	400	18	372	86	2	3	91
470	472	1982	American	425	40	16	12	0	0	12
470	472	1983	American	425	39	18	14	0	0	14
470	472	1984	American	425	38	96	22	0	0	22
470	472	1985	American	425	37	21	22	2	0	24
470	472	1986	American	425	36	26	38	1	0	39
470	472	1987	American	425	35	97	60	3	0	63
470	472	1989	American	425	33	17	18	2	0	20
470	472	1992	American	425	30	105	43	2	0	45
470	472	1994	American	425	28	156	69	5	1	75
470	472	1995	American	425	27	73	22	0	0	22
470	472	1996	American	425	26	7	14	1	1	16
470	472	1997	American	425	25	263	78	5	0	83
470	472	1998	American	425	24	128	57	6	0	63
470	472	1999	American	425	23	219	42	2	0	44
470	472	2000	American	425	22	360	55	2	0	57
470	472	2001	American	425	21	49	37	3	0	40



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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
470	472	2002	American	425	20	364	80	3	0	83
470	472	2003	American	425	19	137	69	3	0	72
470	472	2004	American	425	18	45	39	4	1	44
470	472	2006	American	425	16	34	35	0	0	35
470	472	2007	American	425	15	184	55	2	0	57
470	472	2008	American	425	14	10	13	0	0	13
470	472	2012	American	425	10	1	0	0	0	0
470	472	2017	American	425	5	1	0	0	0	0
471	0	2007	American	425	15	443	92	8	0	100
471	0	2008	American	425	14	36	35	3	0	38
471	0	2010	American	425	12	73	31	1	0	32
471	0	2011	American	425	11	76	33	1	0	34
471	0	2012	American	425	10	10	0	0	0	0
475	0	1996	American	630	26	1	0	0	0	0
475	0	2010	American	630	12	564	97	11	0	108
475	0	2011	American	630	11	993	82	1	0	83
475	0	2012	American	630	10	1378	100	0	0	100
475	0	2013	American	630	9	1438	94	2	0	96
475	0	2014	American	630	8	1501	83	0	1	84
475	0	2015	American	630	7	1211	73	1	0	74
475	0	2016	American	630	6	1586	67	0	0	67
475	0	2017	American	630	5	1653	70	2	0	72
475	0	2018	American	630	4	4574	165	2	2	169
475	0	2019	American	630	3	2923	111	0	0	111
475	0	2020	American	630	2	891	30	0	0	30
475	0	2021	American	630	1	1139	24	0	0	24
475	0	2022	American	630	0	1422	5	0	0	5
480	486	1989	American	800	33	21	12	0	0	12
480	486	1990	American	800	32	10	18	1	0	19
480	486	1992	American	800	30	18	13	0	0	13
480	486	1995	American	800	27	13	14	1	2	17
480	486	2001	American	800	21	11	10	1	0	11
480	486	2002	American	800	20	16	14	0	0	14
485	0	1981	American	800	41	16	15	0	3	18

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
485	0	1984	American	800	38	44	31	1	1	33
485	0	2016	American	800	6	1	0	0	0	0
487	0	2017	American	800	5	55	5	0	0	5
487	0	2018	American	800	4	187	13	0	0	13
487	0	2019	American	800	3	306	20	0	0	20
487	0	2020	American	800	2	231	12	0	0	12
487	0	2021	American	800	1	339	11	0	0	11
487	0	2022	American	800	0	284	4	0	0	4
500	502	2002	American	1000	20	27	25	2	1	28
505	507	2008	American	1000	14	259	92	11	0	103
505	507	2011	American	1000	11	293	91	7	0	98
505	507	2012	American	1000	10	354	54	2	0	56
505	507	2013	American	1000	9	353	47	0	0	47
505	507	2014	American	1000	8	408	48	0	0	48
505	507	2015	American	1000	7	339	31	0	0	31
505	507	2016	American	1000	6	489	56	0	0	56
505	507	2017	American	1000	5	190	20	0	0	20
505	507	2018	American	1000	4	330	30	2	0	32
505	507	2019	American	1000	3	285	32	1	0	33
505	507	2020	American	1000	2	15	2	1	0	3
505	507	2021	American	1000	1	11	2	1	0	3
505	507	2022	American	1000	0	5	0	0	0	0
510	515	1973	Rockwell	310	49	57	34	1	3	38
510	515	1974	Rockwell	310	48	20	23	0	4	27
510	515	1976	Rockwell	310	46	214	62	3	5	70
510	515	1977	Rockwell	310	45	122	41	1	0	42
510	515	1978	Rockwell	310	44	79	54	1	3	58
510	515	1979	Rockwell	310	43	109	53	5	8	66
510	515	1981	Rockwell	310	41	161	30	0	3	33
510	515	1982	Rockwell	310	40	34	42	1	4	47
510	515	1983	Rockwell	310	39	91	42	1	0	43
510	515	1984	Rockwell	310	38	11	17	1	1	19
510	515	1986	Rockwell	310	36	14	11	0	0	11
510	515	1987	Rockwell	310	35	184	51	1	1	53

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
510	515	1989	Rockwell	310	33	65	34	1	0	35
510	515	1990	Rockwell	310	32	178	68	6	2	76
510	515	1991	Rockwell	310	31	192	26	0	1	27
510	515	1992	Rockwell	310	30	90	50	5	4	59
510	515	1993	Rockwell	310	29	87	19	0	2	21
510	515	1994	Rockwell	310	28	26	16	0	0	16
510	515	1996	Rockwell	310	26	18	20	0	1	21
520	0	1977	Rockwell	415	45	32	16	0	0	16
520	0	1978	Rockwell	415	44	26	17	0	0	17
520	0	1979	Rockwell	415	43	59	33	0	3	36
520	0	1980	Rockwell	415	42	47	37	2	0	39
520	0	1981	Rockwell	415	41	196	30	0	2	32
520	0	1982	Rockwell	415	40	31	16	0	0	16
520	0	1988	Rockwell	415	34	38	16	0	1	17
520	0	1991	Rockwell	415	31	60	17	0	1	18
520	0	1992	Rockwell	415	30	42	29	1	3	33
520	0	1994	Rockwell	415	28	78	21	0	1	22
520	0	1996	Rockwell	415	26	87	49	2	1	52
520	0	1997	Rockwell	415	25	40	17	0	1	18
520	0	2003	Rockwell	415	19	128	31	0	0	31
520	0	2004	Rockwell	415	18	54	43	4	0	47
520	0	2005	Rockwell	415	17	19	27	1	0	28
520	0	2017	Rockwell	415	5	1	0	0	0	0
520	0	2018	Rockwell	415	4	1	0	0	0	0
520	0	2019	Rockwell	415	3	1	0	0	0	0
520	0	2020	Rockwell	415	2	1	1	0	0	1
555	0	1980	American	310	42	47	43	3	0	46
555	0	1981	American	310	41	24	18	0	1	19
555	0	1983	American	310	39	66	51	3	0	54
555	0	1984	American	310	38	148	62	3	1	66
555	0	1985	American	310	37	71	41	2	0	43
555	0	1987	American	310	35	27	33	2	1	36
555	0	1989	American	310	33	7	7	0	0	7
560	0	1985	American	250	37	1358	83	3	1	87

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
560	0	1986	American	250	36	5844	323	7	3	333
560	0	1987	American	250	35	405	31	0	0	31
560	0	1988	American	250	34	3007	136	3	0	139
560	0	1989	American	250	33	6619	374	5	5	384
560	0	1990	American	250	32	5985	288	9	5	302
560	0	1991	American	250	31	5270	279	5	4	288
560	0	1992	American	250	30	4630	155	3	5	163
560	0	1993	American	250	29	3908	156	0	2	158
560	0	1994	American	250	28	5913	186	13	1	200
560	0	1995	American	250	27	7864	270	20	3	293
560	0	1996	American	250	26	10698	375	21	4	400
560	0	1999	American	250	23	10906	273	27	1	301
560	0	2000	American	250	22	10917	319	7	2	328
560	0	2001	American	250	21	9195	217	6	1	224
560	0	2002	American	250	20	8289	187	11	0	198
560	0	2003	American	250	19	394	76	0	2	78
560	0	2005	American	250	17	43	30	1	0	31
560	0	2006	American	250	16	579	67	2	0	69
560	0	2007	American	250	15	179	23	0	0	23
560	0	2012	American	250	10	6	0	0	0	0
560	0	2013	American	250	9	2	0	0	0	0
560	0	2014	American	250	8	5	0	0	0	0
560	0	2015	American	250	7	1	0	0	0	0
560	0	2018	American	250	4	3	14	1	0	15
560	0	2022	American	250	0	1	10	0	0	10
561	0	1984	American	250	38	1	0	0	0	0
561	0	2010	American	250	12	9772	348	8	2	358
561	0	2011	American	250	11	10269	398	5	0	403
561	0	2012	American	250	10	11517	428	3	3	434
561	0	2013	American	250	9	14974	408	4	5	417
561	0	2014	American	250	8	14316	374	4	1	379
561	0	2015	American	250	7	17580	385	1	1	387
561	0	2016	American	250	6	12458	225	0	0	225
561	0	2017	American	250	5	11632	243	2	1	246

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
561	0	2018	American	250	4	9609	172	2	3	177
561	0	2019	American	250	3	14433	197	2	0	199
561	0	2020	American	250	2	10627	109	10	0	119
561	0	2021	American	250	1	6920	70	13	0	83
561	0	2022	American	250	0	6316	32	10	0	42
562	0	2017	American	250	5	22	0	0	0	0
562	0	2018	American	250	4	695	0	0	0	0
562	0	2019	American	250	3	1369	5	1	0	6
562	0	2020	American	250	2	996	0	0	0	0
562	0	2021	American	250	1	1101	2	0	0	2
562	0	2022	American	250	0	567	0	0	0	0
570	0	1989	Rockwell	275	33	682	80	3	0	83
570	0	1990	Rockwell	275	32	5186	200	7	2	209
570	0	1991	Rockwell	275	31	2772	132	7	0	139
570	0	1992	Rockwell	275	30	124	57	5	0	62
570	0	1993	Rockwell	275	29	58	33	1	0	34
570	0	1994	Rockwell	275	28	4881	167	6	0	173
570	0	1995	Rockwell	275	27	6226	240	9	5	254
570	0	1996	Rockwell	275	26	7471	203	3	3	209
570	0	1997	Rockwell	275	25	2298	59	1	0	60
570	0	1998	Rockwell	275	24	5258	166	18	1	185
570	0	1999	Rockwell	275	23	10214	262	35	4	301
570	0	2000	Rockwell	275	22	8251	193	24	3	220
570	0	2001	Rockwell	275	21	8448	218	8	0	226
570	0	2002	Rockwell	275	20	10575	234	2	0	236
570	0	2003	Rockwell	275	19	19336	505	8	1	514
570	0	2004	Rockwell	275	18	3508	91	0	0	91
570	0	2005	Rockwell	275	17	6	7	0	0	7
570	0	2012	Rockwell	275	10	4	1	0	0	1
570	0	2013	Rockwell	275	9	1	0	0	0	0
570	0	2014	Rockwell	275	8	2	0	0	0	0
570	0	2016	Rockwell	275	6	2	0	0	0	0
570	0	2017	Rockwell	275	5	3	3	0	0	3
570	0	2018	Rockwell	275	4	2	2	0	0	2

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
570	0	2022	Rockwell	275	0	1	6	1	0	7
572	0	1999	Sensus	275	23	1	0	0	0	0
572	0	2004	Sensus	275	18	13585	325	22	2	349
572	0	2005	Sensus	275	17	6673	5493	335	7	5835
572	0	2008	Sensus	275	14	34	40	1	0	41
572	0	2009	Sensus	275	13	721	55	1	0	56
572	0	2011	Sensus	275	11	63	20	0	0	20
572	0	2012	Sensus	275	10	3	1	0	0	1
572	0	2013	Sensus	275	9	1	0	0	0	0
572	0	2014	Sensus	275	8	2	0	0	0	0
572	0	2015	Sensus	275	7	2	0	0	0	0
572	0	2016	Sensus	275	6	3	0	0	0	0
572	0	2020	Sensus	275	2	9354	109	3	1	113
572	0	2021	Sensus	275	1	11989	108	0	2	110
572	0	2022	Sensus	275	0	12986	70	2	0	72
585	0	1988	Sprague	250	34	169	22	0	0	22
585	0	1991	Sprague	250	31	681	65	1	0	66
585	0	1992	Sprague	250	30	1989	126	1	1	128
585	0	1993	Sprague	250	29	3673	188	1	0	189
585	0	1994	Sprague	250	28	1598	73	0	1	74
585	0	1995	Sprague	250	27	1442	75	2	1	78
585	0	1996	Sprague	250	26	4262	189	1	1	191
585	0	1997	Sprague	250	25	5721	222	2	2	226
585	0	1998	Sprague	250	24	5200	231	1	1	233
585	0	1999	Sprague	250	23	196	54	1	0	55
585	0	2000	Sprague	250	22	31	29	2	0	31
585	0	2001	Sprague	250	21	47	19	0	0	19
585	0	2002	Sprague	250	20	43	16	0	0	16
585	0	2004	Sprague	250	18	42	20	0	1	21
585	0	2014	Sprague	250	8	2	0	0	0	0
585	0	2021	Sprague	175	1	1	2	0	0	2
590	0	1988	Lancaster	250	34	68	19	0	0	19
590	0	1989	Lancaster	250	33	1237	93	0	0	93
590	0	1990	Lancaster	250	32	1254	79	0	1	80

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
590	0	1991	Lancaster	250	31	1628	107	1	0	108
590	0	1992	Lancaster	250	30	2536	151	2	0	153
590	0	1993	Lancaster	250	29	2740	104	2	0	106
590	0	1994	Lancaster	250	28	4163	232	12	3	247
590	0	1995	Lancaster	250	27	4594	227	13	15	255
590	0	1996	Lancaster	250	26	25	22	0	0	22
590	0	1997	Lancaster	250	25	2042	83	1	2	86
590	0	1998	Lancaster	250	24	15	14	0	0	14
590	0	1999	Lancaster	250	23	96	54	2	0	56
590	0	2016	Lancaster	250	6	1	0	0	0	0
590	0	2019	Lancaster	250	3	1	1	0	0	1
590	0	2021	Lancaster	250	1	1	2	0	0	2
590	0	2022	Lancaster	250	0	1	0	0	0	0
595	600	2000	Schlumberger	250	22	2806	482	22	18	522
595	600	2001	Schlumberger	250	21	3532	324	7	1	332
595	600	2002	Schlumberger	250	20	3098	199	1	8	208
595	600	2003	Schlumberger	250	19	44	18	0	0	18
595	600	2004	Schlumberger	250	18	20	12	0	0	12
595	600	2012	Schlumberger	250	10	1	0	0	0	0
595	600	2016	Schlumberger	250	6	1	1	0	0	1
595	600	2019	Schlumberger	250	3	1	3	0	0	3
602	0	1997	Itron	250	25	1	0	0	0	0
602	0	2016	Itron	250	6	4270	110	0	1	111
602	0	2017	Itron	250	5	4521	98	0	1	99
602	0	2018	Itron	250	4	8079	133	2	0	135
602	0	2019	Itron	250	3	11408	155	0	0	155
602	0	2020	Itron	250	2	21275	211	0	0	211
602	0	2021	Itron	250	1	22427	115	1	0	116
602	0	2022	Itron	250	0	8829	34	0	0	34
603	0	2020	Itron	400	2	421	18	0	0	18
603	0	2021	Itron	400	1	380	7	0	0	7
603	0	2022	Itron	400	0	32	0	0	0	0

**Total      695,137**

**Appendix B  
 Meter Families Not Conforming (To Be Removed Over 4 Years)**

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	% Not Conforming	PCC Reason
130	0	1987	American	175	35	5684	217	36	1	14.6%	Determined
130	0	1989	American	175	33	3116	135	23	4	16.7%	Determined
130	0	1991	American	175	31	4695	183	29	5	15.7%	Determined
130	0	2021	American	175	1	1	5	1	0	16.7%	Small Family
272	0	2004	Actaris	1000	18	7	7	1	0	12.5%	Small Family
300	540	2005	Rockwell	800	17	4	6	0	1	14.3%	Small Family
505	507	1981	American	1000	41	6	8	0	2	20.0%	Small Family
520	0	2000	Rockwell	415	22	80	41	7	0	14.6%	Determined
560	0	1998	American	250	24	14106	301	47	3	14.2%	Determined
560	0	2021	American	250	1	1	16	6	0	27.3%	Small Family
561	0	2006	American	250	16	21038	448	70	0	13.5%	Determined
561	0	2007	American	250	15	21448	534	82	2	13.6%	Determined
570	0	2021	Rockwell	275	1	4	1	1	0	50.0%	Small Family
602	0	1981	Itron	250	41	1	0	0	0	0%	Small Family
602	0	1993	Itron	250	29	1	0	0	0	0%	Small Family
470	472	2005	American	425	17	17	6	1	0	14.3%	Samples >50%
520	0	1987	Rockwell	415	35	35	6	0	1	14.3%	Samples >50%
140	0	1998	Sprague	175	24	7	1	0	0	0.0%	Samples >50%

**Total 70,251**