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REPORT NAME: 2017 Meter Sampling Program Report

COMPANY NAME: NW Natural

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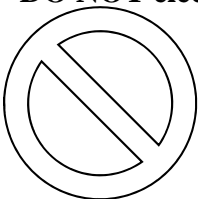
Other At request of Commission Staff

Is this report associated with a specific docket/case? No Yes

If yes, enter docket number: RG 41

List applicable Key Words for this report to facilitate electronic search:
Meter Sampling Program Report for 2017, NW Natural

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SCOTT LUNDGREN, P.E.
Engineering
Tel: 503.226.4211 x 4355
email: srl@nwnatural.com



February 15, 2018

VIA ELECTRONIC FILING

Public Utility Commission of Oregon
201 High Street SE, Suite 100
Post Office Box 1088
Salem, Oregon 97308-1088

Re: RG 41: Meter Sampling Program Report for 2017

At the request of Commission Staff, Northwest Natural Gas Company, dba NW Natural, submits herewith its 2017 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 ft³/hr and below have been statistically analyzed for the year 2017. This analysis utilized all relevant meter tests conducted during the five calendar years between January 1, 2012 and December 31, 2017. The results of this analysis are as follows:

- As of December 31, 2017, we had 747,393 installed meters. These meters formed 477 meter families.
- Over the course of 2017, the company tested 5,116 meters. Over the five-year period of 2012 through 2017, the company had a total of 31,139 meter samples from which to base its results.
- 443 meter families either have sufficient meter samples to establish statistical confidence in their accuracy, or are so new that they do not yet require minimum sampling. These meter families amount to 729,772 meters, or 97.6 percent of the total meter population. The performances of these families are exhibited in Appendix A.
- 30 meter families, consisting of a total of 5,419 meters, are not conforming and have been put on the list to be removed by the end of 2018, per the Meter Sampling Program (MSP) guidelines. The performances of these families are exhibited in Appendix B.
- 428 out of the 430 meter families had sufficient meter tests available to have their accuracy determined statistically; the remaining 2 families will be removed from service due to their small population size. The performances of these families are exhibited in Appendix B.
- Compared to the results above, the Year 2016 report resulted in 4,678 meters being put on the list for removal by the end of 2017.

If you have any questions or comments, please contact me at (503) 226-4211 ext. 4355.

Sincerely,

/s/ Scott Lundgren

Scott Lundgren, P.E.
Gas Measurement and Technical Support Engineer

cc: Andy Fortier Lori Russell
Jon Huddleston Kim Heiting
Grant Yoshihara Mark Thompson
Joe Karney



Appendix A
Meter Families in Conformance

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
140	0	1968	Sprague	175	48	1051	77		13
140	0	1968	Sprague	175	48	1051	77		13
120	0	1968	Rockwell	175	48	81	31	1	
120	0	1969	Rockwell	175	47	233	50	2	
120	0	1970	Rockwell	175	46	652	84	6	1
140	0	1970	Sprague	175	46	365	53		7
120	0	1971	Rockwell	175	45	527	79	11	
130	0	1971	American	175	45	1096	93	5	1
140	0	1971	Sprague	175	45	1001	61		8
130	0	1972	American	175	44	2739	86	13	1
140	0	1972	Sprague	175	44	157	36	1	2
120	0	1972	Rockwell	175	44	864	82	7	1
120	0	1972	Rockwell	175	44	864	82	7	1
120	0	1973	Rockwell	175	43	680	59	1	
130	0	1973	American	175	43	799	53	1	
140	0	1973	Sprague	175	43	2960	144	3	9
470	472	1973	American	425	43	11	12		
510	515	1973	Rockwell	310	43	96	53	3	5
120	0	1974	Rockwell	175	42	2678	148	17	4
130	0	1974	American	175	42	4963	151	22	
140	0	1974	Sprague	175	42	631	39		1
510	515	1974	Rockwell	310	42	56	21		1
120	0	1975	Rockwell	175	41	1848	103	7	3
130	0	1975	American	175	41	38	16		
140	0	1975	Sprague	175	41	737	99		4
510	515	1975	Rockwell	310	41	36	30	2	3
120	0	1976	Rockwell	175	40	1146	66	2	4
140	0	1976	Sprague	175	40	1119	72		3
510	515	1976	Rockwell	310	40	296	55	1	1
130	0	1976	American	175	40	1405	85	12	5
120	0	1977	Rockwell	175	39	1390	83	4	4
510	515	1977	Rockwell	310	39	167	36		3
520	0	1977	Rockwell	415	39	47	16		1
140	0	1977	Sprague	175	39	325	25		2
130	0	1977	American	175	39	3334	117	8	
120	0	1978	Rockwell	175	38	1505	106	5	5
125	0	1978	Rockwell	200	38	1627	78	3	
140	0	1978	Sprague	175	38	276	85		6
485	0	1978	American	800	38	9	8		
510	515	1978	Rockwell	310	38	144	40	1	
520	0	1978	Rockwell	415	38	41	16		
130	0	1978	American	175	38	1600	93	7	
120	0	1979	Rockwell	175	37	1687	76	3	5
130	0	1979	American	175	37	6496	226	14	5

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
510	515	1979	Rockwell	310	37	181	60	3	3
140	0	1979	Sprague	175	37	142	21		1
520	0	1979	Rockwell	415	37	86	31	1	2
125	0	1979	Rockwell	200	37	158	48	2	
120	0	1980	Rockwell	175	36	1068	98	5	1
130	0	1980	American	175	36	6311	239	22	1
140	0	1980	Sprague	175	36	346	33		2
505	507	1980	American	1000	36	10	8		
485	0	1980	American	800	36	30	14		
555	0	1980	American	310	36	79	31	1	
520	0	1980	Rockwell	415	36	78	43	2	
125	0	1980	Rockwell	200	36	1850	92	10	
510	515	1980	Rockwell	310	36	121	50	8	2
120	0	1981	Rockwell	175	35	744	93	7	2
130	0	1981	American	175	35	4679	150	24	2
140	0	1981	Sprague	175	35	648	40		
485	0	1981	American	800	35	35	27	1	1
505	507	1981	American	1000	35	16	11		1
510	515	1981	Rockwell	310	35	209	61	6	3
520	0	1981	Rockwell	415	35	235	42		3
125	0	1981	Rockwell	200	35	2503	88	9	3
555	0	1981	American	310	35	28	30	1	1
125	0	1982	Rockwell	200	34	3159	112	4	2
130	0	1982	American	175	34	3698	165	25	3
140	0	1982	Sprague	175	34	604	53	1	3
485	0	1982	American	800	34	61	48	5	
510	515	1982	Rockwell	310	34	90	32	1	3
120	0	1982	Rockwell	175	34	1200	82	9	1
470	472	1982	American	425	34	19	12		
520	0	1982	Rockwell	415	34	38	27	1	1
120	0	1983	Rockwell	175	33	1413	81	4	
125	0	1983	Rockwell	200	33	1822	63	1	
130	0	1983	American	175	33	3095	123	14	2
140	0	1983	Sprague	175	33	845	94	3	5
520	0	1983	Rockwell	415	33	21	20		1
470	472	1983	American	425	33	29	15		
555	0	1983	American	310	33	120	21		
485	0	1983	American	800	33	47	35	4	1
510	515	1983	Rockwell	310	33	137	52	4	4
125	0	1984	Rockwell	200	32	2168	70	2	1
130	0	1984	American	175	32	4906	165	12	5
140	0	1984	Sprague	175	32	721	89		3
485	0	1984	American	800	32	81	38		1
520	0	1984	Rockwell	415	32	17	19	1	
555	0	1984	American	310	32	221	24		1
470	472	1984	American	425	32	122	21		

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
120	0	1984	Rockwell	175	32	1482	93	8	2
510	515	1984	Rockwell	310	32	17	16	1	2
140	0	1985	Sprague	175	31	1182	64		8
555	0	1985	American	310	31	130	32		
560	0	1985	American	250	31	1486	43	1	1
120	0	1985	Rockwell	175	31	1989	90	7	3
130	0	1985	American	175	31	2126	84	13	3
470	472	1985	American	425	31	24	30	2	
120	0	1986	Rockwell	175	30	1345	62		1
125	0	1986	Rockwell	200	30	410	124	2	1
130	0	1986	American	175	30	4077	138	9	4
140	0	1986	Sprague	175	30	981	60		4
470	472	1986	American	425	30	71	31		
555	0	1986	American	310	30	88	40	1	
560	0	1986	American	250	30	6335	177	9	
510	515	1986	Rockwell	310	30	23	12		1
120	0	1987	Rockwell	175	29	2276	119	9	2
130	0	1987	American	175	29	6025	205	19	3
140	0	1987	Sprague	175	29	3034	132		8
470	472	1987	American	425	29	167	36		
485	0	1987	American	800	29	29	30	1	1
520	0	1987	Rockwell	415	29	44	30	1	2
560	0	1987	American	250	29	448	64	1	
125	0	1987	Rockwell	200	29	567	77	4	2
510	515	1987	Rockwell	310	29	236	46	1	5
470	472	1987	American	425	29	161	42		
555	0	1987	American	310	29	40	35	3	
120	0	1988	Rockwell	175	28	2239	88	3	2
125	0	1988	Rockwell	200	28	436	61	1	1
140	0	1988	Sprague	175	28	798	44		5
470	472	1988	American	425	28	76	19		
555	0	1988	American	310	28	9	7		
560	0	1988	American	250	28	3203	85		2
570	0	1988	Rockwell	275	28	544	26		1
520	0	1988	Rockwell	415	28	53	18		
130	0	1988	American	175	28	3188	114	15	2
520	0	1988	Rockwell	415	28	53	18		
585	0	1988	Sprague	250	28	186	22		
510	515	1988	Rockwell	310	28	140	20		1
590	0	1988	Lancaster	250	28	80	19		
120	0	1989	Rockwell	175	27	3589	128	3	3
125	0	1989	Rockwell	200	27	534	81	2	
130	0	1989	American	175	27	3320	158	7	2
140	0	1989	Sprague	175	27	776	47		2
470	472	1989	American	425	27	39	21		
555	0	1989	American	310	27	15	30	2	

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
560	0	1989	American	250	27	7136	218	4	5
590	0	1989	Lancaster	250	27	1346	64		1
480	486	1989	American	800	27	30	15		1
570	0	1989	Rockwell	275	27	777	23		1
510	515	1989	Rockwell	310	27	92	42	2	2
120	0	1990	Rockwell	175	26	3639	166	5	4
130	0	1990	American	175	26	3169	138	16	3
140	0	1990	Sprague	175	26	1043	99		8
470	472	1990	American	425	26	40	35	1	1
480	486	1990	American	800	26	30	18		
510	515	1990	Rockwell	310	26	271	60	6	4
560	0	1990	American	250	26	6435	186	1	7
570	0	1990	Rockwell	275	26	5451	126	8	1
590	0	1990	Lancaster	250	26	1346	66	1	
555	0	1990	American	310	26	20	20	2	
125	0	1990	Rockwell	200	26	301	71	10	
120	0	1991	Rockwell	175	25	3954	171	1	6
125	0	1991	Rockwell	200	25	724	34		1
130	0	1991	American	175	25	4991	138	4	3
140	0	1991	Sprague	175	25	462	57		5
470	472	1991	American	425	25	38	24	1	
510	515	1991	Rockwell	310	25	222	25		1
520	0	1991	Rockwell	415	25	85	44	2	
560	0	1991	American	250	25	5697	177	2	5
570	0	1991	Rockwell	275	25	2944	75	2	
585	0	1991	Sprague	250	25	755	32		
590	0	1991	Lancaster	250	25	1760	86		3
480	486	1991	American	800	25	51	36	4	
120	0	1992	Rockwell	175	24	6874	273	3	5
125	0	1992	Rockwell	200	24	647	26		
140	0	1992	Sprague	175	24	575	39	1	2
470	472	1992	American	425	24	154	37		1
480	486	1992	American	800	24	31	31	2	2
520	0	1992	Rockwell	415	24	78	23		
560	0	1992	American	250	24	4868	99		2
585	0	1992	Sprague	250	24	2134	78		
590	0	1992	Lancaster	250	24	2710	92		1
510	515	1992	Rockwell	310	24	133	55	3	4
130	0	1992	American	175	24	1435	92	8	
570	0	1992	Rockwell	275	24	133	56	5	
120	0	1993	Rockwell	175	23	2721	123	2	3
130	0	1993	American	175	23	3236	132	10	3
140	0	1993	Sprague	175	23	668	43		3
450	0	1993	Schlumberger	400	23	206	33		
500	502	1993	American	1000	23	7	11		
520	0	1993	Rockwell	415	23	39	16		1

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
560	0	1993	American	250	23	4141	107	2	2
585	0	1993	Sprague	250	23	3886	125		
590	0	1993	Lancaster	250	23	2874	81	1	
480	486	1993	American	800	23	54	35	2	1
470	472	1993	American	425	23	94	20		
510	515	1993	Rockwell	310	23	104	53	5	2
125	0	1993	Rockwell	200	23	492	76	7	1
570	0	1993	Rockwell	275	23	62	31	1	
120	0	1994	Rockwell	175	22	1412	68		2
130	0	1994	American	175	22	2688	114	9	
140	0	1994	Sprague	175	22	607	34		1
470	472	1994	American	425	22	239	63	3	
510	515	1994	Rockwell	310	22	45	37		4
560	0	1994	American	250	22	6231	130	2	
570	0	1994	Rockwell	275	22	5122	106	4	2
585	0	1994	Sprague	250	22	1678	55	1	
590	0	1994	Lancaster	250	22	4471	177	8	7
555	0	1994	American	310	22	10	9	1	
520	0	1994	Rockwell	415	22	98	20		
125	0	1994	Rockwell	200	22	392	77	6	1
120	0	1995	Rockwell	175	21	359	67	3	
125	0	1995	Rockwell	200	21	119	26		
130	0	1995	American	175	21	562	69	3	2
470	472	1995	American	425	21	99	22		
480	486	1995	American	800	21	31	18		1
510	515	1995	Rockwell	310	21	61	29	1	2
560	0	1995	American	250	21	8294	196	6	2
570	0	1995	Rockwell	275	21	6558	123	5	
585	0	1995	Sprague	250	21	1536	51		
590	0	1995	Lancaster	250	21	4938	152	5	10
485	0	1995	American	800	21	16	14	1	
520	0	1995	Rockwell	415	21	310	71	7	2
555	0	1995	American	310	21	9	7		
120	0	1996	Rockwell	175	20	808	95	4	3
125	0	1996	Rockwell	200	20	258	47	1	
300	540	1996	Rockwell	800	20	40	15		1
450	0	1996	Schlumberger	400	20	287	45		
480	486	1996	American	800	20	10	10	1	
485	0	1996	American	800	20	9	12		
510	515	1996	Rockwell	310	20	41	36	2	2
560	0	1996	American	250	20	11248	251	7	2
570	0	1996	Rockwell	275	20	7752	138	2	1
585	0	1996	Sprague	250	20	4493	103		2
590	0	1996	Lancaster	250	20	47	23		
470	472	1996	American	425	20	22	13		
520	0	1996	Rockwell	415	20	141	46	2	

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
130	0	1996	American	175	20	1064	39	1	1
120	0	1997	Rockwell	175	19	200	26		
130	0	1997	American	175	19	252	23		
140	0	1997	Sprague	175	19	481	54	1	3
300	540	1997	Rockwell	800	19	20	17		2
450	0	1997	Schlumberger	400	19	65	20		
485	0	1997	American	800	19	9	8		
510	515	1997	Rockwell	310	19	10	11		
520	0	1997	Rockwell	415	19	59	55	4	
560	0	1997	American	250	19	15250	299	30	1
570	0	1997	Rockwell	275	19	2387	44	1	
585	0	1997	Sprague	250	19	5991	141		2
590	0	1997	Lancaster	250	19	2149	50		2
555	0	1997	American	310	19	34	14		1
470	472	1997	American	425	19	327	53	2	
120	0	1998	Rockwell	175	18	77	21		
125	0	1998	Rockwell	200	18	88	27		
140	0	1998	Sprague	175	18	8	11		
450	0	1998	Schlumberger	400	18	465	53		
500	502	1998	American	1000	18	94	46	7	
560	0	1998	American	250	18	14590	278	13	1
570	0	1998	Rockwell	275	18	5508	85	1	1
585	0	1998	Sprague	250	18	5471	134		
270	0	1998	Schlumberger	1000	18	30	14		
470	472	1998	American	425	18	192	64	6	
590	0	1998	Lancaster	250	18	28	14		
125	0	1999	Rockwell	200	17	158	26		
450	0	1999	Schlumberger	400	17	104	22		
500	502	1999	American	1000	17	20	22	2	
560	0	1999	American	250	17	11340	170	1	1
570	0	1999	Rockwell	275	17	10631	197	12	2
590	0	1999	Lancaster	250	17	155	24		
520	0	1999	Rockwell	415	17	347	70	10	
585	0	1999	Sprague	250	17	250	23		
470	472	1999	American	425	17	255	51	2	
470	472	2000	American	425	16	425	78	3	
560	0	2000	American	250	16	11359	223	5	
570	0	2000	Rockwell	275	16	8557	122	12	2
595	600	2000	Schlumberger	250	16	3436	359	21	7
270	0	2000	Schlumberger	1000	16	21	12		
520	0	2000	Rockwell	415	16	92	43	7	
585	0	2000	Sprague	250	16	36	24	1	
480	486	2000	American	800	16	33	28	2	
270	0	2001	Schlumberger	1000	15	62	18		
470	472	2001	American	425	15	94	22		
480	486	2001	American	800	15	24	21	1	1

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
500	502	2001	American	1000	15	18	14		
560	0	2001	American	250	15	9512	162	2	1
570	0	2001	Rockwell	275	15	8774	119	1	1
585	0	2001	Sprague	250	15	66	30		
595	600	2001	Schlumberger	250	15	3899	314	3	3
270	0	2002	Schlumberger	1000	14	7	13		
300	540	2002	Rockwell	800	14	7	8		
470	472	2002	American	425	14	454	49	1	
480	486	2002	American	800	14	33	15		
500	502	2002	American	1000	14	59	18		
520	0	2002	Rockwell	415	14	96	20		
560	0	2002	American	250	14	8563	121	1	
570	0	2002	Rockwell	275	14	10920	161	2	2
585	0	2002	Sprague	250	14	59	78	2	
595	600	2002	Schlumberger	250	14	3364	287	1	10
450	0	2003	Schlumberger	400	13	29	19		
452	0	2003	Actaris	400	13	101	33	1	2
470	472	2003	American	425	13	217	66	4	
500	502	2003	American	1000	13	26	22		
520	0	2003	Rockwell	415	13	164	75	2	
570	0	2003	Rockwell	275	13	19996	274	4	2
585	0	2003	Sprague	250	13	14	19		
595	600	2003	Schlumberger	250	13	65	17		1
560	0	2003	American	250	13	469	55	2	
272	0	2004	Actaris	1000	12	15	37	2	
450	0	2004	Schlumberger	400	12	9	10		
470	472	2004	American	425	12	92	21		
520	0	2004	Rockwell	415	12	108	25		
570	0	2004	Rockwell	275	12	3633	56		2
572	0	2004	Invensys	275	12	14040	206	12	
585	0	2004	Sprague	250	12	63	29		
595	600	2004	Schlumberger	250	12	34	15		
452	0	2004	Actaris	400	12	452	52	2	3
300	540	2005	Rockwell	800	11	12	12		
450	0	2005	Schlumberger	400	11	8	7		
452	0	2005	Actaris	400	11	17	14		
470	472	2005	American	425	11	24	15		
471	0	2005	American	425	11	966	91	15	
520	0	2005	Rockwell	415	11	54	20		
560	0	2005	American	250	11	79	32	1	1
570	0	2005	Rockwell	275	11	13	9		
572	0	2005	Invensys	275	11	24940	357	27	1
561	0	2005	American	250	11	1654	88	13	
505	507	2006	American	1000	10	584	85	12	
561	0	2006	American	250	10	21711	366	10	1
572	0	2006	Invensys	275	10	8221	143	10	1



Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
470	472	2006	American	425	10	39	31	1	
560	0	2006	American	250	10	661	24		
130	0	2007	American	175	9	3			
140	0	2007	Sprague	175	9	1			
470	472	2007	American	425	9	250	22		3
471	0	2007	American	425	9	551	35	1	
475	0	2007	American	630	9	655	30	3	
480	486	2007	American	800	9	1			
490	0	2007	Sprague	305	9	1			
505	507	2007	American	1000	9	413	58	7	
520	0	2007	Rockwell	415	9	1	1		
560	0	2007	American	250	9	210	12		
561	0	2007	American	250	9	22239	418	25	
570	0	2007	Rockwell	275	9	7			
572	0	2007	Invensys	275	9	24			
580	0	2007	Sprague	175	9	1			
120	0	2008	Rockwell	175	8	3			
125	0	2008	Rockwell	200	8	5			
130	0	2008	American	175	8	3			
140	0	2008	Sprague	175	8	2			
452	0	2008	Actaris	400	8	1			
470	472	2008	American	425	8	23			
471	0	2008	American	425	8	75	4		
505	507	2008	American	1000	8	379	29	5	
510	515	2008	Rockwell	310	8	1			
555	0	2008	American	310	8	1			
560	0	2008	American	250	8	6			
561	0	2008	American	250	8	23270	422	32	
570	0	2008	Rockwell	275	8	6	1		
572	0	2008	Invensys	275	8	78	1		
590	0	2008	Lancaster	250	8	1			
595	600	2008	Schlumberger	250	8	1			
120	0	2009	Rockwell	175	7	12	2	1	
125	0	2009	Rockwell	200	7	3			
130	0	2009	American	175	7	20			
140	0	2009	Sprague	175	7	2			
470	472	2009	American	425	7	4			
471	0	2009	American	425	7	4			
505	507	2009	American	1000	7	309	21	3	
510	515	2009	Rockwell	310	7	1			
520	0	2009	Rockwell	415	7	3			
555	0	2009	American	310	7	1			
561	0	2009	American	250	7	14425	234	18	
570	0	2009	Rockwell	275	7	17			
572	0	2009	Invensys	275	7	785	21		
585	0	2009	Sprague	250	7	5			



Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
590	0	2009	Lancaster	250	7	2	1		
120	0	2010	Rockwell	175	6	2			
470	472	2010	American	425	6	2			
471	0	2010	American	425	6	107	3		
475	0	2010	American	630	6	685	29		1
510	515	2010	Rockwell	310	6	1			
560	0	2010	American	250	6	2			
561	0	2010	American	250	6	10241	178	2	
570	0	2010	Rockwell	275	6	1	1		
572	0	2010	Invensys	275	6	17			
590	0	2010	Lancaster	250	6	2			
140	0	2011	Sprague	175	5	2			
471	0	2011	American	425	5	112	13		
475	0	2011	American	630	5	1086	38		
485	0	2011	American	800	5	1			
505	507	2011	American	1000	5	397	48	1	
510	515	2011	Rockwell	310	5	1			
520	0	2011	Rockwell	415	5	1			
560	0	2011	American	250	5	3			
561	0	2011	American	250	5	10783	178		
570	0	2011	Rockwell	275	5	1			
572	0	2011	Invensys	275	5	90	2		
590	0	2011	Lancaster	250	5	1	1		
120	0	2012	Rockwell	175	4	1	4		
470	472	2012	American	425	4	1			
471	0	2012	American	425	4	10			
475	0	2012	American	630	4	1494	54	1	
505	507	2012	American	1000	4	422	40	1	
555	0	2012	American	310	4	1	1		
560	0	2012	American	250	4	6	5		
561	0	2012	American	250	4	12083	235		1
570	0	2012	Rockwell	275	4	4	3		
572	0	2012	Invensys	275	4	4	1		
595	600	2012	Schlumberger	250	4	1	3		
120	0	2013	Rockwell	175	3	1	3		
130	0	2013	American	175	3	1	1		
450	0	2013	Schlumberger	400	3	1	1		
475	0	2013	American	630	3	1559	66		
505	507	2013	American	1000	3	404	26		
510	515	2013	Rockwell	310	3	1	2		
560	0	2013	American	250	3	4	3		
561	0	2013	American	250	3	15487	238	3	
570	0	2013	Rockwell	275	3	1	3		
572	0	2013	Invensys	275	3	1	1		
120	0	2014	Rockwell	175	2	1	2		
130	0	2014	American	175	2	3	2		

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Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
475	0	2014	American	630	2	1606	46	1	
505	507	2014	American	1000	2	464	22		
510	515	2014	Rockwell	310	2	1			
560	0	2014	American	250	2	5	5		
561	0	2014	American	250	2	14839	133	1	
570	0	2014	Rockwell	275	2	2	3		
572	0	2014	Invensys	275	2	1	1		
585	0	2014	Sprague	250	2	2			
475	0	2015	American	630	1	1290	39		
505	507	2015	American	1000	1	374	14		
560	0	2015	American	250	1	1	8		
561	0	2015	American	250	1	18063	99	3	
570	0	2015	Rockwell	275	1	2	1		
572	0	2015	Invensys	275	1	3	1		
130	0	2016	American	175	0	2	6		
140	0	2016	Sprague	175	0	1	3		
475	0	2016	American	630	0	1665	10	1	
485	0	2016	American	800	0	1			
505	507	2016	American	1000	0	553	6	1	
561	0	2016	American	250	0	12661	32		
570	0	2016	Rockwell	275	0	2	2		
572	0	2016	Invensys	275	0	2			
590	0	2016	Lancaster	250	0	1	2		
595	600	2016	Schlumberger	250	0	1			
602	0	2016	ltron	250	0	4382	7		
475	0	2017	American	630	0	15			
561	0	2017	American	250	0	105			
602	0	2017	ltron	250	0	11			
130	0	2017	American	175	0	1	1		
470	472	2017	American	425	0	1			
505	507	2017	American	1000	0	46			
570	0	2017	Rockwell	275	0	1			
Total						729772	25144	1081	453



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

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family
120	0	2006	Rockwell	175	10	1
120	0	1967	Rockwell	175	49	67
520	0	1976	Rockwell	415	40	50
561	0	1978	American	250	38	1
505	507	1982	American	1000	34	8
555	0	1982	American	310	34	103
125	0	1985	Rockwell	200	31	1529
520	0	1986	Rockwell	415	30	6
572	0	1986	Invensys	275	30	1
585	0	1989	Sprague	250	27	1
555	0	1991	American	310	25	22
500	502	1992	American	1000	24	6
300	540	1999	Rockwell	800	17	12
500	502	2000	American	1000	16	33
120	0	2006	Rockwell	175	10	1
130	0	2006	American	175	10	4
140	0	2006	Sprague	175	10	1
450	0	2006	Schlumberger	400	10	1
452	0	2006	Actaris	400	10	4
471	0	2006	American	425	10	737
480	486	2006	American	800	10	3
520	0	2006	Rockwell	415	10	1
585	0	2006	Sprague	250	10	2
590	0	2006	Lancaster	250	10	2
480	486	2006	American	800	10	3
475	0	2006	American	630	10	624
570	0	2006	Rockwell	275	10	4
475	0	2008	American	630	8	1106
475	0	2009	American	630	7	877
505	507	2010	American	1000	6	206
560	0	2016	American	250	0	4
Total						5419