

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

In the Matter of the Application of)
MONTANA-DAKOTA UTILITIES CO.)
For Authority to Increase its)
Natural Gas Rates)

DOCKET NO. NG12-008

Workpapers

of

Jacob Pous

On behalf of

South Dakota Public Utilities Commission Staff

Diversified Utility Consultants, Inc.
1912 West Anderson Lane, Suite 202
Austin, TX 78757

October 1, 2013

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**MONTANA-DAKOTA UTILITIES CO.
GAS DIVISION**

Depreciation Study
as of December 31, 2008

000001



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Earl M. Robinson, CDP
Principal & Director

January 28, 2010

Mr. Paul Bienek
Montana-Dakota Utilities Company
400 North Fourth Street
Bismark, ND 58501

Dear Mr. Bienek:

Re: MDU Gas Depreciation Study

In accordance with your authorization, we have prepared a depreciation study related to the utility plant in service of Montana-Dakota Utilities Company - Gas Division as of December 31, 2008. Our findings and recommendations, together with supporting schedules and exhibits, are set forth in the accompanying report.

Summary schedules have been prepared to illustrate the impact of instituting the recommended annual depreciation rates as a basis for the Company's annual depreciation expense as compared to the rates presently utilized. The application of the present rates to the depreciable plant in service as of December 31, 2008 results in an annual depreciation expense of \$9,698,264. In comparison, the application of the proposed depreciation rates to the depreciable plant in service at December 31, 2008 results in an annual depreciation expense of \$10,224,058, which is a increase of \$525,793 from current rates. The composite annual depreciation rate under present rates is 3.85 percent, while the proposed pro forma composite depreciation rate is 4.06 percent.

Section 2 of our report contains the summary schedules showing the results of our service life and salvage studies and summaries of presently utilized depreciation rates. The subsequent sections of the report present a detailed outline of the methodology and procedures used in the study together with supporting calculations and analyses used in the development of the results. A detailed table of contents follows this letter.

Respectfully submitted,

A handwritten signature in black ink that reads 'Earl M. Robinson'.

EARL M. ROBINSON, CDP

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with an interpretation of ongoing and anticipated future events. Some of the revisions were not significant and typically reflect fine tuning of previously utilized depreciation rates while others were more substantial in nature. Several of the accounts did reflect more significant changes (as outlined in Section 4 of this report) from the previously utilized depreciation rates.

The most notable depreciation/amortization occurred relative to Account 376 - Mains, Account 380 - Services, Account 391.1 - Office Furniture and Equipment, Account 391.5 - Computer Equipment - Other and Account 392.20 - Transportation Equipment - Cars & Trucks.

The proposed depreciation rate for Account 376 – Mains, increased from 1.92 percent to 2.97 percent. The proposed depreciation rate is the result of combined changes of both the average service life and net salvage parameters for the various property categories that comprise the overall plant account. Based upon the Company's actual historical plant in service data individual service life parameters were estimated for each of the primary property groups (including Steel, Plastic, Valves, Manholes, and Bridge and River Crossings) as outlined in section 4 of the depreciation study report. The proposed average service life for each sub property group was changed in accordance with the life indication developed through an analysis of the Company's historical data and consideration of future expectations. The resulting proposed composite average service life of the various property groups is forty-seven (47) years, while the average service life underlying the present depreciation rate is an implicit forty-five (45) years. The future net salvage underlying the proposed depreciation rates is negative 50 percent while the future net salvage underlying the present depreciation rates is negative 60 percent. Notwithstanding the fact that both the estimated average service life was lengthen and the negative net salvage was reduced in developing the proposed depreciation rate, the resulting

Table 1

Montana-Dakota Utilities Company
Gas Division

Summary or Original Cost of Utility Plant in Service as of December 31, 2008
and Related Annual Depreciation Expense Under Present and Proposed Rates

Account No. (a)	Description (b)	Original Cost 12/31/08 (c)	Present Rates		Proposed Plant Only Rates		Proposed Gross Salv Rates		Proposed COR Rates		Total Proposed Rates		Net Change Depr. Exp. (n)
			Rate % (d)	Annual Accrual (e)	Rate % (f)	Annual Accrual (g)	Rate % (h)	Annual Accrual (i)	Rate % (j)	Annual Accrual (k)	Rate % (l)	Annual Accrual (m)	
DEPRECIABLE PLANT													
Distribution Plant													
374.20	Rights of Way	322,677.60	0.75%	2,420.08	1.39%	4,485.22	0.00%	0.00	0.00%	0.00	1.39%	4,485.22	2,065.14
375.00	Distr. Meas & Reg Station Structures	609,311.11	2.57%	15,659.30	1.52%	9,261.53	0.18%	1,066.76	1.07%	6,519.63	2.77%	16,877.92	1,218.62
Mains													
376.10	Mains-Steel	41,975,049.45	1.92%	805,920.95	1.77%	742,958.38	0.00%	0.00	1.07%	449,133.03	2.84%	1,192,091.40	386,170.45
376.20	Mains-Plastic	63,935,956.79	1.92%	1,227,570.41	1.99%	1,272,325.58	0.00%	0.00	1.06%	677,721.16	3.05%	1,950,046.74	722,476.33
378.30	Mains-Valves	447,328.09	1.92%	8,588.70	2.29%	10,243.81	0.00%	0.00	1.25%	5,591.60	3.54%	15,835.41	7,246.71
376.40	Mains-Manholes	69,919.28	1.92%	1,342.45	1.83%	1,279.52	0.00%	0.00	1.06%	741.14	2.89%	2,020.67	678.22
376.50	Mains-Bridge & River Crossings	19,818.03	1.92%	380.51	2.06%	408.25	0.00%	0.00	1.07%	212.05	3.13%	620.30	239.79
	Total Mains	106,448,073.65	1.92%	2,043,803.02	1.90%	2,027,215.54	0.00%	0.00	1.06%	1,133,398.58	2.97%	3,160,614.52	1,116,811.50
378.00	Meas & Reg Station Equip-General	2,140,308.63	2.96%	63,353.14	2.22%	47,514.85	0.00%	0.00	0.92%	19,690.84	3.14%	67,205.69	3,852.55
379.00	Meas & Reg Station Equip-City Gate	1,028,821.69	3.54%	36,420.29	2.81%	28,909.80	0.00%	0.00	0.94%	9,670.93	3.75%	38,580.82	2,160.53
Services													
380.10	Services-Steel	7,285,187.87	5.66%	412,341.53	2.48%	180,672.66	0.00%	0.00	7.17%	522,347.97	9.65%	703,020.63	290,679.00
380.20	Services-Plastic	42,650,273.23	5.66%	2,416,269.45	2.50%	1,067,256.83	0.00%	0.00	5.41%	2,309,543.78	7.91%	3,376,800.61	960,531.15
380.30	Farm & Fuel Lines	248,640.18	5.66%	14,073.03	3.34%	8,304.58	0.00%	0.00	7.67%	19,070.70	11.01%	27,375.28	13,302.25
	Total Services	80,224,101.28	5.66%	2,842,684.12	2.50%	1,256,234.07	0.00%	0.00	5.68%	2,850,962.45	8.18%	4,107,196.52	1,264,512.40
381.00	Meters	55,172,050.24	3.18%	1,759,988.40	2.91%	1,605,506.66	0.00%	0.00	0.62%	342,066.71	3.53%	1,947,573.37	187,584.97
383.00	Service Regulators	5,555,207.98	2.59%	143,879.89	2.16%	119,892.49	-0.39%	(21,665.31)	0.00%	0.00	1.77%	98,327.18	(45,552.71)
385.00	Industrial Meas. & Reg. Station Equip	875,376.89	3.04%	26,611.46	2.43%	21,271.66	0.35%	3,063.82	0.53%	4,639.50	3.31%	28,974.98	2,363.52
MISCELLANEOUS EQUIPMENT													
386.10	Misc Property on Customers Premise	1,679.84	5.19%	87.18	2.39%	40.15	0.00%	0.00	0.00%	0.00	2.39%	40.15	(47.03)
386.20	CNG Refueling station	261,880.34	3.70%	9,689.57	0.27%	707.08	0.00%	0.00	0.00%	0.00	0.27%	707.08	(8,982.49)
386.30	CNG Lease/Demo	0.00											
	TOTAL Account 386	263,560.18	3.71%	9,776.75	0.28%	747.23	0.00%	0.00	0.00%	0.00	0.28%	747.23	(9,029.52)
OTHER EQUIPMENT													
387.10	Cathodic Protection Equipment	1,737,817.71	5.75%	99,924.52	3.21%	55,783.95	0.00%	0.00	0.00%	0.00	3.21%	55,783.95	(44,140.57)
387.20	Other Distribution Equipment	588,025.51	1.42%	8,349.96	0.99%	5,821.45	0.00%	0.00	0.00%	0.00	0.99%	5,821.45	(2,528.51)
	TOTAL Account 387	2,325,843.22	4.56%	108,274.48	2.65%	61,605.40	0.00%	0.00	0.00%	0.00	2.65%	61,605.40	(46,669.08)
	TOTAL Distribution Plant	224,965,332.67	3.14%	7,052,870.93	2.30%	5,182,744.55	-0.01%	(17,504.73)	1.94%	4,366,949.04	4.24%	9,532,188.85	2,479,317.92
General Plant													
390.00	General Structures	5,835,295.28	3.73%	217,658.51	3.09%	180,310.62	-0.04%	(2,334.12)	0.41%	23,924.71	3.46%	201,901.22	(15,755.28)
OFFICE FURNITURE & EQUIPMENT													
391.10	Office Furniture & Equipment	415,861.93	4.97%	20,668.34	6.59%	27,412.62	0.00%	0.00	0.00%	0.00	6.59%	27,412.62	6,744.28
391.30	Computer Equipment - PC	828,118.21	26.02%	215,476.36	11.28%	93,383.50	0.00%	0.00	0.00%	0.00	11.28%	93,383.50	(122,092.86)
391.50	Other Computer Equipment	53,696.84	0.00%	0.00	4.97%	2,667.08	0.00%	0.00	0.00%	0.00	4.97%	2,667.08	2,667.08
	TOTAL Account 391	1,297,676.98	18.20%	236,144.70	9.51%	123,463.20	0.00%	0.00	0.00%	0.00	9.51%	123,463.20	(112,681.50)

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MONTANA-DAKOTA UTILITIES

Gas Division

General

This report sets forth the results of our study of the depreciable property of Montana-Dakota Utilities - Gas (MDU or the Company) as of December 31, 2008 and contains the basic parameters (recommended average service lives and life characteristics) for the proposed average remaining life depreciation rates. All average service lives set forth in this report are developed based upon plant in service as of December 31, 2008.

The scope of the study included an analysis of MDU's historical data through December 31, 2008, discussions with Company management and staff to identify prior and prospective factors affecting the Company's plant in service, as well as interpretation of past service life data experience and future life expectancies to determine the appropriate average service lives of the Company's surviving plant. The service lives and life characteristics resulting from the in-depth study were utilized together with the Company's plant in service and book depreciation reserve to determine the recommended Average Remaining Life (ARL) depreciation rates for the Company's plant in service as of December 31, 2008.

In preparing the study, the Company's historical investment data were studied using various service life analysis techniques. Further, discussions were held with the MDU's management to obtain an overview of the Company's facilities and to discuss

the general scope of operations together with other factors which could have a bearing on the service lives of the Company's property.

The Company maintains property records containing a summary of its fixed capital investments by property account. This investment data was analyzed and summarized by property group and/or sub group and vintage then utilized as a basis for the various depreciation calculations.

Depreciation Study Overview

There are numerous methods utilized to recover property investment depending upon the goal. For example, accelerated methods such as double declining balance and sum of years digits are methods used in tax accounting to motivate additional investments. Broad Group (BG) and Equal Life Group (ELG) are both Straight Line Grouping Procedures recognized and utilized by various regulatory jurisdictions depending upon the policy of the specific agency.

The Straight Line Group Method of depreciation utilized in this study to develop the recommended depreciation rates is the Broad Group Procedure together with the Average Remaining Life Technique.

The distinction between the Whole Life and Remaining Life Techniques is that under the Whole Life Technique, the depreciation rate is based on the recovery of the investment and average net salvage over the average service life of the property group. In comparison, under the Average Remaining Life Technique, the resulting annual depreciation rate incorporates the recovery of the investment (and future net salvage) less any recovery experienced to date over the average remaining life of the property group.

ACCOUNT – 376.10 Distribution Mains – Steel

Historical Experience

Plant Statistics Plant Balance = \$41,975,049
 Original Gross Additions = \$113,372,232 (Total Account)
 Oldest Surviving Vintage = 1904
 Retirements = \$6,061,120 (Total Account) or 5.3% of historical additions.

Experience Bands 1916 – 2008 (Simulated) 47-R4

Historic Net Salvage: (68-08)

Three Year Average Net Salvage Percent			<u>Full Depth</u>
<u>2004-06</u>	<u>2005-07</u>	<u>2006-08</u>	<u>1968-2008</u>
-27%	-35%	-25%	-32%

Gross Salvage Trend Analysis			
<u>20 Year</u>	<u>15 Year</u>	<u>10 Year</u>	<u>5 Year</u>
2%	0%	0%	0%

Forecasted Net Salvage: -92%

Plant Considerations/Future Expectations

This property group is comprised of the Company's investment and related experience of Steel Distribution Mains. While portions of this property class (bare steel) were originally installed during earlier years, coated and wrapped steel has continue to be installed for higher pressure and larger size requirements. The earlier vintage assets in this account have aged considerably. Likewise, due to the lack of serviceability of the older vintaged property (which are Bare Steel Mains) contained within the Steel Mains category, they are being replaced.

Life Analysis Method: Simulated Plant Analysis Method

Average Remaining Life Development: Full Mortality

Current Depreciation Parameters

ASL/Curve: 45-R3
 Net Salv: -60%

Proposed Depreciation Parameters

ASL/Curve: 47-R4
 Future Net Salv: -50%

	<u>New Rate @New Parameters</u>	<u>Old Rate @ Old Parameters</u>
Rate	2.84%	1.92%
Average Remaining Life	22.3 years	N/A

ACCOUNT – 376.20 Distribution Mains – Plastic

Historical Experience

Plant Statistics Plant Balance = \$63,935,959
 Original Gross Additions = \$113,372,232 (Total Account)
 Oldest Surviving Vintage = 1969
 Retirements = \$6,061,120 (Total Account) or 5.3% of historical additions.

Experience Bands 1916 – 2008 (Simulated) 47-R4

Historic Net Salvage: (68-08)

Three Year Average Net Salvage Percent			<u>Full Depth</u>
<u>2004-06</u>	<u>2005-07</u>	<u>2006-08</u>	<u>1968-2008</u>
-27%	-35%	-25%	-32%

Gross Salvage Trend Analysis			
<u>20 Year</u>	<u>15 Year</u>	<u>10 Year</u>	<u>5 Year</u>
2%	0%	0%	0%

Forecasted Net Salvage: -92%

Plant Considerations/Future Expectations

This property group investment is comprised of the Company’s investment and related experience of Plastic Distribution Mains and are typically related to the more recently installed portions of Mains. Studies of this class of property, in numerous completed depreciation studies, have identified that Plastic Mains routinely experience shorter lives than their metal counterparts. Such shorter lives are the product of higher levels of physical issues (e.g. physical damage, etc) impacting the mains as well as the fact that the Plastic mains have often been installed in areas that experience higher growth and replacements.

Life Analysis Method: Simulated Plant Analysis Method

Current Depreciation Parameters

ASL/Curve: 45-R3
 Net Salv: -60%

Proposed Depreciation Parameters

ASL/Curve: 47-R4
 Future Net Salv: -50%

	<u>New Rate @ New Parameters</u>	<u>Old Rate @ Old Parameters</u>
Rate	3.05%	1.92%
Average Remaining Life	33.4 years	N/A

ACCOUNT – 380.10 Services – Steel

Historical Experience

Plant Statistics Plant Balance = \$7,285,188
 Original Gross Additions = \$54,121,206 (Total Account)
 Oldest Surviving Vintage = 1928
 Retirements = \$3,625,013 (Total Account) or 6.7% of historical additions.

Experience Bands 1920– 2008 (Simulated) 40-R3

Historic Net Salvage: (68-08)

Three Year Average Net Salvage Percent			<u>Full Depth</u>
<u>2004-06</u>	<u>2005-07</u>	<u>2006-08</u>	<u>1968-2008</u>
-234%	-240%	-243%	-88%

Gross Salvage Trend Analysis			
<u>20 Year</u>	<u>15 Year</u>	<u>10 Year</u>	<u>5 Year</u>
0%	0%	0%	0%

Forecasted Net Salvage: -210%

Plant Considerations/Future Expectations

This property group is comprised of the Company's investment and related experience of Steel Services. The older vintage investments within the property group are related to Bare Steel Service which routinely experience higher replacement rates.

Life Analysis Method: Simulated Plant Analysis Method

Current Depreciation Parameters

ASL/Curve: 40-R2.5
 Net Salv: -175%

Proposed Depreciation Parameters

ASL/Curve: 40-R3
 Future Net Salv: -200%

	<u>New Rate @ New Parameters</u>	<u>Old Rate @ Old Parameters</u>
Rate	9.65%	5.66%
Average Remaining Life	13.4 years	N/A

ACCOUNT – 380.20 Services – Plastic

Historical Experience

Plant Statistics Plant Balance = \$42,690,273
 Original Gross Additions = \$54,121,206 (Total Account)
 Oldest Surviving Vintage = 1969
 Retirements = \$3,625,013 (Total Account) or 6.7% of historical additions.

Experience Bands 1920 – 2008 (Simulated) 40-R3

Historic Net Salvage: (68-08)

Three Year Average Net Salvage Percent			<u>Full Depth</u>
<u>2004-06</u>	<u>2005-07</u>	<u>2006-08</u>	<u>1968-2008</u>
-234%	-240%	-243%	-88%

Gross Salvage Trend Analysis			
<u>20 Year</u>	<u>15 Year</u>	<u>10 Year</u>	<u>5 Year</u>
0%	0%	0%	0%

Forecasted Net Salvage: -210%

Plant Considerations/Future Expectations

This property group is comprised of the Company’s investment and related experience of Plastic Services. The future service life of this asset class is anticipated to generally be reflective the recent experience.

Life Analysis Method: Simulated Plant Analysis Method

Current Depreciation Parameters

ASL/Curve: 40-R3
 Net Salv: -175%

Proposed Depreciation Parameters

ASL/Curve: 40-R3
 Future Net Salv: -200%

	<u>New Rate @ New Parameters</u>	<u>Old Rate @ Old Parameters</u>
Rate	7.91%	5.66%
Average Remaining Life	29.0 years	N/A

ACCOUNT – 380.30 Services – Farm & Fuel Lines

Historical Experience

Plant Statistics Plant Balance = \$248,640
 Original Gross Additions = \$54,121,206 (Total Account)
 Oldest Surviving Vintage = 1977
 Retirements = \$3,625,013 (Total Account) or 6.7% of historical additions.

Experience Bands Estimated 30-R1.5

Historic Net Salvage: (68-08)

Three Year Average Net Salvage Percent			<u>Full Depth</u>
<u>2004-06</u>	<u>2005-07</u>	<u>2006-08</u>	<u>1968-2008</u>
-234%	-240%	-243%	-88%

Gross Salvage Trend Analysis			
<u>20 Year</u>	<u>15 Year</u>	<u>10 Year</u>	<u>5 Year</u>
0	0%	0%	0%

Forecasted Net Salvage: -210%

Plant Considerations/Future Expectations

This property group is comprised of the Company’s investment in a limited amount of Farm and Fuel service lines. The future service life of this asset class is anticipated to generally be reflective the recent experience.

Life Analysis Method: Simulated Plant Analysis Method

Current Depreciation Parameters

ASL/Curve: 30-R1.5
 Net Salv: -175%

Proposed Depreciation Parameters

ASL/Curve: 30-R1.5
 Future Net Salv: -200%

	<u>New Rate @New Parameters</u>	<u>Old Rate @ Old Parameters</u>
Rate	11.01%	5.66%
Average Remaining Life	17.9 years	N/A

ACCOUNT – 381 Meters

Historical Experience

Plant Statistics Plant Balance = \$55,172,050
 Original Gross Additions = \$63,302,194
 Oldest Surviving Vintage = 1956
 Retirements = \$7,690,772 or 12.1% of historical additions.

Experience Bands 1933 - 2008 (Simulated) 35-R4

Historic Net Salvage: (68-08)

Three Year Average Net Salvage Percent			<u>Full Depth</u>
<u>2004-06</u>	<u>2005-07</u>	<u>2006-08</u>	<u>1968-2008</u>
-25%	-18%	-9%	7%

Gross Salvage Trend Analysis			
<u>20 Year</u>	<u>15 Year</u>	<u>10 Year</u>	<u>5 Year</u>
10%	15%	16%	0%

Forecasted Net Salvage: -19%

Plant Considerations/Future Expectations

While no specific consideration has been factored into the estimated average service life of meters, in future years the Company's Meter can be anticipated to be impact by Automated Meter Reading technology. It is anticipated that the Company will is investigate the benefits and cost of installing such a Meter system. Under a typical Meter upgrade model/program customer's Meters would routinely be replaced with new property to enhance the efficiency of the Meter reading task. Accordingly, the current service life being achieved by this property class can be anticipated to be materially impacted (shortened) in future years.

Life Analysis Method: Simulated Plant Analysis Method

Current Depreciation Parameters

ASL/Curve: 35-R2.5
 Net Salv: 0%

Proposed Depreciation Parameters

ASL/Curve: 35-R4
 Future Net Salv: -15%

	<u>New Rate @New Parameters</u>	<u>Old Rate @ Old Parameters</u>
Rate	3.53%	3.19%
Average Remaining Life	24.1 years	N/A

Montana-Dakota Utilities Company
Gas Division

376.00, 376.10, 376.20, 376.30, 376.40, 376.50

Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Annual Activity</u>							
1968	200,220.26	16,598.28	8.29%	26,859.47	13.41%	(10,261.19)	-5.12%
1969	194,137.09	15,939.46	8.21%	43,168.49	22.24%	(27,229.03)	-14.03%
1970	267,046.03	23,230.21	8.70%	46,950.89	17.58%	(23,720.68)	-8.88%
1971	177,113.50	13,833.58	7.81%	56,809.25	32.08%	(42,975.67)	-24.26%
1972	157,195.80	13,435.85	8.55%	42,912.41	27.30%	(29,476.56)	-18.75%
1973	135,609.90	13,644.75	10.06%	27,848.00	20.54%	(14,203.25)	-10.47%
1974	79,682.47	4,158.86	5.22%	33,340.09	41.84%	(29,181.23)	-36.62%
1975	127,632.18	7,857.70	6.16%	43,072.35	33.75%	(35,214.65)	-27.59%
1976	195,879.62	9,760.39	4.98%	58,379.94	29.80%	(48,619.55)	-24.82%
1977	84,326.99	-3,773.39	-4.47%	25,097.78	29.76%	(28,871.17)	-34.24%
1978	116,364.42	10,832.09	9.31%	46,758.20	40.18%	(35,926.11)	-30.87%
1979	123,150.94	11,190.96	9.09%	36,244.68	29.43%	(25,053.72)	-20.34%
1980	88,516.03	3,479.59	3.93%	38,660.28	43.68%	(35,180.69)	-39.74%
1981	152,498.86	6,295.38	4.13%	46,691.72	30.62%	(40,396.34)	-26.49%
1982	127,572.66	-2,610.34	-2.05%	56,734.00	44.47%	(59,344.34)	-46.52%
1983	161,051.86	-581.14	-0.36%	104,094.70	64.63%	(104,675.84)	-65.00%
1984	185,619.78	-504.59	-0.27%	90,504.85	48.76%	(91,009.44)	-49.03%
1985	225.00	0.00	0.00%	94,130.78	1835.90%	(94,130.78)	-1835.90%
1986	164,397.14	-401.47	-0.24%	51,009.31	31.03%	(51,410.78)	-31.27%
1987	201,062.80	-231.86	-0.12%	90,443.45	44.98%	(90,675.31)	-45.10%
1988	281,758.55	-4,416.44	-1.57%	101,619.66	36.07%	(106,036.10)	-37.63%
1989	149,536.04	317.65	0.21%	69,598.16	46.54%	(69,280.51)	-46.33%
1990	92,157.64	-2,915.53	-3.16%	35,838.46	38.89%	(38,753.99)	-42.05%
1991	208,283.95	3,390.22	1.63%	72,574.40	34.84%	(69,184.18)	-33.22%
1992	261,776.43	-2,741.03	-1.05%	81,630.92	31.16%	(84,371.95)	-32.23%
1993	129,595.28	-3,971.17	-3.06%	60,124.58	46.39%	(64,095.75)	-49.46%
1994	362,204.01	-340.60	-0.09%	96,506.29	26.64%	(96,846.89)	-26.74%
1995	81,561.25	0.10	0.00%	22,341.68	27.39%	(22,341.58)	-27.39%

Montana-Dakota Utilities Company
Gas Division

376.00, 376.10, 376.20, 376.30, 376.40, 376.50

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Annual Activity</u>							
1996	312,810.33	767.42	0.25%	83,391.55	26.66%	(82,624.13)	-26.41%
1997	182,351.81	56,675.22	31.08%	0.00	0.00%	56,675.22	31.08%
1998	196,796.74	805.67	0.41%	76,362.06	38.80%	(75,556.39)	-38.39%
1999	186,253.29	0.00	0.00%	82,439.31	44.26%	(82,439.31)	-44.26%
2000	158,497.94	0.00	0.00%	61,044.27	38.51%	(61,044.27)	-38.51%
2001	171,123.71	0.00	0.00%	74,109.60	43.31%	(74,109.60)	-43.31%
2002	118,946.90	0.00	0.00%	70,046.34	58.89%	(70,046.34)	-58.89%
2003	234,006.15	0.00	0.00%	150,701.69	64.40%	(150,701.69)	-64.40%
2004	390,887.97	0.00	0.00%	80,069.14	20.48%	(80,069.14)	-20.48%
2005	169,754.69	0.00	0.00%	57,360.40	33.79%	(57,360.40)	-33.79%
2006	122,131.96	804.98	0.66%	50,615.34	41.44%	(49,810.36)	-40.78%
2007	260,243.03	230.02	0.09%	85,572.48	32.88%	(85,342.46)	-32.79%
2008	443,390.53	155.02	0.03%	72,514.10	16.35%	(72,359.08)	-16.32%

Montana-Dakota Utilities Company
Gas Division

376.00, 376.10, 376.20, 376.30, 376.40, 376.50

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Three - Year Rolling Bands</u>							
1996 - 1998	691,958.88	58,248.31	8.42%	159,753.61	23.09%	(101,505.30)	-14.67%
1997 - 1999	565,401.84	57,480.89	10.17%	158,801.37	28.09%	(101,320.48)	-17.92%
1998 - 2000	541,547.97	805.67	0.15%	219,845.64	40.60%	(219,039.97)	-40.45%
1999 - 2001	515,874.94	0.00	0.00%	217,593.18	42.18%	(217,593.18)	-42.18%
2000 - 2002	448,568.55	0.00	0.00%	205,200.21	45.75%	(205,200.21)	-45.75%
2001 - 2003	524,076.76	0.00	0.00%	294,857.63	56.26%	(294,857.63)	-56.26%
2002 - 2004	743,841.02	0.00	0.00%	300,817.17	40.44%	(300,817.17)	-40.44%
2003 - 2005	794,648.81	0.00	0.00%	288,131.23	36.26%	(288,131.23)	-36.26%
2004 - 2006	682,774.62	804.98	0.12%	188,044.88	27.54%	(187,239.90)	-27.42%
2005 - 2007	552,129.68	1,035.00	0.19%	193,548.22	35.05%	(192,513.22)	-34.87%
2006 - 2008	825,765.52	1,190.02	0.14%	208,701.92	25.27%	(207,511.90)	-25.13%

**Montana-Dakota Utilities Company
Gas Division**

376.00, 376.10, 376.20, 376.30, 376.40, 376.50

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>

Three - Year Rolling Bands

1968 - 2008	7,453,371.53	190,915.84	2.56	2,544,171.07	34.13	(2,353,255.23)	-31.57
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Trend Analysis (End Year) 2008

*Based Upon Three - Year Rolling Averages

Annual Inflation Rate	2.75%
Average Service Life (ASL)	47.0
Average Retirement Age (Yrs)	10.2
Years To ASL	36.8
Inflation Factor At 2.75% to ASL	2.71

Gross Salvage
Linear Trend Analysis

1989-2008	20 - Year Trend	1.53%
1994-2008	15 - Year Trend	0.00%*
1999-2008	10 - Year Trend	0.00%*
2004-2008	5 - Year Trend	0.23%

*Forecasted Gross Salvage Calculates To Less Than 0.00%—Percentage Set To A Floor of 0.00%.

Forecasted

Gross Salvage	0.23%
(Five Year Trend)	
Cost Of Removal	92.64%
Net Salvage	-92.41%

Montana-Dakota Utilities Company

Gas Division

380.00, 380.10, 380.20, 380.30

Forecasted Future Net Salvage

Based Upon Experienced Net Salvage 1968 - 2008

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Annual Activity</u>							
1968	58,055.53	3,059.40	5.27%	27,723.99	47.75%	(24,664.59)	-42.48%
1969	55,853.48	845.59	1.51%	26,200.12	46.91%	(25,354.53)	-45.39%
1970	78,879.56	530.18	0.67%	23,001.10	29.16%	(22,470.92)	-28.49%
1971	52,774.35	860.28	1.67%	35,729.03	67.70%	(34,848.75)	-66.03%
1972	79,522.93	697.12	0.88%	32,010.82	40.25%	(31,313.70)	-39.38%
1973	65,093.43	0.00	0.00%	0.00	0.00%	0.00	0.00%
1974	64,653.14	596.73	0.92%	49,546.52	76.63%	(48,949.79)	-75.71%
1975	37,754.54	2,843.03	7.53%	50,159.99	132.86%	(47,316.96)	-125.33%
1976	68,213.75	0.00	0.00%	0.00	0.00%	0.00	0.00%
1977	192,462.86	0.00	0.00%	0.00	0.00%	0.00	0.00%
1978	-92,938.46	0.00	0.00%	0.00	0.00%	0.00	0.00%
1979	55,534.41	0.00	0.00%	0.00	0.00%	0.00	0.00%
1980	61,494.60	0.00	0.00%	0.00	0.00%	0.00	0.00%
1981	63,423.25	0.00	0.00%	0.00	0.00%	0.00	0.00%
1982	84,858.56	0.00	0.00%	0.00	0.00%	0.00	0.00%
1983	73,868.72	0.00	0.00%	0.00	0.00%	0.00	0.00%
1984	95,311.04	0.00	0.00%	0.00	0.00%	0.00	0.00%
1985	33,968.77	0.00	0.00%	0.00	0.00%	0.00	0.00%
1986	82,204.03	0.00	0.00%	0.00	0.00%	0.00	0.00%
1987	102,945.66	0.00	0.00%	0.00	0.00%	0.00	0.00%
1988	130,255.01	0.00	0.00%	0.00	0.00%	0.00	0.00%
1989	103,193.55	0.00	0.00%	0.00	0.00%	0.00	0.00%
1990	87,093.75	0.00	0.00%	0.00	0.00%	0.00	0.00%
1991	112,288.21	0.00	0.00%	0.00	0.00%	0.00	0.00%
1992	152,087.98	0.00	0.00%	0.00	0.00%	0.00	0.00%
1993	117,390.79	0.00	0.00%	0.00	0.00%	0.00	0.00%
1994	213,594.75	0.00	0.00%	0.00	0.00%	0.00	0.00%
1995	85,394.58	238.78	0.28%	132,997.10	155.74%	(132,758.32)	-155.46%

Montana-Dakota Utilities Company**Gas Division**

380.00, 380.10, 380.20, 380.30

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Annual Activity</u>							
1996	190,887.20	489.25	0.26%	196,474.55	102.93%	(195,985.30)	-102.67%
1997	147,018.12	274.30	0.19%	167,867.03	114.18%	(167,592.73)	-113.99%
1998	156,868.35	165.57	0.11%	232,839.48	148.43%	(232,673.91)	-148.32%
1999	129,601.17	0.00	0.00%	205,972.55	158.68%	(205,972.55)	-158.68%
2000	134,394.03	0.00	0.00%	200,260.66	149.01%	(200,260.66)	-149.01%
2001	123,831.18	31.47	0.03%	203,228.57	164.12%	(203,197.10)	-164.09%
2002	95,019.90	0.00	0.00%	198,438.09	208.84%	(198,438.09)	-208.84%
2003	183,649.47	2,265.98	1.38%	269,303.25	164.56%	(267,037.27)	-163.18%
2004	184,931.55	0.00	0.00%	371,150.10	200.70%	(371,150.10)	-200.70%
2005	91,049.72	78.72	0.09%	257,936.56	283.29%	(257,857.84)	-283.21%
2006	107,041.95	275.02	0.26%	265,998.27	248.50%	(265,723.25)	-248.24%
2007	173,205.75	46.31	0.03%	367,375.64	212.10%	(367,329.33)	-212.08%
2008	112,617.91	461.23	0.41%	322,736.26	286.58%	(322,277.03)	-286.17%

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Montana-Dakota Utilities Company**Gas Division**

380.00, 380.10, 380.20, 380.30

Forecasted Future Net Salvage

Based Upon Experienced Net Salvage 1968 - 2008

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Three - Year Rolling Bands</u>							
1968 - 1970	192,788.57	4,435.17	2.30%	76,925.21	39.90%	(72,490.04)	-37.60%
1969 - 1971	187,507.39	2,256.05	1.20%	84,930.25	45.29%	(82,674.20)	-44.09%
1970 - 1972	211,176.84	2,107.58	1.00%	90,740.95	42.97%	(88,633.37)	-41.97%
1971 - 1973	197,390.71	1,577.40	0.80%	67,739.85	34.32%	(66,162.45)	-33.52%
1972 - 1974	209,269.50	1,293.85	0.62%	81,557.34	38.97%	(80,263.49)	-38.35%
1973 - 1975	167,501.11	3,439.76	2.05%	99,706.51	59.53%	(96,266.75)	-57.47%
1974 - 1976	170,621.43	3,439.76	2.02%	99,706.51	58.44%	(96,266.75)	-56.42%
1975 - 1977	298,431.15	2,843.03	0.95%	50,159.99	16.81%	(47,316.96)	-15.86%
1976 - 1978	167,738.15	0.00	0.00%	0.00	0.00%	0.00	0.00%
1977 - 1979	155,058.81	0.00	0.00%	0.00	0.00%	0.00	0.00%
1978 - 1980	24,090.55	0.00	0.00%	0.00	0.00%	0.00	0.00%
1979 - 1981	180,452.26	0.00	0.00%	0.00	0.00%	0.00	0.00%
1980 - 1982	209,776.41	0.00	0.00%	0.00	0.00%	0.00	0.00%
1981 - 1983	222,150.53	0.00	0.00%	0.00	0.00%	0.00	0.00%
1982 - 1984	254,038.32	0.00	0.00%	0.00	0.00%	0.00	0.00%
1983 - 1985	203,148.53	0.00	0.00%	0.00	0.00%	0.00	0.00%
1984 - 1986	211,483.84	0.00	0.00%	0.00	0.00%	0.00	0.00%
1985 - 1987	219,118.46	0.00	0.00%	0.00	0.00%	0.00	0.00%
1986 - 1988	315,404.70	0.00	0.00%	0.00	0.00%	0.00	0.00%
1987 - 1989	336,394.22	0.00	0.00%	0.00	0.00%	0.00	0.00%
1988 - 1990	320,542.31	0.00	0.00%	0.00	0.00%	0.00	0.00%
1989 - 1991	302,575.51	0.00	0.00%	0.00	0.00%	0.00	0.00%
1990 - 1992	351,469.94	0.00	0.00%	0.00	0.00%	0.00	0.00%
1991 - 1993	381,766.96	0.00	0.00%	0.00	0.00%	0.00	0.00%
1992 - 1994	483,073.52	0.00	0.00%	0.00	0.00%	0.00	0.00%
1993 - 1995	416,380.12	238.78	0.06%	132,997.10	31.94%	(132,758.32)	-31.88%
1994 - 1996	469,876.53	728.03	0.15%	329,471.65	67.26%	(328,743.62)	-67.11%
1995 - 1997	423,299.90	1,002.33	0.24%	497,338.66	117.49%	(496,336.35)	-117.25%

Montana-Dakota Utilities Company
Gas Division

380.00, 380.10, 380.20, 380.30

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Three - Year Rolling Bands</u>							
1996 - 1998	494,773.67	929.12	0.19%	597,181.06	120.70%	(596,251.94)	-120.51%
1997 - 1999	433,687.64	439.87	0.10%	606,679.06	139.88%	(606,239.19)	-139.79%
1998 - 2000	421,063.55	165.57	0.04%	639,072.69	151.78%	(638,907.12)	-151.74%
1999 - 2001	388,026.38	31.47	0.01%	609,461.78	157.07%	(609,430.31)	-157.06%
2000 - 2002	353,245.11	31.47	0.01%	601,927.32	170.40%	(601,895.85)	-170.39%
2001 - 2003	382,500.55	2,297.45	0.60%	670,969.91	175.42%	(668,672.46)	-174.82%
2002 - 2004	443,600.92	2,265.98	0.51%	838,891.44	189.11%	(836,625.46)	-188.60%
2003 - 2005	439,630.74	2,344.70	0.53%	898,389.91	204.35%	(896,045.21)	-203.82%
2004 - 2006	383,023.22	353.74	0.09%	895,084.93	233.69%	(894,731.19)	-233.60%
2005 - 2007	371,297.42	400.05	0.11%	891,310.47	240.05%	(890,910.42)	-239.95%
2006 - 2008	392,865.61	782.56	0.20%	956,112.17	243.37%	(955,329.61)	-243.17%

Montana-Dakota Utilities Company

Gas Division

380.00, 380.10, 380.20, 380.30

**Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008**

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>

Three - Year Rolling Bands

1968 - 2008	4,125,549.07	13,778.96	0.33	3,636,951.68	88.16	(3,623,172.72)	-87.82
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Trend Analysis (End Year) 2008

*Based Upon Three - Year Rolling Averages

Annual Inflation Rate	2.75%
Average Service Life (ASL)	40.0
Average Retirement Age (Yrs)	8.0
Years To ASL	32.0
Inflation Factor At 2.75% to ASL	2.38

Gross Salvage
Linear Trend Analysis

1989-2008	20 - Year Trend	0.33%
1994-2008	15 - Year Trend	0.32%
1999-2008	10 - Year Trend	0.33%
2004-2008	5 - Year Trend	0.00% *

*Forecasted Gross Salvage Calculates To Less Than 0.00%--Percentage Set To A Floor of 0.00%.

Forecasted

Gross Salvage	0.00% *
(Five Year Trend)	
Cost Of Removal	209.83%
Net Salvage	-209.83%

Montana-Dakota Utilities Company
Gas Division
381.00 METERS

*Forecasted Future Net Salvage
 Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Annual Activity</u>							
1996	143,875.77	8,202.93	5.70%	0.00	0.00%	8,202.93	5.70%
1997	163,997.79	3,569.20	2.18%	0.00	0.00%	3,569.20	2.18%
1998	167,984.94	395.20	0.24%	0.00	0.00%	395.20	0.24%
1999	105,617.04	1,111.77	1.05%	0.00	0.00%	1,111.77	1.05%
2000	82,561.94	12,514.29	15.16%	0.00	0.00%	12,514.29	15.16%
2001	417,486.88	3,201.41	0.77%	92,372.21	22.13%	(89,170.80)	-21.36%
2002	1,907.40	755.86	39.63%	78.00	4.09%	677.86	35.54%
2003	13,397.63	10,850.29	80.99%	837.73	6.25%	10,012.56	74.73%
2004	29,662.11	13,191.45	44.47%	6,515.30	21.97%	6,676.15	22.51%
2005	1,342,411.55	35,501.30	2.64%	418,661.00	31.19%	(383,179.70)	-28.54%
2006	46,151.70	29,808.13	64.59%	6,552.00	14.20%	23,256.13	50.39%
2007	569,985.49	11,103.05	1.95%	0.00	0.00%	11,103.05	1.95%
2008	53,910.77	48,607.78	90.16%	143,105.00	265.45%	(94,497.22)	-175.28%

Montana-Dakota Utilities Company**Gas Division****381.00 METERS**

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>		
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	
<u>Three - Year Rolling Bands</u>								
1968 - 1970	261,995.34	64,662.94	24.68%	105.37	0.04%	64,557.57	24.64%	
1969 - 1971	285,977.58	89,269.59	31.22%	4.76	0.00%	89,264.83	31.21%	
1970 - 1972	302,203.33	96,799.57	32.03%	5.00	0.00%	96,794.57	32.03%	
1971 - 1973	321,115.38	107,511.50	33.48%	5.00	0.00%	107,506.50	33.48%	
1972 - 1974	310,248.18	114,170.05	36.80%	5.00	0.00%	114,165.05	36.80%	
1973 - 1975	371,516.36	148,512.22	39.97%	0.00	0.00%	148,512.22	39.97%	
1974 - 1976	403,999.51	174,785.11	43.26%	0.00	0.00%	174,785.11	43.26%	
1975 - 1977	373,200.64	147,840.87	39.61%	0.00	0.00%	147,840.87	39.61%	
1976 - 1978	338,842.96	137,109.91	40.46%	0.00	0.00%	137,109.91	40.46%	
1977 - 1979	351,448.94	141,516.14	40.27%	(43.43)	-0.01%	141,559.57	40.28%	
1978 - 1980	584,909.52	325,225.30	55.60%	34.16	0.01%	325,191.14	55.60%	
1979 - 1981	580,607.13	323,366.82	55.70%	34.16	0.01%	323,352.66	55.69%	
1980 - 1982	586,452.34	294,487.91	50.22%	(89.69)	-0.02%	294,577.60	50.23%	
1981 - 1983	443,531.54	112,762.68	25.42%	(190.01)	-0.04%	112,952.69	25.47%	
1982 - 1984	587,986.66	113,467.12	19.30%	(190.01)	-0.03%	113,657.13	19.33%	
1983 - 1985	439,823.57	77,640.96	17.65%	(22.73)	-0.01%	77,663.69	17.66%	
1984 - 1986	398,343.99	73,254.74	18.39%	0.00	0.00%	73,254.74	18.39%	
1985 - 1987	240,242.66	41,901.60	17.44%	0.00	0.00%	41,901.60	17.44%	
1986 - 1988	367,448.85	63,027.13	17.15%	0.00	0.00%	63,027.13	17.15%	
1987 - 1989	364,626.17	57,110.91	15.66%	0.00	0.00%	57,110.91	15.66%	
1988 - 1990	326,041.68	43,564.31	13.36%	0.00	0.00%	43,564.31	13.36%	
1989 - 1991	273,350.10	26,031.00	9.52%	0.00	0.00%	26,031.00	9.52%	
1990 - 1992	261,604.25	11,421.30	4.37%	0.00	0.00%	11,421.30	4.37%	
1991 - 1993	273,320.18	9,602.30	3.51%	0.00	0.00%	9,602.30	3.51%	
1992 - 1994	333,333.91	11,665.02	3.50%	28.34	0.01%	11,636.68	3.49%	
1993 - 1995	492,318.59	9,559.95	1.94%	28.34	0.01%	9,531.61	1.94%	
1994 - 1996	549,733.60	13,298.70	2.42%	28.34	0.01%	13,270.36	2.41%	
1995 - 1997	573,287.13	11,912.96	2.08%	0.00	0.00%	11,912.96	2.08%	

Montana-Dakota Utilities Company

Gas Division

381.00 METERS

Forecasted Future Net Salvage

Based Upon Experienced Net Salvage 1968 - 2008

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Three - Year Rolling Bands</u>							
1996 - 1998	475,858.50	12,167.33	2.56%	0.00	0.00%	12,167.33	2.56%
1997 - 1999	437,599.77	5,076.17	1.16%	0.00	0.00%	5,076.17	1.16%
1998 - 2000	356,163.92	14,021.26	3.94%	0.00	0.00%	14,021.26	3.94%
1999 - 2001	605,665.86	16,827.47	2.78%	92,372.21	15.25%	(75,544.74)	-12.47%
2000 - 2002	501,956.22	16,471.56	3.28%	92,450.21	18.42%	(75,978.65)	-15.14%
2001 - 2003	432,791.91	14,807.56	3.42%	93,287.94	21.55%	(78,480.38)	-18.13%
2002 - 2004	44,967.14	24,797.60	55.15%	7,431.03	16.53%	17,366.57	38.62%
2003 - 2005	1,385,471.29	59,543.04	4.30%	426,034.03	30.75%	(366,490.99)	-26.45%
2004 - 2006	1,418,225.36	78,500.88	5.54%	431,748.30	30.44%	(353,247.42)	-24.91%
2005 - 2007	1,958,548.74	76,412.48	3.90%	425,233.00	21.71%	(348,820.52)	-17.81%
2006 - 2008	670,047.96	89,518.96	13.36%	149,657.00	22.34%	(60,138.04)	-8.98%

**MONTANA-DAKOTA UTILITIES CO.
COMMON PLANT**

Depreciation Study
as of December 31, 2008

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AUS CONSULTANTS

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Earl M. Robinson, CDP
Principal & Director

January 28, 2010

Mr. Paul Bienek
Montana-Dakota Utilities Company
400 North Fourth Street
Bismark, ND 58501

Dear Mr. Bienek:

Re: MDU Common Plant Depr. Study

In accordance with your authorization, we have prepared a depreciation study related to the utility plant in service of Montana-Dakota Utilities Company - Common Plant as of December 31, 2008. Our findings and recommendations, together with supporting schedules and exhibits, are set forth in the accompanying report.

Summary schedules have been prepared to illustrate the impact of instituting the recommended annual depreciation rates as a basis for the Company's annual depreciation expense as compared to the rates presently utilized. The application of the present rates to the depreciable plant in service as of December 31, 2008 results in an annual depreciation expense of \$2,410,513. In comparison, the application of the proposed amortization/depreciation rates to the depreciable plant in service at December 31, 2008 results in an annual amortization/depreciation expense of \$1,677,496, which is a decrease of \$733,017 from current rates. The composite annual depreciation rate under present rates is 5.63 percent, while the proposed pro forma composite depreciation rate is 3.92 percent.

Section 2 of our report contains the summary schedules showing the results of our service life and salvage studies and summaries of presently utilized depreciation rates. The subsequent sections of the report present a detailed outline of the methodology and procedures used in the study together with supporting calculations and analyses used in the development of the results. A detailed table of contents follows this letter.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Earl M. Robinson', written in a cursive style.

EARL M. ROBINSON, CDP

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Table 2 - Plant Only

Montana-Dakota Utilities Company
Common Plant

Summary of Original Cost of Utility Plant in Service and Calculation of
Annual Depreciation Rates and Depreciation Expense Based Upon Utilization of
Book Depreciation Reserve and Average Remaining Lives as of December 31, 2008

Account No.	Description	Original Cost 12/31/08	Estimated Future Net Salvage % Amount	Original Cost Less Salvage	Book Depreciation Reserve	Net Original Cost Less Salvage	A.S.L./ Survivor Curve	Average Remaining Life	Annual Depreciation Accrual	Annual Depr. Rate	
(a)	(b)	(c)	(d) (e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	
DEPRECIABLE PLANT											
General Plant											
390.0	General Structures	26,865,571.47	0%	0.00	26,865,571.47	9,843,802.26	17,021,769.21	35-R1	25.2	675,467.03	2.51%
OFFICE FURNITURE & EQUIPMENT											
391.1	Office Furniture & Equipment	3,072,248.50	0%	0.00	3,072,248.50	1,438,080.62	1,634,167.88	N/A	N/A	207,227.63	6.75% *
391.2	Computer Equipment - Honeywell	0.00	0%	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00% *
391.3	Computer Equipment - PC	2,168,689.65	0%	0.00	2,168,689.65	2,130,757.41	37,932.24	N/A	N/A	157,939.09	7.28% *
391.4	Computer Equipment - Prime/Sun	7,552.14	0%	0.00	7,552.14	7,806.34	-254.20	N/A	N/A	51.47	0.68% *
391.5	Computer Equipment - Other	1,049,321.00	0%	0.00	1,049,321.00	467,503.87	581,817.13	N/A	N/A	193,100.24	18.40% *
	TOTAL Account 391	6,297,811.29		0.00	6,297,811.29	4,044,148.24	2,253,663.05			558,318.42	8.87%
TRANSPORTATION EQUIPMENT											
392.1	Transportation Equipment (Trailers)	113,614.30	0%	0.00	113,614.30	152,128.67	-38,514.37	24-L1	12.6	0.00	0.00% (1)
392.2	Transportation Equipment (Cars & Trucks)	5,326,632.43	0%	0.00	5,326,632.43	3,135,598.94	2,191,033.49	8-R2	4.5	486,896.33	9.14%
	TOTAL Account 392	5,440,246.73		0.00	5,440,246.73	3,287,727.61	2,152,519.12			486,896.33	8.95%
393.0	Stores Equipment	45,012.16	0%	0.00	45,012.16	16,459.85	28,552.31	N/A	N/A	1,494.05	3.32% *
TOOLS, SHOP & GARAGE EQ.											
394.1	Tools, Shop & Garage Equip. (Non-Unitized)	412,820.47	0%	0.00	412,820.47	161,007.16	251,813.31	N/A	N/A	27,719.23	6.71% *
394.3	Vehicle Maintenance Equipment	179,785.84	0%	0.00	179,785.84	80,709.96	99,075.88	N/A	N/A	9,591.43	5.33% *
394.4	Vehicle Refueling Equipment	612,112.44	0%	0.00	612,112.44	575,399.33	36,713.11	N/A	N/A	20,101.35	3.28% *
	TOTAL Account 394	1,204,718.75		0.00	1,204,718.75	817,116.45	387,602.30			57,412.01	4.77%
396.2	Power Operated Equipment	53,432.48	0%	0.00	53,432.48	7,669.90	45,762.58	10-R2	4.7	9,736.72	18.22%
COMMUNICATION EQUIPMENT											
397.1	Radio Communication Equip. (Fixed)	379,772.93	0%	0.00	379,772.93	233,451.80	146,321.13	N/A	N/A	17,844.86	4.70% *
397.2	Radio Communication Equip. (Mobile)	612,124.91	0%	0.00	612,124.91	466,747.57	145,377.34	N/A	N/A	25,251.65	4.13% *
397.3	General Telephone Communication Equip.	496,688.56	0%	0.00	496,688.56	368,104.63	128,583.93	N/A	N/A	38,662.59	7.78% *
397.5	Supervisory & Telemetering Equip.	41,918.98	0%	0.00	41,918.98	39,621.09	2,297.89	N/A	N/A	1,777.12	4.24% *

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analysis of historical retirements, current and future construction, historical experience and future expectations of salvage and cost of removal as related to plant investment. Service lives are affected by many different factors, some of which can be obtained from studying plant experience, others which may rely heavily on future expectations. When physical aspects are the controlling factor in determining the service life of property, historical experience is a valuable tool in selecting service lives. In the case where changing technology or a less costly alternative develops, then historical experience is of lesser value.

While various methods are available to study historical data, the principal methods utilized to determine average service lives for a Company's property are the Retirement Rate Method, the Simulated Plant Record Method, the Life Span Method, and the Judgment Method.

Retirement Rate Method - The Retirement Rate Method uses actual Company retirement experience to develop a survivor curve (Observed Life Table) which is used to determine the average service life being experienced in the account under study. Computer processing provides the opportunity to review various experience bands throughout the life of the account to observe trends and changes. For each experience band studied, the "observed life table" is constructed based on retirement experience within the band of years. In some cases, the total life of the account has not been achieved and the experienced life table, when plotted, results in a "stub curve." It is this "stub curve" or total life curve, if achieved, which is matched or fitted to a standard Survivor curve. The matching process is performed both by computer analysis, using a least squares technique, and by manually plotting observed life tables to which smooth

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Montana-Dakota Utilities Company
Common Plant

390.00 STRUCTURES & IMPROVEMENTS

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Annual Activity</u>							
1968	4,755.66	662.00	13.92%	40.08	0.84%	621.92	13.08%
1969	23,146.27	350.00	1.51%	978.69	4.23%	(628.69)	-2.72%
1970	9,535.95	5,550.94	58.21%	1,401.83	14.70%	4,149.11	43.51%
1971	55.50	816.00	1470.27%	1,457.69	2626.47%	(641.69)	-1156.20%
1972	89,020.14	20,850.79	23.42%	100.23	0.11%	20,750.56	23.31%
1973	823.15	556.00	67.55%	0.00	0.00%	556.00	67.55%
1974	6,649.36	0.00	0.00%	2,380.69	35.80%	(2,380.69)	-35.80%
1975	0.00	0.00	0.00%	0.00	0.00%	0.00	0.00%
1976	698.69	0.00	0.00%	17.84	2.55%	(17.84)	-2.55%
1977	33,563.08	10.00	0.03%	7,368.10	21.95%	(7,358.10)	-21.92%
1978	5,945.18	166.75	2.80%	470.81	7.92%	(304.06)	-5.11%
1979	361.83	-2.15	-0.59%	28.73	7.94%	(30.88)	-8.53%
1980	36,428.79	46,043.00	126.39%	0.00	0.00%	46,043.00	126.39%
1981	386.16	0.00	0.00%	0.00	0.00%	0.00	0.00%
1982	2,390.36	-35,198.49	-1472.52%	0.00	0.00%	(35,198.49)	-1472.52%
1983	151,268.18	52,055.19	34.41%	17,106.40	11.31%	34,948.79	23.10%
1984	0.00	239.87	0.00%	0.00	0.00%	239.87	0.00%
1985	29,321.00	0.00	0.00%	0.00	0.00%	0.00	0.00%
1986	353,205.79	462.87	0.13%	23,017.27	6.52%	(22,554.40)	-6.39%
1987	114,668.89	6.60	0.01%	178,550.90	155.71%	(178,544.30)	-155.70%
1988	1,065.81	20.00	1.88%	44,427.72	4168.45%	(44,407.72)	-4166.57%
1989	2,907.81	0.00	0.00%	1,361.75	46.83%	(1,361.75)	-46.83%
1990	1,179.28	0.00	0.00%	4,183.53	354.75%	(4,183.53)	-354.75%
1991	11,317.67	0.00	0.00%	21,000.00	185.55%	(21,000.00)	-185.55%
1992	6,400.00	0.00	0.00%	59,485.65	929.46%	(59,485.65)	-929.46%
1993	66,938.07	5,500.00	8.22%	11,015.00	16.46%	(5,515.00)	-8.24%
1994	76,339.95	52.50	0.07%	3,348.28	4.39%	(3,295.78)	-4.32%
1995	249,269.07	188,096.00	75.46%	48,516.38	19.46%	139,579.62	56.00%

Montana-Dakota Utilities Company
Common Plant

390.00 STRUCTURES & IMPROVEMENTS

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
	<u>Retirements</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Annual Activity</u>							
1996	174,572.37	26,753.21	15.32%	22,545.80	12.91%	4,207.41	2.41%
1997	97,788.56	45,363.50	46.39%	4,264.75	4.36%	41,098.75	42.03%
1998	255,811.74	0.00	0.00%	40,398.90	15.79%	(40,398.90)	-15.79%
1999	303,792.23	30,685.00	10.10%	12,226.33	4.02%	18,458.67	6.08%
2000	172,070.45	10,283.75	5.98%	30,934.95	17.98%	(20,651.20)	-12.00%
2001	109,759.98	0.00	0.00%	14,718.75	13.41%	(14,718.75)	-13.41%
2002	110,036.20	0.00	0.00%	29,201.73	26.54%	(29,201.73)	-26.54%
2003	16,416.00	0.00	0.00%	0.00	0.00%	0.00	0.00%
2004	1,053,662.14	639,099.00	60.66%	26,474.19	2.51%	612,624.81	58.14%
2005	-32,272.79	0.00	0.00%	225.00	0.00%	(225.00)	0.00%
2006	381,881.81	330,000.00	86.41%	9,972.50	2.61%	320,027.50	83.80%
2007	95,847.37	111,000.00	115.81%	14,204.68	14.82%	96,795.32	100.99%
2008	26,948.70	0.00	0.00%	2,070.30	7.68%	(2,070.30)	-7.68%

Montana-Dakota Utilities Company
Common Plant
390.00 STRUCTURES & IMPROVEMENTS
Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Three - Year Rolling Bands</u>							
1968 - 1970	37,437.88	6,562.94	17.53%	2,420.60	6.47%	4,142.34	11.06%
1969 - 1971	32,737.72	6,716.94	20.52%	3,838.21	11.72%	2,878.73	8.79%
1970 - 1972	98,611.59	27,217.73	27.60%	2,959.75	3.00%	24,257.98	24.60%
1971 - 1973	89,898.79	22,222.79	24.72%	1,557.92	1.73%	20,664.87	22.99%
1972 - 1974	96,492.65	21,406.79	22.18%	2,480.92	2.57%	18,925.87	19.61%
1973 - 1975	7,472.51	556.00	7.44%	2,380.69	31.86%	(1,824.69)	-24.42%
1974 - 1976	7,348.05	0.00	0.00%	2,398.53	32.64%	(2,398.53)	-32.64%
1975 - 1977	34,261.77	10.00	0.03%	7,385.94	21.56%	(7,375.94)	-21.53%
1976 - 1978	40,206.95	176.75	0.44%	7,856.75	19.54%	(7,680.00)	-19.10%
1977 - 1979	39,870.09	174.60	0.44%	7,867.64	19.73%	(7,693.04)	-19.30%
1978 - 1980	42,735.80	46,207.60	108.12%	499.54	1.17%	45,708.06	106.95%
1979 - 1981	37,176.78	46,040.85	123.84%	28.73	0.08%	46,012.12	123.77%
1980 - 1982	39,205.31	10,844.51	27.66%	0.00	0.00%	10,844.51	27.66%
1981 - 1983	154,044.70	16,856.70	10.94%	17,106.40	11.10%	(249.70)	-0.16%
1982 - 1984	153,658.54	17,096.57	11.13%	17,106.40	11.13%	(9.83)	-0.01%
1983 - 1985	180,589.18	52,295.06	28.96%	17,106.40	9.47%	35,188.66	19.49%
1984 - 1986	382,526.79	702.74	0.18%	23,017.27	6.02%	(22,314.53)	-5.83%
1985 - 1987	497,195.68	469.47	0.09%	201,568.17	40.54%	(201,098.70)	-40.45%
1986 - 1988	468,940.49	489.47	0.10%	245,995.89	52.46%	(245,506.42)	-52.35%
1987 - 1989	118,642.51	26.60	0.02%	224,340.37	189.09%	(224,313.77)	-189.07%
1988 - 1990	5,152.90	20.00	0.39%	49,973.00	969.80%	(49,953.00)	-969.42%
1989 - 1991	15,404.76	0.00	0.00%	26,545.28	172.32%	(26,545.28)	-172.32%
1990 - 1992	18,896.95	0.00	0.00%	84,669.18	448.06%	(84,669.18)	-448.06%
1991 - 1993	84,655.74	5,500.00	6.50%	91,500.65	108.09%	(86,000.65)	-101.59%
1992 - 1994	149,678.02	5,552.50	3.71%	73,848.93	49.34%	(68,296.43)	-45.63%
1993 - 1995	392,547.09	193,648.50	49.33%	62,879.66	16.02%	130,768.84	33.31%
1994 - 1996	500,181.39	214,901.71	42.96%	74,410.46	14.88%	140,491.25	28.09%
1995 - 1997	521,630.00	260,212.71	49.88%	75,326.93	14.44%	184,885.78	35.44%

Montana-Dakota Utilities Company
Common Plant
390.00 STRUCTURES & IMPROVEMENTS
Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008

<u>Year</u>	<u>Original Cost Of</u> <u>Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>
<u>Three - Year Rolling Bands</u>							
1996 - 1998	528,172.67	72,116.71	13.65%	67,209.45	12.72%	4,907.26	0.93%
1997 - 1999	657,392.53	76,048.50	11.57%	56,889.98	8.65%	19,158.52	2.91%
1998 - 2000	731,674.42	40,968.75	5.60%	83,560.18	11.42%	(42,591.43)	-5.82%
1999 - 2001	585,622.66	40,968.75	7.00%	57,880.03	9.88%	(16,911.28)	-2.89%
2000 - 2002	391,866.63	10,283.75	2.62%	74,855.43	19.10%	(64,571.68)	-16.48%
2001 - 2003	236,212.18	0.00	0.00%	43,920.48	18.59%	(43,920.48)	-18.59%
2002 - 2004	1,180,114.34	639,099.00	54.16%	55,675.92	4.72%	583,423.08	49.44%
2003 - 2005	1,037,805.35	639,099.00	61.58%	26,699.19	2.57%	612,399.81	59.01%
2004 - 2006	1,403,271.16	969,099.00	69.06%	36,671.69	2.61%	932,427.31	66.45%
2005 - 2007	445,456.39	441,000.00	99.00%	24,402.18	5.48%	416,597.82	93.52%
2006 - 2008	504,677.88	441,000.00	87.38%	26,247.48	5.20%	414,752.52	82.18%

**Montana-Dakota Utilities Company
Common Plant**

390.00 STRUCTURES & IMPROVEMENTS

*Forecasted Future Net Salvage
Based Upon Experienced Net Salvage 1968 - 2008*

<u>Year</u>	<u>Original Cost Of Retirements</u>	<u>Gross Salvage</u>		<u>Cost of Removal</u>		<u>Net Salvage</u>	
		<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>

Three - Year Rolling Bands

1968 - 2008	4,043,956.40	1,479,422.33	36.58	633,495.45	15.67	845,926.88	20.92
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Trend Analysis (End Year) 2008

*Based Upon Three - Year Rolling Averages

Annual Inflation Rate	2.75%
Average Service Life (ASL)	35.0
Average Retirement Age (Yrs)	8.4
Years To ASL	26.6
Inflation Factor At 2.75% to ASL	2.06

<u>Gross Salvage</u>		
<u>Linear Trend Analysis</u>		
1989-2008	20 - Year Trend	67.87%
1994-2008	15 - Year Trend	70.21%
1999-2008	10 - Year Trend	102.38%
2004-2008	5 - Year Trend	105.40%

Forecasted

Gross Salvage	105.40%
(Five Year Trend)	
Cost Of Removal	32.22%
Net Salvage	73.18%

BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

In the Matter of the Application of)
MONTANA-DAKOTA UTILITIES CO.,)
a Division of MDU Resources Group,) Docket No. NG12-__
Inc., for Authority to Establish)
Increased Rates for Natural Gas)
Service

DIRECT TESTIMONY AND EXHIBITS

OF

EARL M. ROBINSON

On The Subject of Depreciation

DEPRECIATION

000035

1 common plant assets as of December 31, 2008. Reports of my review
2 and analyses are contained in Exhibit No. ___(EMR-1), titled "Montana-
3 Dakota Utilities Co-Gas Division Depreciation Study as of December 31,
4 2008" and Exhibit No.__(EMR-2), the "Montana-Dakota Utilities Co-
5 Common Plant Depreciation Study as of December 31, 2008". In
6 preparing the report, I investigated and analyzed the Company's historical
7 plant data and reviewed the Company's past experience and future
8 expectations to determine the remaining lives of the Company's gas and
9 common plant assets. The studies utilized the resulting remaining lives,
10 the results of a salvage analysis, the Company's vintaged plant in service
11 investment and depreciation reserve to develop recommended average
12 remaining life depreciation rates and depreciation expense related to the
13 Company's plant in service.

14 III. BACKGROUND

15 **Q4. How is depreciation defined?**

16 **A.** Depreciation is defined in the 1996 NARUC "Public Utility Depreciation
17 Practices" publication as follows: "Depreciation, as applied to depreciable
18 utility plant, means the loss in service value not restored by current
19 maintenance, incurred in connection with the consumption or prospective
20 retirement of utility plant in the course of service from causes which are
21 known to be in current operation and against which the utility is not
22 protected by insurance. Among the causes to be given consideration are

1 compiled through December 31, 2008, which contains detailed vintage
2 level information, was used to develop observed life tables. The
3 development of the observed life tables from the historical information was
4 completed by grouping like aged investments within each property
5 category and identifying the level of retirements that occur through each
6 successive age to develop the applicable observed life tables. The
7 resulting observed lives were then fitted to standard Iowa Curves to
8 estimate each property group's historically achieved average service life.

9 Likewise, the net salvage database was used as a basis to identify
10 historical experience and trends and to determine each property group's
11 recommended net salvage factors. This was accomplished by preparing
12 various three year rolling band analyses of salvage components as well as
13 a forecast based on the Company's historical salvage experience.

14 **Q9. In the preparation of the depreciation study, have you utilized**
15 **information from additional sources when estimating service life and**
16 **salvage parameters?**

17 **A.** Yes. In addition to the historical data obtained from the Company's books
18 and records, information was obtained from Company personnel relative
19 to current operations and future expectations with respect to depreciation.
20 Discussions were held with Company planning and operations
21 management. In addition, physical inspections were also conducted of
22 various representative sites of the Company's operating property.

1 **Q12. Are there standard methods utilized to complete a service life**
2 **analysis of a company's historical property investments?**

3 **A.** Yes. As discussed in Section 3 of the depreciation study report as well as
4 later in this testimony, the two most common methods are the Retirement
5 Rate Method and the Simulated Plant Record Method. The method
6 chosen to study a company's historical data is dependent upon whether
7 aged or un-aged data is available. If specific aged data is available, the
8 Retirement Rate Method is used. If only un-aged data is available, the
9 Simulated Plant Record Method is used.

10 **Q13. Were your studies prepared utilizing one of these accepted standard**
11 **methods?**

12 **A.** Yes. The Company maintains aged plant records. Therefore, the
13 Retirement Rate Method was utilized in the depreciation studies of the
14 Company's property.

15 **V. METHODS, PROCUDURES & TECHNIQUES**

16 **Q14. Please describe the depreciation methods, procedures, and**
17 **techniques commonly utilized to develop depreciation rates for**
18 **utility property.**

19 **A.** Inherent in all depreciation calculations is an overall method, such as the
20 Straight Line Method (which is the most widely used approach within the
21 utility industry) to depreciate property. Other methods available to develop
22 average service lives and depreciation rates are accelerated and/or

1 deferral approaches such as the Sum of the Years Digits Method or
2 Sinking Fund Method.

3 In addition, there are several procedures that can be used to
4 arrange or group property by sub-groups of vintages to develop applicable
5 service lives. These procedures include the Broad Group, the Equal Life
6 Group and other procedures. Due to the existence of very large quantities
7 of property units within utility operating property, utility property is typically
8 grouped into homogeneous categories as opposed to being depreciated
9 on an individual unit basis. While the Equal Life Group procedure is
10 viewed as being the more definitive procedure for identifying the life
11 characteristics of utility property and as a basis for developing service
12 lives and depreciation rates, the Broad Group Procedure is more widely
13 utilized throughout the utility industry by regulatory commissions as a
14 basis for depreciation rates. My comments on the Equal Life Group
15 procedure are discussed later in my testimony.

16 The distinction between the two procedures is in the manner in
17 which recovery of the cost is achieved. Under the Broad Group Procedure,
18 the useful life and resulting depreciation rate is based upon the overall
19 average life of all of the property within the group, while under the Equal
20 Life Group Procedure, the useful life and resulting depreciation rate is
21 based upon separately recovering the investment in each equal life group

1 within the property category over the actual life of the property in that
2 group.

3 A brief example (with a property group that has three units/three
4 equal life groups of like property) will demonstrate the difference between
5 the two procedures. The example incorporates the assumption that unit
6 No. 1 (or equal life group of property) will retire after one year, unit No. 2
7 (or equal life group) will retire after two years, and Unit No. 3 (or equal life
8 group) will retire after three years. Accordingly, the average life of all
9 three (groups) is two (2) years $(1+2+3)/3$. Under the Broad Group
10 Procedure, the average useful life and resulting depreciation rate is
11 calculated based upon the two (2) year average life. The resulting annual
12 depreciation rates would be fifty (50) percent in every year. Conversely,
13 under the Equal Life Group Procedure, each year's average life and
14 resulting depreciation rate is calculated by using the period of time during
15 which the portion of the property group remains in service. Since unit No.
16 1 (or that portion of the account) was retired from service after one year,
17 the entire investment for that property is recovered over one (1) year.
18 Likewise, since unit No. 2 (or that portion of the account) will have a
19 service life of two years, the recovery of that portion of the account will
20 occur over two years. Lastly, unit No. 3 (or that portion of the account) is
21 recovered over three years. Hence, the useful average life for the
22 property group in the first year is 1.64 years and the first year's annual

1 depreciation rate is 61.11 percent. In the second year, the useful average
2 life of the surviving group is 2.4 years and the second year's depreciation
3 rate drops to 41.67 percent. This occurs because during the first year,
4 unit No. 1 (or that portion of the account) was fully recovered. Likewise, in
5 year three the useful life of the surviving group is 3 years and the
6 depreciation rate further drops to 33.33 percent. See the following Table
7 EMR-1 (BG and ELG).

<u>BG Average Life Calculation</u>					<u>BG Depreciation Rate Calculation</u>				
<u>Year</u>		<u>Investment</u>	<u>Recovery Period (Yrs)</u>	<u>ASL (Years)</u>	<u>Weight</u>	<u>Investment</u>	<u>Recovery Period (Yrs)</u>	<u>Annual Rate-%</u>	<u>Recovery Amount</u>
1	Group # 1	300	2		150	300	2		150
	Group # 2	300	2		150	300	2		150
	Group # 3	<u>300</u>	2		<u>150</u>	<u>300</u>	2		<u>150</u>
	Total	900		2.00	450	900		50.00%	450
2	Group # 1	0	0		0	0	0		0
	Group # 2	300	2		150	300	2		150
	Group # 3	<u>300</u>	2		<u>150</u>	<u>300</u>	2		<u>150</u>
	Total	600		2.00	300	600		50.00%	300
3	Group # 1	0	0		0	0	0		0
	Group # 2	0	0		0	0	0		0
	Group # 3	<u>300</u>	2		<u>150</u>	<u>300</u>	2		<u>150</u>
	Total	300		2.00	150	300		50.00%	150
Grand Total		1,800		2.00	900	1,800		50.00%	900

<u>ELG Average Life Calculation</u>					<u>ELG Depreciation Rate Calculation</u>				
<u>Year</u>		<u>Investment</u>	<u>Recovery Period (Yrs)</u>	<u>ASL (Years)</u>	<u>Weight</u>	<u>Investment</u>	<u>Recovery Period (Yrs)</u>	<u>Annual Rate-%</u>	<u>Recovery Amount</u>
1	Group # 1	300	1		300	300	1		300
	Group # 2	300	2		150	300	2		150
	Group # 3	<u>300</u>	3		<u>100</u>	<u>300</u>	3		<u>100</u>
	Total	900		1.64	550	900		61.11%	550
2	Group # 1	0	0		0	0	0		0
	Group # 2	300	2		150	300	2		150
	Group # 3	<u>300</u>	3		<u>100</u>	<u>300</u>	3		<u>100</u>
	Total	600		2.40	250	600		41.67%	250
3	Group # 1	0	0		0	0	0		0
	Group # 2	0	0		0	0	0		0
	Group # 3	<u>300</u>	3		<u>100</u>	<u>300</u>	3		<u>100</u>
	Total	300		3.00	100	300		33.33%	100
Grand Total		1,800		2.00	900	1,800		50.00%	900

1 Method with the Broad Group Procedure and the Average Remaining Life
2 Technique, or the Straight Line Method with the Equal Life Group
3 Procedure and Average Remaining Life Technique, or combinations
4 thereof.

5 **Q15. Which of these methods, procedures and techniques did you use in**
6 **your depreciation studies?**

7 **A.** The depreciation rates set forth in my depreciation study reports were
8 developed utilizing the Straight Line Method, the Broad Group Procedure,
9 and the Average Remaining Life Technique.

10 **Q16. Why did you utilize this method, procedure and technique?**

11 **A.** The Straight Line Method is widely understood, recognized, and utilized
12 almost exclusively for depreciating utility property.

13 The Broad Group Procedure recovers the Company's investments
14 over the average period of time in which the property is providing service
15 to the Company's customers. While I have used the Equal Life Group
16 procedure in other studies, I used the Broad Group Procedure in this study
17 because it is consistent with depreciation methods and procedures
18 generally accepted by regulatory Commissions and is the approach
19 underlying the Company's current depreciation rates.

20 Finally, the amount of annual depreciation must be based upon the
21 productive life over which the un-depreciated capital investment is
22 recovered (the Average Remaining Life Technique). The utilization of the
23 Average Remaining Life Technique to develop the applicable annual

1 identical service lives, but have lives which are dispersed over a range of
2 time. Utilizing group depreciation allows for a uniform application of
3 depreciation rates to groups of similar property in lieu of performing
4 extensive depreciation calculations on an item-by-item basis. The Broad
5 Group approach is a recognized common group depreciation procedure.

6 The Broad Group Procedure recovers the investment within the
7 asset group over the average service life of the property group. Given that
8 there is dispersion within each property group, there are variations of
9 retirement ages for the many investments within each property group.
10 That is, some properties retire early (before average service life) while
11 others retire at older ages (after average service life). This dispersion of
12 retirement ages defines the survival pattern experienced by the applicable
13 property group.

14 **Q18. What factors influence the determination of the recommended**
15 **annual depreciation rates included in your depreciation reports?**

16 **A.** The depreciation rates reflect four principal factors: (1) the plant in service
17 by vintage, (2) the book depreciation reserve, (3) the future net salvage,
18 and (4) the composite remaining life for the property group. Factors
19 considered in arriving at the service life are the average age, realized life
20 and the survival characteristics of the property. The net salvage estimate
21 is influenced by both past experience and future estimates of the cost of
22 removal and gross salvage amounts.

1 cost of the plant when first placed into service. This information, along
2 with knowledge about the average age of the historical retirements that
3 have occurred to date, allows an estimation of the level of retirement cost
4 that will be experienced by the Company at the end of each property
5 group's useful life. The study methodology utilized has been extensively
6 set forth in depreciation textbooks and has been the accepted practice by
7 depreciation professionals for many decades. Furthermore, the cost of
8 removal analysis is the current standard practice used for mass assets by
9 essentially all depreciation professionals in estimating future net salvage
10 for the purpose of identifying the applicable depreciation rate for a
11 property group. There is a direct relationship between the installation of
12 specific plant and its corresponding removal. The installation is its
13 beginning of life cost while the removal is its end of life cost. Also, it is
14 important to note that Average Remaining Life depreciation rates
15 incorporate future net salvage which is typically more representative of
16 recent versus long-term historical average net salvage.

17 The Company's historical net salvage experience was analyzed to
18 identify the historical net salvage factor for each applicable property group
19 and is included in Section 7 of the study. This analysis routinely finds that
20 historical retirements have occurred at average ages significantly shorter
21 than the property group's average service life. The occurrence of
22 historical retirements at an age which is significantly younger than the
23 average service life of the property category demonstrates that the

1 current and future construction technology, historical experience and
2 future expectations of salvage and the cost of removal.

3 Service lives are affected by many different factors, some of which
4 can be determined from studying past experience, others of which must
5 rely heavily on future expectations. When physical characteristics are the
6 controlling factor in determining the service life of property, historical
7 experience is a useful tool in selecting service lives. In cases where there
8 are changes in technology, regulatory requirements, Company policy or
9 the development of a less costly alternative, historical experience is of
10 lesser or little value. However, even when considering physical factors,
11 the future lives of various properties may vary from those experienced in
12 the recent past.

13 While a number of methods are available to study historical data,
14 as I mentioned previously, the two methods most commonly utilized to
15 determine average service lives for a company's property are the
16 Retirement Rate Method and the Simulated Plant Record Method. Given
17 that the Company does not have complete historical vintage based
18 investment records, it was required that the Simulated Plant Record
19 Method be used to analyze the past historical data. The Company is
20 currently in the process of implementing a new property record system
21 which will enable increased use of actuarial study analysis in future years.

22 **Q24. Please explain further the use of the retirement rate method.**

1 A. With this method of analysis, the Company's actuarial service life data,
2 which is sorted by age, is used to develop a survivor curve (observed life
3 table). This survivor curve is the basis upon which smooth curves
4 (standard Iowa Curves) are matched or fitted to then determine the
5 average service life being experienced by the property account under
6 study. Computer processing provides the capability to review various
7 experience bands throughout the life of the account to observe trends and
8 changes. For each experience band analysis, an "observed life table" is
9 constructed using the exposure and retirement experience within the
10 selected band of years. In some cases, the total life cycle of the property
11 has not been achieved and the experienced life table, when plotted,
12 results in a "stub curve." It is the "stub curve," or the total life curve, if the
13 total life curve is achieved, which is matched or fitted to the standard Iowa
14 Curves. The matching process is performed both by computer analysis,
15 using a least squares technique, and by overlaying the observed life
16 tables on the selected smooth curves for visual reference. The fitted
17 smooth curve is a benchmark which provides a basis to determine the
18 estimated average service life for the property group under study.

19 **Q25. Do the depreciation study reports contain charts which compare the**
20 **analysis of the Company's actual historical data to the service life**
21 **parameters you are proposing as a basis for your recommended**
22 **annual depreciation rates?**

000047

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

6-32. Please provide a detailed narrative explaining specifically how the 47R4 life-curve combination was selected for Accounts 376.1 and 376.2 – Mains Steel and Plastic, respectively. To the extent SPR results were relied upon to any extent, provide all ranking criteria for curve results, as well as full justification for which band analysis was relied upon, and why the results of other bands were not relied on.

Response:

The raw data is the basic information required to make any estimate of average service life as well as to calculate the plotted actual versus simulated survivors. Without such raw data life analysis or calculations cannot be performed, hence the raw data is the basic depreciation workpapers. SPR analysis and application software, which any analyst completing depreciation studies should have, is simply a working tool used to perform a variety of calculations on the data.

Notwithstanding the above discussion, please see Attachment A for a schedule listing numerous band analysis for Account 376 Mains.

Due to the variation of data over time, none of the Iowa dispersions provided a good or better fit for the overall experience band. Conversely, for essentially all the numerous 5 year historic bands, the R4 curve provided an excellent fit plus the REI was 100% indicating that the entire curve was used in the analysis. Given that the R4 curve was an excellent fit for the various individual experience bands the life of 47 years from the overall band was estimated for the property group. The range of indicated average service lives under the R4 curve for the many study bands was from approximately 29 years to 51.50 years with the 51.50 years being the only one study band that was greater than the 47 years proposed in the depreciation study for Account 376 Mains.

The full range of data analysis was reviewed and considered.

Certainly such indexes are viewed when completing the analysis. Such measures are related to goodness of fit of the historical data. Blind and radical adherence to such criteria in forecasting average service lives for a property group makes the presumption that the future average service life parameters will follow exactly the same path as historical. Under such blind acceptance, any and all historical bands studied should have produced exactly the same results, which is never the case.

At least two reasons exist as to why it is often not appropriate to use the mathematically best fit curve is that in many circumstances the best fit curve is often an "O" or "L" mode curve with an extremely long curve (e.g., 150 year average service life, etc.). The use of such a life and curve as the applicable future service life an

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

Response No. 6-32 (cont.)

account is routinely unwarranted both because the life is irrational with regard to the typical average service life experience of the account being studied, and secondly because the life characteristic (mode of curve) is not representative of what the property being studied would experience. Since property is placed into service with the expectation that its usefulness will continue for a longer length of time, with fewer retirements occurring early in the life of the property group, higher subscript and/or more right mode curves (with the exception of interim retirement curves, are routinely experienced and estimated for most property groups. Some limited quantities of property groups often are influenced by non age dependent factors such as vehicular accidents or highway projects and therefore demonstrate a lower subscript curve type, etc.

In the life analysis process, professional judgment is routinely used to select a life characteristic of the property class subsequent to which the analysis result for that characteristic is consider in the development of the estimate future average service life. That being said, life estimation process is not one of simple arithmetic calculation of historical data. While the historical retirement rate analysis and/or SPR analysis are valuable analytical tools, they are just that a tool to use and consider in the overall process. Professional judgment and experience, as well as consideration of current company factors and future events must be incorporated into the process.

The databases and study software are electronic and the numerous band analysis was run in real time during the course of completing the depreciation study. Plot outputs are provided in the depreciation study report for the service life parameters that were estimated for each of the property groups.

Please see Response No. 6-23 for a complete copy of the historic depreciation database. The SPR is one additional tool of various items that are reviewed to identify the applicable service life for each of the applicable property groups.

Montana-Dakota Utilities Company

Gas Division
376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 93
Interval Between Test Points - 1
First Test Point - 1916
Last Test Point - 2008

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O3	160.63 Yrs.	7.8182E+13	28.38	35.23	49.37
O1	99.16 Yrs.	8.0322E+13	28.00	35.71	46.64
SC	99.16 Yrs.	8.0322E+13	28.00	35.71	46.64
O2	111.41 Yrs.	8.0362E+13	28.00	35.72	46.66
R0.5	63.00 Yrs.	8.7591E+13	26.82	37.29	55.77
O4	201.00 Yrs.	9.7114E+13	30.00	40.00	45.52
S.5	79.81 Yrs.	9.8733E+13	25.26	39.59	59.47
R1	70.16 Yrs.	1.0260E+14	24.78	40.36	71.68
L0	88.46 Yrs.	1.0546E+14	24.44	40.82	57.66
L0.5	76.94 Yrs.	1.2098E+14	22.82	43.83	66.33
R1.5	62.34 Yrs.	1.2278E+14	22.65	44.15	87.59
S0	66.78 Yrs.	1.3071E+14	21.95	45.55	75.77
L1	67.88 Yrs.	1.4533E+14	20.82	48.03	75.61
S0.5	60.97 Yrs.	1.5086E+14	20.43	48.94	86.66
R2	56.41 Yrs.	1.5126E+14	20.41	49.00	98.01
L1.5	61.91 Yrs.	1.6504E+14	19.54	51.19	83.76
R2.5	52.81 Yrs.	1.7394E+14	19.03	52.55	99.86
S1	56.28 Yrs.	1.7830E+14	18.80	53.21	95.23
L2	57.03 Yrs.	1.9458E+14	17.99	55.58	90.43
S1.5	53.41 Yrs.	1.9673E+14	17.89	55.89	98.64
R3	49.91 Yrs.	2.0308E+14	17.61	56.78	100.00
S2	50.94 Yrs.	2.2016E+14	16.91	59.12	99.91
L3	51.25 Yrs.	2.3663E+14	16.32	61.29	98.13
R4	47.16 Yrs.	2.4919E+14	15.90	62.90	100.00
S3	48.13 Yrs.	2.5250E+14	15.79	63.31	100.00
L4	47.69 Yrs.	2.7038E+14	15.26	65.52	99.99
S4	46.28 Yrs.	2.8824E+14	14.78	67.65	100.00
L5	46.06 Yrs.	3.0255E+14	14.43	69.31	100.00
R5	45.69 Yrs.	3.0452E+14	14.38	69.53	100.00
S5	45.44 Yrs.	3.1907E+14	14.05	71.17	100.00
S6	44.97 Yrs.	3.4185E+14	13.57	73.67	100.00
SQ	45.00 Yrs.	3.6682E+14	13.10	76.31	100.00

Montana-Dakota Utilities Company**Gas Division**
376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008**

Simulated Balances Method

No. Of Test Points - 5
 Interval Between Test Points - 1
 First Test Point - 2004
 Last Test Point - 2008

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O3	191.50 Yrs.	4.6431E+11	313.94	3.19	37.33
SC	117.66 Yrs.	4.7667E+11	309.84	3.23	39.31
O1	117.66 Yrs.	4.7667E+11	309.84	3.23	39.31
O2	132.22 Yrs.	4.7688E+11	309.77	3.23	39.32
RD.5	97.28 Yrs.	5.2014E+11	296.61	3.37	45.53
S.5	92.81 Yrs.	5.8666E+11	279.29	3.58	49.80
L0	102.88 Yrs.	6.1534E+11	272.70	3.67	49.51
R1	80.78 Yrs.	6.1744E+11	272.24	3.67	58.20
L0.5	88.44 Yrs.	7.2526E+11	251.19	3.98	57.53
R1.5	70.75 Yrs.	7.6285E+11	244.92	4.08	74.61
S0	76.28 Yrs.	7.8373E+11	241.64	4.14	64.61
L1	77.25 Yrs.	8.9644E+11	225.94	4.43	66.71
S0.5	69.00 Yrs.	9.3829E+11	220.84	4.53	75.89
R2	63.31 Yrs.	9.8262E+11	215.80	4.63	90.44
L1.5	69.81 Yrs.	1.0546E+12	207.33	4.82	75.90
S1	63.19 Yrs.	1.1568E+12	198.89	5.03	86.90
R2.5	58.84 Yrs.	1.1857E+12	196.46	5.09	97.79
L2	63.88 Yrs.	1.3172E+12	186.39	5.37	84.01
S1.5	59.63 Yrs.	1.3338E+12	185.23	5.40	93.95
R3	55.22 Yrs.	1.4920E+12	175.13	5.71	100.00
S2	56.59 Yrs.	1.5633E+12	171.09	5.84	98.40
L3	56.75 Yrs.	1.8199E+12	158.57	6.31	94.90
S3	53.00 Yrs.	2.0277E+12	150.23	6.66	99.98
R4	51.50 Yrs.	2.2926E+12	141.28	7.08	100.00
L4	52.34 Yrs.	2.4176E+12	137.58	7.27	99.83
S4	50.53 Yrs.	2.8318E+12	127.12	7.87	100.00
L5	50.25 Yrs.	3.1333E+12	120.85	8.27	100.00
SQ	49.00 Yrs.	3.1771E+12	120.02	8.33	100.00
R5	49.59 Yrs.	3.5328E+12	113.81	8.79	100.00
S5	49.34 Yrs.	3.6599E+12	111.82	8.94	100.00
S6	48.88 Yrs.	4.0700E+12	106.04	9.43	100.00
O4	201.00 Yrs.	4.9913E+13	.00	.00	45.52

Montana-Dakota Utilities Company**Gas Division**
376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008****Simulated Balances Method**

No. Of Test Points - 6
 Interval Between Test Points - 1
 First Test Point - 1999
 Last Test Point - 2003

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O3	172.88 Yrs.	5.9937E+11	227.46	4.40	40.78
SC	106.38 Yrs.	6.1502E+11	224.55	4.45	43.48
O1	106.38 Yrs.	6.1502E+11	224.55	4.45	43.48
O2	119.53 Yrs.	6.1537E+11	224.48	4.45	43.49
R0.5	86.31 Yrs.	6.6981E+11	215.17	4.65	51.51
S.5	84.50 Yrs.	7.5964E+11	202.05	4.95	55.65
R1	73.78 Yrs.	7.8759E+11	198.43	5.04	66.69
L0	93.73 Yrs.	8.2139E+11	194.30	5.15	54.46
LD.5	80.94 Yrs.	9.3769E+11	181.85	5.50	63.10
R1.5	66.00 Yrs.	9.4951E+11	180.72	5.53	63.63
S0	69.97 Yrs.	1.0171E+12	174.61	5.73	71.80
L1	70.87 Yrs.	1.1120E+12	166.99	5.99	72.58
S0.5	63.50 Yrs.	1.1727E+12	162.62	6.15	83.27
R2	56.44 Yrs.	1.1807E+12	162.06	6.17	86.31
L1.5	64.31 Yrs.	1.2892E+12	155.09	6.45	81.37
R2.5	54.44 Yrs.	1.3750E+12	150.18	6.66	99.58
S1	56.34 Yrs.	1.3830E+12	149.74	6.68	93.02
S1.5	55.16 Yrs.	1.5523E+12	141.34	7.08	97.67
L2	58.97 Yrs.	1.5525E+12	141.33	7.08	88.68
R3	51.13 Yrs.	1.6722E+12	136.18	7.34	100.00
S2	52.41 Yrs.	1.7696E+12	132.38	7.55	99.75
L3	52.50 Yrs.	2.0435E+12	123.19	8.12	97.54
S3	49.09 Yrs.	2.2323E+12	117.86	8.48	100.00
R4	47.69 Yrs.	2.4669E+12	112.12	8.92	100.00
L4	48.47 Yrs.	2.6484E+12	108.21	9.24	99.98
S4	46.75 Yrs.	3.0380E+12	101.03	9.90	100.00
L5	46.50 Yrs.	3.3918E+12	95.62	10.46	100.00
R5	45.84 Yrs.	3.7751E+12	90.63	11.03	100.00
S5	45.66 Yrs.	3.9169E+12	88.98	11.24	100.00
S6	45.19 Yrs.	4.4369E+12	83.60	11.96	100.00
SQ	45.00 Yrs.	5.6349E+12	74.18	13.48	100.00
O4	201.00 Yrs.	1.4655E+13	.00	.00	45.52

Montana-Dakota Utilities Company

Gas Division

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
Interval Between Test Points - 1
First Test Point - 1994
Last Test Point - 1998

Curve Type	Average Service Life	Sum Of Squares Difference	Conformance Index	Index Of Variation	Ret Exp Index
O3	150.94 Yrs.	4.6521E+11	229.35	4.36	45.62
O1	93.13 Yrs.	4.7728E+11	226.43	4.42	49.66
SC	93.13 Yrs.	4.7728E+11	226.43	4.42	49.66
O2	104.63 Yrs.	4.7738E+11	226.40	4.42	49.67
RO.5	77.88 Yrs.	5.1494E+11	217.99	4.59	60.47
S.5	74.97 Yrs.	5.5651E+11	209.69	4.77	63.86
LO	83.27 Yrs.	5.6685E+11	207.77	4.81	61.10
R1	65.78 Yrs.	5.9169E+11	203.36	4.92	78.13
LO.5	72.47 Yrs.	6.4723E+11	194.44	5.14	70.21
S0	62.84 Yrs.	6.6269E+11	189.32	5.28	80.95
R1.5	58.50 Yrs.	6.9465E+11	187.69	5.33	92.73
L1	63.97 Yrs.	7.5847E+11	179.62	5.57	79.52
S0.5	57.38 Yrs.	7.8914E+11	176.09	5.68	91.27
R2	53.00 Yrs.	8.2836E+11	171.87	5.82	99.69
L1.5	58.25 Yrs.	8.8037E+11	166.72	6.00	87.31
S1	53.00 Yrs.	9.2767E+11	162.41	6.16	98.01
R2.5	49.56 Yrs.	9.4093E+11	161.26	6.20	100.00
O4	201.00 Yrs.	9.4770E+11	.00	.00	45.52
S1.5	50.25 Yrs.	1.0533E+12	152.42	6.56	99.69
L2	53.59 Yrs.	1.0677E+12	151.39	6.61	93.31
R3	46.66 Yrs.	1.1321E+12	147.02	6.80	100.00
S2	47.84 Yrs.	1.2198E+12	141.64	7.06	100.00
L3	47.91 Yrs.	1.4475E+12	130.02	7.69	99.30
S3	44.88 Yrs.	1.5769E+12	124.57	8.03	100.00
R4	43.56 Yrs.	1.7512E+12	118.21	8.46	100.00
L4	44.28 Yrs.	1.9331E+12	112.51	8.89	100.00
S4	42.72 Yrs.	2.2266E+12	104.83	9.54	100.00
L5	42.50 Yrs.	2.5451E+12	98.05	10.20	100.00
R5	41.88 Yrs.	2.8682E+12	92.37	10.83	100.00
S5	41.69 Yrs.	3.0098E+12	90.17	11.09	100.00
S6	41.28 Yrs.	3.5400E+12	83.14	12.03	100.00
SQ	41.00 Yrs.	4.7974E+12	71.42	14.00	100.00

Montana-Dakota Utilities Company**Gas Division**
376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008****Simulated Balances Method**

No. Of Test Points - 5
 Interval Between Test Points - 1
 First Test Point - 1989
 Last Test Point - 1993

Curve Type	Average Service Life	Sum Of Squares Difference	Conformance Index	Index Of Variation	Ret Exp Index
O4	185.28 Yrs.	3.0449E+11	216.79	4.61	48.26
O3	133.97 Yrs.	3.0843E+11	215.05	4.65	50.08
O1	82.88 Yrs.	3.2156E+11	210.96	4.74	55.81
SC	82.88 Yrs.	3.2156E+11	210.96	4.74	55.81
O2	93.13 Yrs.	3.2171E+11	210.91	4.74	55.72
R0.5	69.75 Yrs.	3.5996E+11	199.39	5.02	69.28
S.5	67.50 Yrs.	4.1088E+11	186.63	5.36	71.69
R1	59.47 Yrs.	4.3647E+11	181.28	5.62	87.78
L0	75.18 Yrs.	4.8593E+11	181.18	5.52	67.02
L0.5	65.89 Yrs.	5.1531E+11	166.65	6.00	76.34
R1.5	53.28 Yrs.	5.2879E+11	164.51	6.08	97.78
S0	57.22 Yrs.	5.6088E+11	159.73	6.26	88.67
L1	58.28 Yrs.	6.3475E+11	150.15	6.66	85.24
R2	48.53 Yrs.	6.4945E+11	148.44	6.74	100.00
S0.5	62.44 Yrs.	6.6001E+11	147.25	6.79	96.66
R2.5	45.47 Yrs.	7.3666E+11	139.38	7.17	100.00
L1.5	53.22 Yrs.	7.4188E+11	138.89	7.20	91.86
S1	48.59 Yrs.	7.9281E+11	134.35	7.44	99.86
S1.5	46.09 Yrs.	8.8683E+11	127.03	7.87	100.00
R3	42.84 Yrs.	8.9258E+11	126.62	7.90	100.00
L2	49.06 Yrs.	9.1302E+11	125.20	7.99	96.48
S2	43.91 Yrs.	1.0165E+12	118.65	8.43	100.00
L3	43.91 Yrs.	1.2177E+12	108.41	9.22	99.91
S3	41.16 Yrs.	1.2921E+12	105.24	9.50	100.00
R4	39.94 Yrs.	1.3849E+12	101.65	9.84	100.00
L4	40.53 Yrs.	1.6240E+12	93.87	10.65	100.00
S4	39.09 Yrs.	1.8345E+12	88.32	11.32	100.00
L5	38.84 Yrs.	2.1747E+12	81.12	12.33	100.00
R5	38.28 Yrs.	2.4058E+12	77.13	12.97	100.00
S5	38.09 Yrs.	2.6011E+12	74.17	13.48	100.00
S6	37.66 Yrs.	3.2829E+12	66.02	15.15	100.00
SQ	38.00 Yrs.	3.5959E+12	63.08	15.85	100.00

Montana-Dakota Utilities Company**Gas Division**
376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008****Simulated Balances Method**

No. Of Test Points - 5
 Interval Between Test Points - 1
 First Test Point - 1984
 Last Test Point - 1988

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
S.5	61.22 Yrs.	2.5969E+11	197.69	5.06	79.35
L0	68.07 Yrs.	2.5991E+11	197.61	5.06	72.82
R0.5	63.19 Yrs.	2.6009E+11	197.54	5.06	77.65
R1	54.16 Yrs.	2.6059E+11	197.35	5.07	94.98
O2	83.97 Yrs.	2.6171E+11	196.93	5.08	61.57
O1	74.72 Yrs.	2.6172E+11	196.92	5.08	61.90
SC	74.72 Yrs.	2.6172E+11	196.92	5.08	61.90
O3	120.63 Yrs.	2.6260E+11	196.59	5.09	54.11
O4	166.69 Yrs.	2.6300E+11	196.44	5.09	51.82
L0.5	59.66 Yrs.	2.6381E+11	196.14	5.10	82.08
R1.5	48.75 Yrs.	2.6553E+11	195.51	5.11	99.68
S0	52.13 Yrs.	2.6742E+11	194.81	5.13	95.33
L1	53.06 Yrs.	2.7528E+11	192.01	5.21	90.26
R2	44.53 Yrs.	2.7625E+11	191.68	5.22	100.00
S0.5	47.91 Yrs.	2.7841E+11	190.93	5.24	99.65
R2.5	41.78 Yrs.	2.8616E+11	188.33	5.31	100.00
L1.5	48.53 Yrs.	2.9115E+11	186.71	5.36	95.46
S1	44.47 Yrs.	2.9776E+11	184.62	5.42	100.00
R3	39.28 Yrs.	3.1099E+11	180.65	5.54	100.00
S1.5	42.22 Yrs.	3.1495E+11	179.51	5.57	100.00
L2	44.78 Yrs.	3.2336E+11	177.16	5.64	98.57
S2	40.19 Yrs.	3.4318E+11	171.97	5.81	100.00
L3	40.09 Yrs.	4.0496E+11	156.31	6.32	100.00
S3	37.59 Yrs.	4.1594E+11	156.21	6.40	100.00
R4	36.44 Yrs.	4.3463E+11	152.81	6.54	100.00
L4	36.94 Yrs.	5.3897E+11	137.22	7.29	100.00
S4	35.59 Yrs.	6.1241E+11	128.73	7.77	100.00
L5	35.31 Yrs.	7.8918E+11	113.40	8.82	100.00
R5	34.75 Yrs.	8.6417E+11	108.97	9.23	100.00
S5	34.56 Yrs.	9.9227E+11	101.13	9.89	100.00
SQ	34.00 Yrs.	1.3678E+12	86.14	11.61	100.00
S6	34.13 Yrs.	1.4705E+12	83.08	12.04	100.00

*Montana-Dakota Utilities Company**Gas Division**376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008*

Simulated Balances Method

No. Of Test Points - 5
 Interval Between Test Points - 1
 First Test Point - 1979
 Last Test Point - 1983

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O4	166.59 Yrs.	1.9171E+11	185.15	5.40	51.84
O3	120.41 Yrs.	1.9399E+11	184.06	5.43	54.17
SC	74.44 Yrs.	1.9969E+11	181.41	5.51	62.13
O1	74.44 Yrs.	1.9969E+11	181.41	5.51	62.13
O2	83.66 Yrs.	1.9976E+11	181.38	5.51	61.79
R0.5	62.59 Yrs.	2.1760E+11	173.79	5.75	78.45
S.5	60.31 Yrs.	2.4137E+11	165.01	6.06	80.54
R1	63.28 Yrs.	2.5080E+11	161.88	6.18	85.95
L0	66.94 Yrs.	2.5278E+11	161.24	6.20	73.80
R1.5	47.72 Yrs.	2.8801E+11	151.06	6.62	99.87
L0.5	56.28 Yrs.	2.9075E+11	150.35	6.65	83.40
S0	50.81 Yrs.	3.0983E+11	145.64	6.87	96.83
R2	43.38 Yrs.	3.2699E+11	141.77	7.05	100.00
R2.5	40.66 Yrs.	3.2924E+11	141.28	7.08	100.00
R3	38.18 Yrs.	3.3689E+11	139.67	7.16	100.00
S0.5	46.50 Yrs.	3.5170E+11	136.70	7.32	99.99
L1	51.47 Yrs.	3.5379E+11	136.29	7.34	91.89
R4	35.03 Yrs.	3.6061E+11	135.00	7.41	100.00
L1.5	46.91 Yrs.	3.8776E+11	130.19	7.68	96.49
S1	42.94 Yrs.	4.0746E+11	127.00	7.87	100.00
S1.5	40.72 Yrs.	4.2503E+11	124.35	8.04	100.00
L2	43.06 Yrs.	4.5447E+11	120.25	8.32	99.13
S2	38.66 Yrs.	4.5480E+11	120.21	8.32	100.00
S3	35.97 Yrs.	4.8635E+11	116.24	8.50	100.00
L3	38.28 Yrs.	5.3510E+11	110.82	9.02	100.00
L4	35.09 Yrs.	5.8326E+11	106.15	9.42	100.00
S4	33.75 Yrs.	6.1788E+11	103.13	9.70	100.00
R5	32.75 Yrs.	7.1756E+11	95.70	10.45	100.00
L5	33.25 Yrs.	8.0653E+11	90.27	11.08	100.00
S5	32.41 Yrs.	9.7266E+11	82.20	12.17	100.00
S6	31.69 Yrs.	1.5937E+12	64.22	15.57	100.00
SQ	32.00 Yrs.	4.2048E+12	39.53	25.29	100.00

Montana-Dakota Utilities Company
Gas Division
376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
Interval Between Test Points - 1
First Test Point - 1974
Last Test Point - 1978

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O4	140.63 Yrs.	1.5262E+11	163.06	6.13	57.46
O3	101.84 Yrs.	1.5462E+11	162.00	6.17	60.60
SO	63.25 Yrs.	1.5985E+11	159.33	6.28	73.42
O1	63.25 Yrs.	1.5985E+11	159.33	6.28	73.42
O2	71.09 Yrs.	1.5992E+11	159.29	6.28	71.40
R0.5	53.78 Yrs.	1.7525E+11	152.17	6.57	90.70
R4	31.38 Yrs.	1.7826E+11	150.88	6.63	100.00
S.5	52.03 Yrs.	1.9719E+11	143.45	6.97	92.17
R1	46.41 Yrs.	2.0061E+11	142.22	7.03	99.99
R3	34.13 Yrs.	2.0869E+11	140.12	7.14	100.00
L0	57.60 Yrs.	2.1589E+11	137.10	7.29	82.19
R2.5	36.31 Yrs.	2.2126E+11	135.43	7.38	100.00
R1.5	42.06 Yrs.	2.2176E+11	135.27	7.39	100.00
R2	38.56 Yrs.	2.3718E+11	130.80	7.65	100.00
L0.5	50.59 Yrs.	2.3947E+11	130.17	7.68	90.51
S0	44.38 Yrs.	2.5785E+11	125.45	7.97	100.00
S0.5	40.91 Yrs.	2.7752E+11	120.92	8.27	100.00
L1	44.97 Yrs.	2.7894E+11	120.61	8.29	96.60
S3	32.06 Yrs.	2.8413E+11	119.51	8.37	100.00
L1.5	41.25 Yrs.	2.9262E+11	117.76	8.49	99.02
S1.5	36.16 Yrs.	2.9538E+11	117.21	8.53	100.00
S2	34.41 Yrs.	2.9575E+11	117.14	8.54	100.00
S1	38.00 Yrs.	3.0121E+11	116.07	8.62	100.00
L4	31.22 Yrs.	3.1075E+11	114.27	8.75	100.00
S4	30.00 Yrs.	3.1929E+11	112.74	8.87	100.00
R5	29.06 Yrs.	3.2615E+11	111.54	8.97	100.00
L2	38.00 Yrs.	3.2825E+11	111.19	8.99	99.92
L3	33.97 Yrs.	3.4155E+11	109.00	9.17	100.00
L5	29.47 Yrs.	4.0160E+11	100.52	9.95	100.00
S5	28.66 Yrs.	4.9164E+11	90.85	11.01	100.00
S6	27.94 Yrs.	8.1216E+11	70.69	14.15	100.00
SQ	28.00 Yrs.	1.5826E+12	50.64	19.75	100.00

Montana-Dakota Utilities Company

Gas Division
376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
Interval Between Test Points - 1
First Test Point - 1969
Last Test Point - 1973

Curve Type	Average Service Life	Sum Of Squares Difference	Conformance Index	Index Of Variation	Ret Exp Index
R4	28.75 Yrs.	1.3310E+10	446.72	2.24	100.00
S4	27.13 Yrs.	2.2779E+10	341.47	2.93	100.00
L4	28.22 Yrs.	2.4949E+10	326.29	3.06	100.00
R5	26.28 Yrs.	2.4987E+10	326.04	3.07	100.00
L5	26.50 Yrs.	2.6575E+10	316.14	3.16	100.00
R3	31.03 Yrs.	2.9245E+10	301.37	3.32	100.00
S3	29.00 Yrs.	3.3639E+10	281.00	3.56	100.00
S5	25.59 Yrs.	3.6009E+10	271.59	3.68	100.00
R2.5	32.78 Yrs.	4.2904E+10	248.81	4.02	100.00
SQ	24.00 Yrs.	4.8201E+10	234.74	4.26	100.00
O4	118.31 Yrs.	5.4107E+10	221.56	4.51	62.89
S2	30.97 Yrs.	5.4136E+10	221.50	4.51	100.00
O3	85.91 Yrs.	5.4651E+10	220.46	4.54	66.91
O2	60.38 Yrs.	5.6448E+10	216.92	4.61	80.15
O1	53.72 Yrs.	5.6482E+10	216.85	4.61	86.10
SC	53.72 Yrs.	5.6482E+10	216.85	4.61	86.10
L3	30.44 Yrs.	5.6487E+10	216.84	4.61	100.00
R2	34.56 Yrs.	5.7544E+10	214.84	4.65	100.00
S6	24.63 Yrs.	5.8183E+10	213.66	4.68	100.00
R0.5	46.31 Yrs.	6.0333E+10	209.82	4.77	100.00
S1.5	32.44 Yrs.	6.2167E+10	206.70	4.84	100.00
S.5	45.00 Yrs.	6.2592E+10	206.00	4.85	100.00
L0	49.71 Yrs.	6.3212E+10	204.99	4.88	89.35
R1.5	37.31 Yrs.	6.3987E+10	203.74	4.91	100.00
R1	40.66 Yrs.	6.4439E+10	203.02	4.93	100.00
L0.5	44.06 Yrs.	6.8330E+10	197.16	5.07	95.54
S0	38.97 Yrs.	7.0303E+10	194.37	5.14	100.00
S0.5	36.25 Yrs.	7.1660E+10	192.52	5.19	100.00
S1	33.91 Yrs.	7.2099E+10	191.94	5.21	100.00
L1.5	36.50 Yrs.	7.3747E+10	189.78	5.27	99.86
L2	33.81 Yrs.	7.5822E+10	187.16	5.34	100.00
L1	39.50 Yrs.	7.7990E+10	184.55	5.42	99.09

Montana-Dakota Utilities Company**Gas Division**

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
 Interval Between Test Points - 1
 First Test Point - 1964
 Last Test Point - 1968

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O4	114.47 Yrs.	2.2421E+09	784.21	1.28	63.88
O3	83.13 Yrs.	2.2595E+09	781.18	1.28	68.08
O2	58.38 Yrs.	2.3214E+09	770.69	1.30	81.70
SC	51.94 Yrs.	2.3222E+09	770.55	1.30	89.05
O1	51.94 Yrs.	2.3222E+09	770.55	1.30	89.05
R2.5	32.38 Yrs.	2.5391E+09	736.91	1.36	100.00
R0.5	44.75 Yrs.	2.5567E+09	734.36	1.36	100.00
R2	33.75 Yrs.	2.7315E+09	710.48	1.41	100.00
S.5	43.44 Yrs.	2.8569E+09	694.72	1.44	100.00
R1	39.34 Yrs.	2.9731E+09	681.01	1.47	100.00
L1.5	35.41 Yrs.	3.0353E+09	673.99	1.48	98.92
S1.5	31.78 Yrs.	3.0768E+09	669.43	1.49	100.00
R1.5	36.22 Yrs.	3.0778E+09	669.32	1.49	100.00
S1	32.94 Yrs.	3.2240E+09	653.96	1.53	100.00
L0	47.84 Yrs.	3.3595E+09	640.65	1.56	90.96
L0.5	42.47 Yrs.	3.3524E+09	640.37	1.56	96.52
S0.5	35.06 Yrs.	3.6441E+09	615.12	1.63	100.00
L1	38.03 Yrs.	3.6725E+09	612.74	1.63	99.47
L2	32.97 Yrs.	3.8691E+09	596.96	1.68	100.00
S0	37.56 Yrs.	4.0334E+09	584.68	1.71	100.00
R3	31.06 Yrs.	4.6688E+09	543.44	1.84	100.00
S2	30.63 Yrs.	5.3202E+09	509.08	1.96	100.00
L3	30.50 Yrs.	1.4343E+10	310.05	3.23	100.00
R4	29.78 Yrs.	1.7227E+10	282.91	3.53	100.00
S3	29.59 Yrs.	2.0151E+10	261.58	3.82	100.00
S6	29.78 Yrs.	2.2988E+10	244.91	4.08	100.00
L4	29.53 Yrs.	2.8616E+10	219.51	4.56	100.00
R5	29.47 Yrs.	3.6228E+10	195.09	5.13	100.00
S5	29.59 Yrs.	3.8496E+10	189.26	5.28	100.00
L5	29.44 Yrs.	4.3215E+10	178.62	5.60	100.00
S4	29.31 Yrs.	4.3949E+10	177.13	5.65	100.00
SQ	23.00 Yrs.	1.9498E+12	26.59	37.60	100.00

Montana-Dakota Utilities Company

Gas Division

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
Interval Between Test Points - 1
First Test Point - 1959
Last Test Point - 1963

Curve Type	Average Service Life	Sum Of Squares Difference	Conformance Index	Index Of Variation	Ret Exp Index
R2.5	34.94 Yrs.	1.6551E+10	215.23	4.65	100.00
S6	32.56 Yrs.	1.6602E+10	214.80	4.65	100.00
S5	32.66 Yrs.	1.6600E+10	213.63	4.66	100.00
R2	36.47 Yrs.	1.7064E+10	211.98	4.72	100.00
R1.5	39.50 Yrs.	1.7186E+10	211.22	4.73	100.00
R3	33.72 Yrs.	1.7744E+10	207.87	4.81	100.00
R5	32.69 Yrs.	1.8044E+10	206.13	4.85	100.00
R1	43.63 Yrs.	1.8114E+10	205.75	4.86	100.00
R0.5	50.88 Yrs.	1.9034E+10	200.70	4.98	94.52
L5	32.84 Yrs.	1.9319E+10	199.22	5.02	100.00
O2	67.75 Yrs.	1.9606E+10	197.76	5.06	74.15
O1	60.31 Yrs.	1.9606E+10	197.75	5.06	76.68
SO	60.31 Yrs.	1.9606E+10	197.75	5.06	76.68
R4	32.91 Yrs.	1.9631E+10	197.63	5.06	100.00
S4	32.84 Yrs.	1.9661E+10	197.48	5.06	100.00
O3	97.41 Yrs.	1.9835E+10	196.61	5.09	62.28
O4	134.63 Yrs.	1.9894E+10	196.32	5.09	58.87
S.5	49.00 Yrs.	1.9999E+10	195.80	5.11	96.49
L0	53.89 Yrs.	2.0645E+10	192.71	5.19	85.60
S0	41.38 Yrs.	2.1080E+10	190.72	5.24	100.00
S0.5	38.41 Yrs.	2.2450E+10	184.81	5.41	100.00
L0.5	47.50 Yrs.	2.2703E+10	183.77	5.44	93.07
S1	36.00 Yrs.	2.5249E+10	174.26	5.74	100.00
S1.5	34.84 Yrs.	2.6450E+10	170.26	5.87	100.00
L4	33.22 Yrs.	2.6515E+10	170.05	5.88	100.00
L1	42.31 Yrs.	2.6700E+10	169.46	5.90	98.03
S3	33.16 Yrs.	2.6865E+10	168.94	5.92	100.00
L1.5	39.44 Yrs.	2.8110E+10	165.16	6.05	99.46
S2	33.88 Yrs.	2.9137E+10	162.22	6.16	100.00
L3	34.59 Yrs.	3.2388E+10	153.86	6.50	100.00
L2	37.06 Yrs.	3.3097E+10	152.21	6.57	99.96
SQ	18.00 Yrs.	1.2772E+13	7.75	129.06	100.00

Montana-Dakota Utilities Company
Gas Division
376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
Interval Between Test Points - 1
First Test Point - 1954
Last Test Point - 1958

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
R2.5	36.34 Yrs.	7.1717E+08	689.50	1.43	100.00
R2	38.53 Yrs.	7.2687E+08	694.82	1.44	100.00
S2	35.81 Yrs.	8.4078E+08	646.04	1.55	100.00
R1.5	42.41 Yrs.	8.4320E+08	645.11	1.55	100.00
L3	36.47 Yrs.	8.7862E+08	631.97	1.58	100.00
R1	47.84 Yrs.	9.9074E+08	595.14	1.68	99.70
R0.5	57.09 Yrs.	1.0591E+09	575.61	1.74	86.11
O1	68.69 Yrs.	1.0771E+09	570.77	1.75	67.33
SC	68.69 Yrs.	1.0771E+09	570.77	1.75	67.33
O2	77.19 Yrs.	1.0780E+09	570.53	1.75	66.55
S1.5	37.19 Yrs.	1.0797E+09	570.08	1.75	100.00
O3	111.59 Yrs.	1.0916E+09	566.98	1.76	57.10
O4	154.63 Yrs.	1.0957E+09	565.91	1.77	54.34
R3	34.75 Yrs.	1.1174E+09	560.39	1.78	100.00
S.5	54.75 Yrs.	1.2745E+09	524.72	1.91	88.24
L2	40.06 Yrs.	1.3085E+09	517.85	1.93	99.74
S1	38.84 Yrs.	1.6612E+09	459.60	2.18	100.00
L0	60.41 Yrs.	1.6713E+09	458.22	2.18	79.61
S0.5	41.75 Yrs.	1.6738E+09	457.87	2.18	100.00
L1.5	43.03 Yrs.	1.6808E+09	456.93	2.19	98.41
L0.5	52.84 Yrs.	1.7545E+09	447.23	2.24	88.51
S3	34.28 Yrs.	1.7935E+09	442.33	2.26	100.00
S0	45.47 Yrs.	1.8105E+09	440.25	2.27	100.00
L1	46.97 Yrs.	2.2186E+09	397.71	2.51	95.28
L4	54.19 Yrs.	2.8138E+09	353.14	2.83	100.00
R4	33.47 Yrs.	4.1107E+09	292.17	3.42	100.00
S4	33.25 Yrs.	5.8387E+09	245.15	4.08	100.00
L5	33.25 Yrs.	6.4771E+09	232.76	4.30	100.00
R5	32.88 Yrs.	9.5257E+09	191.93	5.21	100.00
S5	32.84 Yrs.	9.7306E+09	189.90	5.27	100.00
S6	32.69 Yrs.	1.1182E+10	177.15	5.65	100.00
SQ	33.00 Yrs.	2.0199E+10	131.81	7.59	100.00

Montana-Dakota Utilities Company

Gas Division

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
Interval Between Test Points - 1
First Test Point - 1949
Last Test Point - 1953

<u>Curve Type</u>	<u>Average Service Life</u>	<u>Sum Of Squares Difference</u>	<u>Conformance Index</u>	<u>Index Of Variation</u>	<u>Ret Exp Index</u>
S6	31.84 Yrs.	1.3226E+08	954.90	1.05	100.00
S5	32.22 Yrs.	1.3477E+09	299.14	3.94	100.00
R5	32.34 Yrs.	2.3339E+09	227.32	4.40	100.00
L5	32.97 Yrs.	3.2562E+09	192.45	5.20	100.00
S4	33.19 Yrs.	5.6641E+09	145.92	6.85	100.00
SQ	32.00 Yrs.	5.8955E+09	143.03	6.99	100.00
L4	34.63 Yrs.	8.6831E+09	117.85	8.49	100.00
R4	33.81 Yrs.	1.0738E+10	105.98	9.44	100.00
S3	35.28 Yrs.	1.3049E+10	96.14	10.40	100.00
L3	38.38 Yrs.	1.6541E+10	85.39	11.71	100.00
S2	38.44 Yrs.	2.0745E+10	76.25	13.12	100.00
R3	36.75 Yrs.	2.1262E+10	75.31	13.26	100.00
L2	44.47 Yrs.	2.5340E+10	68.99	14.60	98.69
S1.5	41.09 Yrs.	2.5676E+10	68.53	14.59	100.00
R2.5	39.81 Yrs.	2.6855E+10	67.01	14.92	100.00
S1	44.44 Yrs.	2.9635E+10	63.79	15.66	100.00
L1.5	49.59 Yrs.	3.0005E+10	63.40	15.77	94.71
R2	44.06 Yrs.	3.0971E+10	62.40	16.03	100.00
L1	56.28 Yrs.	3.2781E+10	60.65	16.49	87.21
S0.5	49.56 Yrs.	3.3693E+10	59.83	16.71	98.87
R1.5	51.25 Yrs.	3.4301E+10	59.30	16.86	98.90
L0.5	65.91 Yrs.	3.6136E+10	57.77	17.31	76.13
R1	61.13 Yrs.	3.6185E+10	57.73	17.32	85.27
S0	56.25 Yrs.	3.6659E+10	57.86	17.43	89.99
S.5	71.41 Yrs.	3.6957E+10	57.12	17.51	67.43
R0.5	76.53 Yrs.	3.6990E+10	57.10	17.51	61.80
O1	94.53 Yrs.	3.7302E+10	56.86	17.59	48.93
SC	94.53 Yrs.	3.7302E+10	56.86	17.59	48.93
O2	106.19 Yrs.	3.7307E+10	56.86	17.59	48.94
O3	154.88 Yrs.	3.7411E+10	56.78	17.61	44.68
L0	78.81 Yrs.	3.8415E+10	56.03	17.85	64.27
O4	201.00 Yrs.	4.0812E+10	.00	.00	45.52

Montana-Dakota Utilities Company

*Gas Division
376.00 MAINS*

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
Interval Between Test Points - 1
First Test Point - 1949
Last Test Point - 1953

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for increase in rates by Progress Energy Florida, Inc.	DOCKET NO. 090079-EI
In re: Petition for limited proceeding to include Bartow repowering project in base rates, by Progress Energy Florida, Inc.	DOCKET NO. 090144-EI
In re: Petition for expedited approval of the deferral of pension expenses, authorization to charge storm hardening expenses to the storm damage reserve, and variance from or waiver of Rule 25-6.0143(1)(c), (d), and (f), F.A.C., by Progress Energy Florida, Inc.	DOCKET NO. 090145-EI ORDER NO. ISSUED:

The following Commissioners participated in the disposition of this matter:

NANCY ARGENZIANO, Chairman
LISA POLAK EDGAR
NATHAN A. SKOP
DAVID E. KLEMENT
BEN A. "STEVE" STEVENS III

APPEARANCES:

R. ALEXANDER GLENN, JOHN T. BURNETT, ESQUIRES, Progress Energy Service Company, LLC, P.O. Box 14042, St. Petersburg, Florida 33733-4042; JAMES MICHAEL WALLS, DIANNE M. TRIPLETT, and MATTHEW BERNIER, ESQUIRES, Carlton Fields, P.A., Post Office Box 3239, Tampa, Florida 33601-3239; RICHARD D. MELSON, ESQUIRE, 705 Piedmont Drive, Tallahassee, Florida 32312
On behalf of Progress Energy Florida, Inc. (PEF).

CHARLES REHWINKEL, Associate Public Counsel, CHARLIE BECK, Deputy Public Counsel, and PATRICIA A. CHRISTENSEN, Associate Public Counsel, ESQUIRES, Office of the Public Counsel, c/o the Florida Legislature, 111 West Madison Street, Room 812, Tallahassee, Florida 32399-1400
On behalf of the Citizens of the State of Florida (OPC).

STEPHANIE ALEXANDER, ESQUIRE, 200 West 200 West College Avenue, Suite 216, Tallahassee, Florida 32301
On behalf of the Florida Association for Fairness in Rate Making (AFFIRM).

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ORDER NO.

DOCKET NOS. 090079-EI, 090144-EI, 090145-EI

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The Crystal River Units 4 & 5 are in the process of undergoing major upgrading and the Bartow Units are scheduled for retirement during 2009. The increasing focus on air quality standards inclusive of carbon regulation will continue to place increasing burdens on the Company to maintain and/or continue to operate generating plants within i[t]s fossil fleet.

We note that this exact same narrative was provided for each of the steam production accounts. Similar non-specific narratives were provided for PEF's nuclear and other production accounts. Other than the results of the historical statistical analysis, this language was the only support offered for PEF's proposed life and salvage factors for the steam production plants and accounts. We find that these narratives did not constitute an adequate explanation and justification for any of the steam production accounts, and did not define or describe the specific factors that justified the life and salvage components being proposed. We cannot locate anything in PEF's study that meaningfully discussed the key factors presumably considered by PEF in its design of depreciation rates for a given category, such as company planning, anticipated growth, technology, physical conditions, and trends. The only thing the study contained was the results of the statistical analyses performed and the calculations yielding the category's rate. There was no indication how the interim retirement rate was selected or why. There was no information regarding how potential changes in air quality standards may impact the lives of the steam plants.

In a depreciation study review, depreciation rates should only be revised where warranted. With the passage of time, all other things remaining equal, the average remaining life will necessarily change due to the increased age of the plant. OPC witness Pous asserted that the sole support and basis for PEF's life and salvage proposals for production plant are only the numerical analyses presented and a statement that life and salvage determinations are not an arithmetic process but an interpretative process. Our staff requested that PEF identify the factors it evaluated that indicate a need to revise the estimated life and salvage values from the 2005 study, other than the results of the depreciation computer program analysis. PEF responded, "Mr. Robinson's depreciation study analysis approach is to view each study as a fresh start project." The response goes on to state that the study analysis is the reason for the proposed changes. We find that PEF provided no other basis, narrative, or explanations supporting its assumptions or determinations. Thus, we conclude that PEF failed to carry its burden of proof regarding its proposed depreciation rates for production plant. We agree with OPC witness Pous that PEF has provided only generalized statements with little support or documentation. We believe there should be an objective reason for changing life and salvage values other than that the computer program dictates the change. We further believe that company planning is an important element in developing appropriate life parameters for production plant, a discussion that was lacking in PEF's depreciation study and discovery responses, even though it was requested.

OPC witness Pous stated that the remaining life technique recognizes that depreciation is a forecast or estimation process. Both PEF witness Robinson and OPC witness Pous testified that depreciation involves subjectivity and judgment plays an important role. However, OPC witness Pous asserted that simply referring to judgment as the basis for a proposal without

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Title 18: Conservation of Power and Water Resources

A. PART 201—UNIFORM SYSTEM OF ACCOUNTS PRESCRIBED FOR NATURAL GAS COMPANIES SUBJECT TO THE PROVISIONS OF THE NATURAL GAS ACT

AUTHORITY: 15 U.S.C. 717-717w, 3301-3432; 42 U.S.C. 7101-7352, 7651-7651o.

SOURCE: Order 219, 25 FR 5616, June 21, 1960, unless otherwise noted.

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting part 201, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.fdsys.gov.

EFFECTIVE DATE NOTE: At 58 FR 18006, April 7, 1993, part 201 was amended by redesignating definitions 31 through 39 as 32 through 40 and adding a new definition 31; Accounts 182.3 and 254 were added under Balance Sheet Accounts; and Accounts 407.3 and 407.4 were added under Income Accounts. The added text contains information collection and recordkeeping requirements and will not become effective until approval has been given by the Office of Management and Budget.

NOTE: Order 141, 12 FR 8504, Dec. 19, 1947, provides in part as follows:

Prescribing a system of accounts for natural gas companies under the Natural Gas Act. The Federal Power Commission acting pursuant to authority granted by the Natural Gas Act (58 Stat. 821, as amended; 15 U.S.C. and Sup. 717 et seq.), particularly sections 8(a), 10(a) and 16 thereof, and finding such action necessary and appropriate for carrying out the provisions of said Act, ordered that:

(a) The accompanying system of accounts, entitled "Uniform System of Accounts Prescribed for Natural Gas Companies Subject to the Provisions of the Natural Gas Act," and the rules and regulations contained therein, be adopted;

(b) Said system of accounts and said rules and regulations contained therein be and the same are hereby prescribed and promulgated as the system of accounts and rules and regulations of the Commission to be kept and observed by natural gas companies subject to the jurisdiction of the Commission, to the extent and in the manner set forth therein;

(c) Said system of accounts and rules and regulations therein contained as to all natural gas companies now subject to the jurisdiction of the Commission, became effective on January 1, 1940, and as to any natural gas company which may hereafter become subject to the jurisdiction of the Commission, they shall become effective as of the date when such natural gas company becomes subject to the jurisdiction of the Commission.

Uniform System of Accounts Prescribed for Natural Gas Companies Subject to the Provisions of the Natural Gas Act

Definitions

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When used in this system of accounts:

1. *Accounts* means the accounts prescribed in this system of accounts.

2. *Actually issued*, as applied to securities issued or assumed by the utility, means those which have been sold to bona fide purchasers for a valuable consideration, those issued as dividends on stock, and those which have been issued in accordance with contractual requirements direct to trustees of sinking funds.

3. *Actually outstanding*, as applied to securities issued or assumed by the utility, means those which have been actually issued and are neither retired nor held by or for the utility; provided, however, that securities held by trustees shall be considered as actually outstanding.

4. *Amortization* means the gradual extinguishment of an amount in an account by distributing such amount over a fixed period, over the life of the asset or liability to which it applies, or over the period during which it is anticipated the benefit will be realized.

5. A. *Associated (affiliated) companies* means companies or persons that directly or indirectly, through one or more intermediaries, control, or are controlled by, or are under common control with the accounting company.

B. *Control* (including the terms "controlling," "controlled by," and "under common control with") means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a company, whether such power is exercised through one or more intermediary companies, or alone, or in conjunction with, or pursuant to an agreement, and whether such power is established through a majority or minority ownership or voting of securities, common directors, officers, or stockholders, voting trusts, holding trusts, associated companies, contract or any other direct or indirect means.

6. *Book cost* means the amount at which property is recorded in these accounts without deduction of related provisions for accrued depreciation, depletion, amortization, or for other purposes.

7. *Commission*, means the Federal Energy Regulatory Commission.

8. *Continuing plant inventory record* means company plant records for retirement units and mass property that provide, as either a single record, or in separate records readily obtainable by references made in a single record, the following information:

A. For each retirement unit;

- (1) The name or description of the unit, or both;
- (2) The location of the unit;
- (3) The date the unit was placed in service;
- (4) The cost of the unit as set forth in Plant Instructions 2 and 3 of this part; and
- (5) The plant control account to which the cost of the units is charged; and

B. For each category of mass property;

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- (1) A general description of the property and quantity;
- (2) The quantity placed in service by vintage year;
- (3) The average cost as set forth in Plant Instructions 2 and 3 of this part; and
- (4) The plant control account to which the costs are charged.

9. *Cost* means the amount of money actually paid for property or services. When the consideration given is other than cash in a purchase and sale transaction, as distinguished from a transaction involving the issuance of common stock in a merger or a pooling of interest, the value of such consideration shall be determined on a cash basis.

10. *Cost of removal* means the cost of demolishing, dismantling, tearing down or otherwise removing gas plant, including the cost of transportation and handling incidental thereto. It does not include the cost of removal activities associated with asset retirement obligations that are capitalized as part of the tangible long-lived assets that give rise to the obligation. (See General Instruction 24).

11. *Debt expense* means all expenses in connection with the issuance and initial sale of evidences of debt, such as fees for drafting mortgages and trust deeds; fees and taxes for issuing or recording evidences of debt; cost of engraving and printing bonds and certificates of indebtedness; fees paid trustees; specific costs of obtaining governmental authority; fees for legal services; fees and commissions paid underwriters, brokers, and salesmen for marketing such evidences of debt; fees and expenses of listing on exchanges; and other like costs.

12. A. *Depletion*, as applied to natural gas producing land and land rights, means the loss in service value incurred in connection with the exhaustion of the natural resource in the course of service.

B. *Depreciation*, as applied to depreciable gas plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of gas plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities, and, in the case of natural gas companies, the exhaustion of natural resources.

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$$Y = a_0 + a_1X + a_2X^2 + a_3X^3 + \dots + a_nX^n$$

Standard regression techniques and computer programs can be used to find the regression coefficients a_i . Although this technique works well for smoothing, the polynomial function should only be used with great care to extrapolate data. In *Statistical Theory with Engineering Applications* Abraham Hald (1952:559) states, "From a purely statistical point of view the regression curve provides a description of the interrelation between the two variables within the limited range of the observations, and extrapolations, i.e., computations or values outside this range are in principle not justifiable as perhaps it is not possible to represent the interrelation outside the observed range by the function utilized. It is therefore absolutely necessary that extrapolation be firmly based on professional knowledge concerning the data." A polynomial curve may not be a good function to use for the difficult task of extrapolation.

If the Iowa curves are adopted as a model, an underlying assumption is that the process describing the retirement pattern is one of the 22 processes described by the Iowa curves. The problem is then to decide which specific type of Iowa curve "best" fits the observed data. *Best* can take on different meanings, each with subtle differences; here it will refer to the curve that most accurately represents the observed data.

One method is to fit the data visually. Until recently, this required a set of curves printed on translucent paper. Printed on each sheet is a family of a specific type Iowa curve. Each member of the family represents a different average life, typically running from 10 to 50 years in steps of 2 years. Traditionally these curves were scaled to 4 years/inch and 10% surviving/inch, but sets of curves scaled to one-half or double this size were also common. These scales can be multiplied or divided by a constant to accommodate observed data with very long or very short lives. If, for example, the observed curve had an average life of about 80 years, the scale could be doubled so that the curves would run from 20 to 100 years. The observed curve was plotted on graph paper using the same scale, and a translucent sheet of paper with the printed curves was then placed over the observed curve, allowing the analyst to compare visually the empirical and observed curves.

After plotting the observed curve, the analyst should first visually examine the plotted data to make an initial judgment about the type curves that may be good fits. The analyst also must decide which points or sections of the curve should be given the most weight. Points at the end of the curve are often based on fewer exposures and may be given less weight than points based on larger samples. The weight placed on those points will depend on the size of the exposures. Often the middle section of the curve (that section ranging from approximately 80% to 20% surviving) is given

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more weight than the first and last sections. This middle section is relatively straight and is the portion of the curve that often best characterizes the survivor curve.

Begin fitting with the left modal curves and identify the two or three curves that appear to best fit the data. Note the curve type and the corresponding average life, which is typically estimated to the nearest year. Continue with the symmetrical, right modal, and origin modal curves. Some groups may not give a suitable fit.

Continue by reexamining the contenders selected during the first pass. Often the choice between two or three tentative selections is difficult to make. The conservative choice is toward the lower life and right modal curve.

An alternative to visual fitting is mathematical fitting. Usually the least squares method is used. This method is time consuming if done by hand, and is not practical unless a computer is used. Typical logic for a computer program is as follows. First a type curve is arbitrarily selected. If the observed curve goes to zero percent surviving, calculate the area under the curve and designate this the average life.

If the observed curve is a stub curve (i.e., if it does not go to zero), calculate the area under the curve and up to the age at final data point. Call this area the *realized life*. Then systematically vary the average life of the theoretical survivor curve and calculate its realized life at the age corresponding to the study date. This trial and error procedure ends when you find an average life such that the realized life of the theoretical curve equals the realized life of the observed curve. Call this the *average life*.

Once the average life is found, calculate the difference between each percent surviving point on the observed survivor curve and the corresponding point on the Iowa curve. Square each difference and sum them. The sum of squares is used as a measure of goodness of fit for that particular Iowa type curve. This procedure is repeated for the remaining 21 Iowa type curves. The "best fit" is declared to be the type of curve that minimizes the sum of differences squared.

On the surface, the removal of judgment from the fitting process may appear to be an advantage, but blind acceptance of mechanical fitting processes will occasionally but consistently result in poor results. A better procedure is to use the least squares method to select candidates for the best fit. Comparison of the sum of squares will reveal situations where the difference between the best choices is small. The analyst should then visually examine the observed data and compare them to the theoretical curves. This can be done quickly on a computer with graphic capabilities so that the analyst need not use time to plot the observed curve by hand. The analyst can consider single points that may contribute significantly to the sum of squares but that may deserve less weight than other points. Fits at

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OCC-201

Company: Connecticut Natural Gas Corporation

Witness: Earl Robinson

Docket No. 13-06-08

Page 1 of 2

Date Submitted: August 19, 2013

OCC-201 Q: Regarding the curve fit set forth on page 5-13 of the depreciation study for Account 376.00 – Distribution Mains – Steel, please provide the following:

- a. Whether all points on the curve for curve-fitting purposes were considered as equal, and if not why not;
- b. The portion(s) of the curve in the curve-fitting process that was given greater weight than the other portion and the basis for such difference, if any;
- c. The dollar level of exposures, if any, where the resulting data points are considered less significant or insignificant in the curve-fitting process, and the basis for such position;
- d. All reasons why a 65R3 life-curve combination would not be a more appropriate fit of the data; and
- e. Why the retirement activity in the mid-30-year age range was considered representative of future expected life of the current investment, along with all supporting documentation.

OCC-201 A:

- a. Yes, the least square fitting routine gives all points equal weight. Notwithstanding, in the curve fitting process the middle portion of the observed life table, is routinely more meaningful. The implied presumption within the data request is that future average service life will exactly mirror the experience of the past, a circumstance that commonly is not the case.

Page 126 of the NARUC Depreciation Practices Manual states “Depreciation analysts should avoid becoming ensnared in the mechanics of the historical life study and relying solely on mathematical solutions. The reason for making an historical life analysis is to develop a sufficient understanding of history in order to evaluate whether it is a reasonable predictor of the future. The importance of being aware of circumstances having direct bearing on the reason for making an historical life analysis cannot be understated. These circumstances, when factored into the analysis, determining the application and limitations of an historical life analysis.”

- b. See item a.

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OCC-201

Company: Connecticut Natural Gas Corporation

Witness: Earl Robinson

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- c. The point at which data points are considered less significant or insignificant in the curve-fitting process is where a modest level of additional retirements could significantly move the observed life table. Likewise a flat observed life tail occurs where survivors have not aged beyond that point.
- d. The proposed Iowa 63-R3 curve is the best fit analysis of the historical data. If anything, the future life of various portions the property is subject to anticipated increases of property change outs and resulting shorter average service life. The estimated future average of the property group is conservative (longer than may be experienced).
- e. If the request is implying that the future life expectancy is identified by looking at the remaining life of specific property in the mid 30 year range, that is not the manner in which the average service life (future life expectancy) is developed for a property group. The average remaining life for a property group is developed by first estimating the average service life for the property group, and then applying the depreciation parameters to the property group's vintage level survivors as of the study date.

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OCC-189

Company: Connecticut Natural Gas Corporation

Witness: Earl Robinson

Docket No. 13-06-08

Page 1 of 2

Date Submitted: August 16, 2013

OCC-189 Q: Please provide a copy of all notes associated with discussions with senior management as referenced on page 1-2 of the depreciation study. To the extent any meaningful or significant item of information was not reduced to writing, identify and provide such item of information. Further, provide a detailed narrative identifying the item of information by account and the impact it has in the development of life or salvage parameters.

OCC-189 A: Please see the requested notes included in OCC-189 CNG Attachment.

All items discussed with management at the onsite meetings, as written on the attached notes, were considered along with the historical analysis results in the process of estimating the applicable service lives for each of the property groups.

With regard to the Company's property, examples of specific current or future events that are anticipated to impact the overall life of property are the Company's program to remove Cast Iron Mains, Bare Steel Mains and Services, upgrades of Production Plant, and upgrades of SCADA Equipment, etc. Calculations related to the impact of the life of such properties are contained on Table 6 within the provided depreciation tables.

With regard to life analysis, an important consideration is the content of the property group. That is, reasons exist as to why it is often inappropriate to use the mathematically best fit curve that is, in many circumstances, often an "0" or "L" mode curve with an extremely long curve (e.g., 150 year or longer average service life, etc.). The use of such a life and curve as the applicable future service life of an account is routinely inappropriate both because the life is irrationally long with regard to the typical average service life experience of the account being studied, and secondly because the life characteristic (mode of curve) is not representative of that which the property being studied would experience. Since property is placed into service with the expectation that its usefulness will continue for a long length of time, with more limited retirements occurring early in the life of the property group, mid to higher subscript and/or more right mode curves (with the exception of interim retirement curves), are often experienced and estimated for many property groups. Some quantities of property groups are influenced by non

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OCC-189

Company: Connecticut Natural Gas Corporation**Witness:** Earl Robinson**Docket No.** 13-06-08**Page 2 of 2****Date Submitted:** August 16, 2013

age-dependent factors such as vehicular accidents or highway projects and, therefore, demonstrate a lower subscript curve type, etc.

In the life analysis process, professional judgment is routinely incorporated into the estimation process in which a range of life characteristics (Iowa Curves) are considered when arriving at the estimated future average service life of the studied property class. (See the above discussion about the resulting extremely long maximum lives when selecting low order curves for long lived property—e.g. 150 year average service lives with 300 plus year maximum lives).

That being said, life estimation process is not one of simple arithmetic calculation of historical data. While the historical retirement rate analysis and/or SPR analysis are valuable analytical tools, they are just that, a tool to use and consider in the overall process. Professional judgment and experience, as well as consideration of current company factors and future events must be incorporated into the process.

Factors affecting future net salvage estimates are as follows. The estimated future net salvage percent for each property group gives consideration to the overall average net salvage experience, more recent experience, and forecast analysis. A potential shortfall of giving equal or greater weight to the overall experience is that the analysis can be drawing on experience from 30-40 or more years prior at a time when cost and factors affecting future net salvage were far different from the present and even further from the anticipated experience of future years. The net salvage estimation process is one of gradualism towards more future looking calculations which is more representative of the future net salvage that can be anticipated at end of life of the property group.

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OCC-189 CNG Attachment

Connecticut Natural Gas Corporation
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Page 1 of 3

CNG

376 Cast Iron + Bone 321 Miles Retire
Main 20 Years

~~Also~~ All of Plastic Inserts to
be removed.

380 Bone Steel Services 9,300

Elevated Cast- 11 Miles 17-25 lbs

Replace in 4 Years - 3 Miles Year

378 Continuator

381.10 Meter Reading Drowned + Read
By Interland Group

378 Field - "Mercury" Replacing Set + Dist. Reg
RTU'S All replaced in 3 Years

386.30 Retire during 2014 ??
Conversion Turner

OCC-189 CNG Attachment

Connecticut Natural Gas Corporation
Docket No. 13-06-08

Witness: Earl Robinson
Page 2 of 3

MILFORD LNG

BRIAN

BOB

DAVE

Liquefaction - Replacing Control

Control Replaced

Vaporizer

10-YEAR PROGRAM (2010 2 Trains Done) 2021

Currently 14 Day

New Upgrades -

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Rocky Hill

Nox Peak Stack Test
Air Permit -

Replacing Controls for Expander Compressor
Replacing Cooling Tower this year

Emergency Generator Replacing

Boil Off Gas Controls
Boil Gas Water + Piping

Boil off Gas Compressor

Vaporizer 2015-2016

1 DEPARTMENT OF PUBLIC SERVICE REGULATION
2 BEFORE THE PUBLIC SERVICE COMMISSION
3 OF THE STATE OF MONTANA

4 In the Matter of the Application)
5 of MONTANA-DAKOTA UTILITIES, CO.,)
6 a Division of MDU Resources Group,)
7 Inc., for Authority to Establish) DOCKET D2012.9.100
8 Increased Rates for Natural Gas)
9 Service.)

10 Taken at: Clock Tower Inn
11 Billings, Montana
12 Monday August 5, 2013 - Tuesday, August 6, 2013

13 TRANSCRIPT OF PUBLIC HEARING

14 THE PUBLIC SERVICE COMMISSION:

15 W.A. (Bill) GALLAGHER, Chairman
16 BOB LAKE, Vice-Chairman
17 TRAVIS KAVULLA, Commissioner
18 ROGER KOOPMAN, Commissioner
19 KIRK BUSHMAN, Commissioner
20 JUSTIN KRASKE, ESQ., PSC Staff Counsel
21 BRENDA ELIAS, ESQ., PSC Staff Counsel

22
23 Reported by David E. Hix, ASCR, Court Reporter Support
24 Services, Inc., 1022 Grizzly Mountain Road, Missoula,
25 Montana 59808, (406) 726-7592, Professional Freelance
Court Reporter and Notary Public for the State of
Montana, residing in Missoula, Montana.

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1 both the average service life and the dispersion
2 patterns for that study, correct?

3 A. That's correct.

4 Q. And you understand that the depreciation experts
5 prefer the actuarial method for depreciation purposes,
6 correct?

7 A. I somewhat agree with that, in the sense that if
8 you have actuarial data, that's usually the first
9 choice.

10 Q. Okay, thanks. And the primary basis for your
11 recommendation was the SPR, the simulated plant records,
12 right?

13 A. That's correct, because the company really didn't
14 have a long history of actuarial data.

15 Q. Okay, but they did have some actuarial data,
16 correct?

17 A. Yes. And hopefully, it's going to be more as
18 time goes on.

19 Q. But there was some there?

20 A. There was some there.

21 Q. And the reason that you chose to use the
22 simulated -- the SPR, the simulated plant records,
23 rather than an actuarial analysis was because you
24 concluded that the SPR analysis would result in a more
25 complete file; is that right?

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*Montana-Dakota Utilities Company**Gas Division*
*376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008*

Simulated Balances Method

No. Of Test Points - 93
Interval Between Test Points - 1
First Test Point - 1916
Last Test Point - 2008

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O3	160.63 Yrs.	7.8182E+13	28.38	35.23	43.37
O1	99.16 Yrs.	8.0322E+13	28.00	35.71	46.64
SC	99.16 Yrs.	8.0322E+13	28.00	35.71	46.64
O2	111.41 Yrs.	8.0362E+13	28.00	35.72	46.66
R0.5	83.00 Yrs.	8.7591E+13	26.82	37.29	55.77
O4	201.00 Yrs.	9.7114E+13	.00	.00	45.52
S.5	79.81 Yrs.	9.8733E+13	25.26	39.59	59.47
R1	70.16 Yrs.	1.0260E+14	24.78	40.36	71.68
L0	88.46 Yrs.	1.0546E+14	24.44	40.92	57.66
L0.5	76.94 Yrs.	1.2098E+14	22.82	43.83	66.33
R1.5	62.34 Yrs.	1.2278E+14	22.65	44.15	87.59
S0	66.78 Yrs.	1.3071E+14	21.95	45.55	75.77
L1	67.88 Yrs.	1.4533E+14	20.82	48.03	75.61
S0.5	60.97 Yrs.	1.5086E+14	20.43	48.94	86.66
R2	56.41 Yrs.	1.5126E+14	20.41	49.00	98.01
L1.5	61.91 Yrs.	1.6504E+14	19.54	51.19	83.76
R2.5	52.81 Yrs.	1.7394E+14	19.03	52.55	99.86
S1	56.28 Yrs.	1.7830E+14	18.80	53.21	95.23
L2	57.03 Yrs.	1.9458E+14	17.99	55.58	90.43
S1.5	53.41 Yrs.	1.9673E+14	17.89	55.89	98.64
R3	49.91 Yrs.	2.0308E+14	17.61	56.78	100.00
S2	50.94 Yrs.	2.2016E+14	16.91	59.12	99.91
L3	51.25 Yrs.	2.3663E+14	16.32	61.29	98.13
R4	47.16 Yrs.	2.4919E+14	15.90	62.90	100.00
S3	48.13 Yrs.	2.5250E+14	15.79	63.31	100.00
L4	47.69 Yrs.	2.7038E+14	15.26	65.52	99.99
S4	46.28 Yrs.	2.8824E+14	14.78	67.65	100.00
L5	46.06 Yrs.	3.0255E+14	14.43	69.31	100.00
R5	45.69 Yrs.	3.0452E+14	14.38	69.53	100.00
S5	45.44 Yrs.	3.1907E+14	14.05	71.17	100.00
S6	44.97 Yrs.	3.4185E+14	13.57	73.67	100.00
SQ	45.00 Yrs.	3.6682E+14	13.10	76.31	100.00

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Montana-Dakota Utilities Company**Gas Division**
376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008**

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	2004
Last Test Point -	2008

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O3	191.50 Yrs.	4.6431E+11	313.94	3.19	37.33
SC	117.66 Yrs.	4.7667E+11	309.84	3.23	39.31
O1	117.66 Yrs.	4.7667E+11	309.84	3.23	39.31
O2	132.22 Yrs.	4.7688E+11	309.77	3.23	39.32
RO.5	97.28 Yrs.	5.2014E+11	296.61	3.37	45.53
S.5	92.81 Yrs.	5.8666E+11	279.29	3.58	49.80
L0	102.88 Yrs.	6.1534E+11	272.70	3.67	49.51
R1	80.78 Yrs.	6.1744E+11	272.24	3.67	58.20
LO.5	88.44 Yrs.	7.2526E+11	251.19	3.98	57.53
R1.5	70.75 Yrs.	7.6285E+11	244.92	4.08	74.61
SD	76.28 Yrs.	7.8373E+11	241.64	4.14	64.61
L1	77.25 Yrs.	8.9644E+11	225.94	4.43	66.71
SD.5	69.00 Yrs.	9.3829E+11	220.84	4.53	75.89
R2	63.31 Yrs.	9.8262E+11	215.80	4.63	90.44
L1.5	69.81 Yrs.	1.0646E+12	207.33	4.82	75.90
S1	63.19 Yrs.	1.1568E+12	198.89	5.03	86.90
R2.5	58.84 Yrs.	1.1857E+12	196.46	5.09	97.79
L2	63.88 Yrs.	1.3172E+12	186.39	5.37	84.01
S1.5	59.63 Yrs.	1.3338E+12	185.23	5.40	93.95
R3	55.22 Yrs.	1.4920E+12	175.13	5.71	100.00
S2	56.59 Yrs.	1.5633E+12	171.09	5.84	96.40
L3	56.75 Yrs.	1.8199E+12	158.57	6.31	94.90
S3	53.00 Yrs.	2.0277E+12	150.23	6.66	99.98
R4	51.50 Yrs.	2.2926E+12	141.28	7.08	100.00
L4	52.34 Yrs.	2.4176E+12	137.58	7.27	99.83
S4	50.53 Yrs.	2.8318E+12	127.12	7.87	100.00
L5	50.25 Yrs.	3.1333E+12	120.85	8.27	100.00
SQ	49.00 Yrs.	3.1771E+12	120.02	8.33	100.00
R5	49.59 Yrs.	3.5328E+12	113.81	8.79	100.00
S5	49.34 Yrs.	3.6599E+12	111.82	8.94	100.00
S6	48.88 Yrs.	4.0700E+12	106.04	9.43	100.00
O4	201.00 Yrs.	4.9913E+13	.00	.00	45.52

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Montana-Dakota Utilities Company**Gas Division**

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
Interval Between Test Points - 1
First Test Point - 1999
Last Test Point - 2003

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O3	172.88 Yrs.	5.9937E+11	227.46	-4.40	40.78
SC	106.38 Yrs.	6.1502E+11	224.55	-4.45	43.48
O1	106.38 Yrs.	6.1502E+11	224.55	-4.45	43.48
O2	119.53 Yrs.	6.1537E+11	224.48	-4.45	43.49
R0.5	88.31 Yrs.	6.6981E+11	215.17	-4.65	51.51
S.5	84.50 Yrs.	7.5964E+11	202.05	-4.95	55.65
R1	73.78 Yrs.	7.8759E+11	198.43	5.04	66.69
L0	93.73 Yrs.	8.2139E+11	194.30	5.15	54.46
L0.5	80.84 Yrs.	9.3769E+11	181.85	5.50	63.10
R1.5	65.00 Yrs.	9.4951E+11	180.72	5.53	83.63
S0	69.97 Yrs.	1.0171E+12	174.61	5.73	71.80
L1	70.97 Yrs.	1.1120E+12	166.99	5.99	72.58
S0.5	63.50 Yrs.	1.1727E+12	162.62	6.15	83.27
R2	58.44 Yrs.	1.1807E+12	162.06	6.17	96.31
L1.5	64.31 Yrs.	1.2892E+12	155.09	6.45	81.37
R2.5	54.44 Yrs.	1.3750E+12	150.18	6.66	99.58
S1	58.34 Yrs.	1.3830E+12	149.74	6.68	93.02
S1.5	55.16 Yrs.	1.5523E+12	141.34	7.08	97.67
L2	58.97 Yrs.	1.5525E+12	141.33	7.08	88.68
R3	51.13 Yrs.	1.6722E+12	136.18	7.34	100.00
S2	52.41 Yrs.	1.7696E+12	132.38	7.55	99.75
L3	52.50 Yrs.	2.0435E+12	123.19	8.12	97.54
S3	49.09 Yrs.	2.2323E+12	117.86	8.48	100.00
R4	47.69 Yrs.	2.4669E+12	112.12	8.92	100.00
L4	48.47 Yrs.	2.6484E+12	108.21	9.24	99.98
S4	46.75 Yrs.	3.0380E+12	101.03	9.90	100.00
L5	46.50 Yrs.	3.3918E+12	95.62	10.46	100.00
R5	45.84 Yrs.	3.7751E+12	90.63	11.03	100.00
S5	45.66 Yrs.	3.9169E+12	88.98	11.24	100.00
S6	45.19 Yrs.	4.4369E+12	83.60	11.96	100.00
SQ	45.00 Yrs.	5.6349E+12	74.18	13.48	100.00
O4	201.00 Yrs.	1.4655E+13	.00	.00	45.52

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*Montana-Dakota Utilities Company**Gas Division*

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	1994
Last Test Point -	1998

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O3	150.94 Yrs.	4.6521E+11	229.35	4.36	45.62
O1	93.13 Yrs.	4.7728E+11	226.43	4.42	49.66
SC	93.13 Yrs.	4.7728E+11	226.43	4.42	49.66
O2	104.63 Yrs.	4.7738E+11	226.40	4.42	49.67
R0.5	77.88 Yrs.	5.1494E+11	217.99	4.59	60.47
S.5	74.97 Yrs.	5.5651E+11	209.69	4.77	63.86
L0	83.27 Yrs.	5.6685E+11	207.77	4.81	61.10
R1	65.78 Yrs.	5.9169E+11	203.36	4.92	78.13
L0.5	72.41 Yrs.	6.4723E+11	194.44	5.14	70.21
S0	62.84 Yrs.	6.8269E+11	189.32	5.28	80.95
R1.5	58.50 Yrs.	6.9465E+11	187.69	5.33	92.73
L1	63.97 Yrs.	7.5847E+11	179.62	5.57	79.52
S0.5	57.38 Yrs.	7.8914E+11	176.09	5.68	91.27
R2	53.00 Yrs.	8.2836E+11	171.87	5.82	99.69
L1.5	58.25 Yrs.	8.8037E+11	166.72	6.00	87.31
S1	53.00 Yrs.	9.2767E+11	162.41	6.16	98.01
R2.5	49.56 Yrs.	9.4093E+11	161.26	6.20	100.00
O4	201.00 Yrs.	9.4770E+11	.00	.00	45.52
S1.5	50.25 Yrs.	1.0533E+12	152.42	6.56	99.69
L2	53.59 Yrs.	1.0677E+12	151.39	6.61	93.31
R3	46.66 Yrs.	1.1321E+12	147.02	6.80	100.00
S2	47.84 Yrs.	1.2198E+12	141.64	7.06	100.00
L3	47.91 Yrs.	1.4475E+12	130.02	7.69	99.30
S3	44.88 Yrs.	1.5769E+12	124.57	8.03	100.00
R4	43.56 Yrs.	1.7512E+12	118.21	8.46	100.00
L4	44.28 Yrs.	1.9331E+12	112.51	8.89	100.00
S4	42.72 Yrs.	2.2266E+12	104.83	9.54	100.00
L5	42.50 Yrs.	2.5451E+12	98.05	10.20	100.00
R5	41.88 Yrs.	2.8682E+12	92.37	10.83	100.00
S5	41.69 Yrs.	3.0098E+12	90.17	11.09	100.00
S6	41.28 Yrs.	3.5400E+12	83.14	12.03	100.00
SQ	41.00 Yrs.	4.7974E+12	71.42	14.00	100.00

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*Montana-Dakota Utilities Company**Gas Division*

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
 Interval Between Test Points - 1
 First Test Point - 1989
 Last Test Point - 1993

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O4	185.28 Yrs.	3.0449E+11	216.79	4.61	48.26
O3	133.97 Yrs.	3.0943E+11	215.05	4.65	50.09
O1	82.88 Yrs.	3.2156E+11	210.96	4.74	55.81
SC	82.88 Yrs.	3.2156E+11	210.96	4.74	55.81
O2	93.13 Yrs.	3.2171E+11	210.91	4.74	55.72
R0.5	69.75 Yrs.	3.5996E+11	199.39	5.02	69.28
S.5	67.50 Yrs.	4.1088E+11	186.63	5.36	71.69
R1	59.47 Yrs.	4.3547E+11	181.28	5.52	87.78
L0	75.18 Yrs.	4.3593E+11	181.18	5.52	67.02
L0.5	65.69 Yrs.	5.1531E+11	166.65	6.00	76.34
R1.5	53.28 Yrs.	5.2879E+11	164.51	6.08	97.78
S0	57.22 Yrs.	5.6088E+11	159.73	6.26	88.67
L1	58.28 Yrs.	6.3475E+11	150.15	6.66	85.24
R2	48.53 Yrs.	6.4945E+11	148.44	6.74	100.00
S0.5	52.44 Yrs.	6.6001E+11	147.25	6.79	96.66
R2.5	45.47 Yrs.	7.3666E+11	139.38	7.17	100.00
L1.5	53.22 Yrs.	7.4188E+11	138.89	7.20	91.86
S1	48.59 Yrs.	7.9281E+11	134.35	7.44	99.86
S1.5	46.09 Yrs.	8.8683E+11	127.03	7.87	100.00
R3	42.84 Yrs.	8.9258E+11	126.62	7.90	100.00
L2	49.06 Yrs.	9.1302E+11	125.20	7.99	96.48
S2	43.91 Yrs.	1.0165E+12	118.65	8.43	100.00
L3	43.91 Yrs.	1.2177E+12	108.41	9.22	99.91
S3	41.16 Yrs.	1.2921E+12	105.24	9.50	100.00
R4	39.94 Yrs.	1.3849E+12	101.65	9.84	100.00
L4	40.53 Yrs.	1.6240E+12	93.87	10.65	100.00
S4	39.09 Yrs.	1.8345E+12	88.32	11.32	100.00
L5	38.84 Yrs.	2.1747E+12	81.12	12.33	100.00
R5	38.28 Yrs.	2.4058E+12	77.13	12.97	100.00
S5	38.09 Yrs.	2.6011E+12	74.17	13.48	100.00
S6	37.66 Yrs.	3.2829E+12	66.02	15.15	100.00
SQ	38.00 Yrs.	3.5959E+12	63.08	15.85	100.00

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*Montana-Dakota Utilities Company**Gas Division*
*376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008*

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	1984
Last Test Point -	1988

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
S.5	61.22 Yrs.	2.5969E+11	197.69	5.06	79.35
L0	68.07 Yrs.	2.5991E+11	197.61	5.06	72.82
R0.5	63.19 Yrs.	2.6009E+11	197.54	5.06	77.65
R1	54.16 Yrs.	2.6059E+11	197.35	5.07	94.98
O2	83.97 Yrs.	2.6171E+11	196.93	5.08	61.57
O1	74.72 Yrs.	2.6172E+11	196.92	5.08	61.90
SC	74.72 Yrs.	2.6172E+11	196.92	5.08	61.90
O3	120.63 Yrs.	2.6260E+11	196.59	5.09	54.11
O4	166.69 Yrs.	2.6300E+11	196.44	5.09	51.82
L0.5	59.66 Yrs.	2.6381E+11	196.14	5.10	82.08
R1.5	48.75 Yrs.	2.6553E+11	195.51	5.11	99.68
S0	52.13 Yrs.	2.6742E+11	194.81	5.13	95.33
L1	53.06 Yrs.	2.7528E+11	192.01	5.21	90.26
R2	44.53 Yrs.	2.7625E+11	191.68	5.22	100.00
S0.5	47.91 Yrs.	2.7841E+11	190.93	5.24	99.66
R2.5	41.78 Yrs.	2.8616E+11	188.33	5.31	100.00
L1.5	48.53 Yrs.	2.9115E+11	186.71	5.36	95.46
S1	44.47 Yrs.	2.9776E+11	184.62	5.42	100.00
R3	39.28 Yrs.	3.1099E+11	180.65	5.54	100.00
S1.5	42.22 Yrs.	3.1495E+11	179.51	5.57	100.00
L2	44.78 Yrs.	3.2336E+11	177.16	5.64	98.57
S2	40.19 Yrs.	3.4318E+11	171.97	5.81	100.00
L3	40.09 Yrs.	4.0496E+11	158.31	6.32	100.00
S3	37.59 Yrs.	4.1594E+11	156.21	6.40	100.00
R4	36.44 Yrs.	4.3463E+11	152.81	6.54	100.00
L4	36.94 Yrs.	5.3897E+11	137.22	7.29	100.00
S4	35.59 Yrs.	6.1241E+11	128.73	7.77	100.00
L5	35.31 Yrs.	7.8918E+11	113.40	8.82	100.00
R5	34.75 Yrs.	8.6417E+11	108.37	9.23	100.00
S5	34.56 Yrs.	9.9227E+11	101.13	9.89	100.00
SQ	34.00 Yrs.	1.3678E+12	86.14	11.61	100.00
S6	34.13 Yrs.	1.4705E+12	83.08	12.04	100.00

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*Montana-Dakota Utilities Company**Gas Division*

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	1979
Last Test Point -	1983

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O4	166.59 Yrs.	1.9171E+11	185.15	5.40	51.84
O3	120.41 Yrs.	1.9399E+11	184.06	5.43	54.17
SC	74.44 Yrs.	1.9969E+11	181.41	5.51	62.13
O1	74.44 Yrs.	1.9969E+11	181.41	5.51	62.13
O2	83.66 Yrs.	1.9976E+11	181.38	5.51	61.79
R0.5	62.59 Yrs.	2.1760E+11	173.79	5.75	78.45
S.5	60.31 Yrs.	2.4137E+11	165.01	6.06	80.54
R1	53.28 Yrs.	2.5080E+11	161.88	6.18	95.95
L0	66.94 Yrs.	2.5278E+11	161.24	6.20	73.80
R1.5	47.72 Yrs.	2.8801E+11	151.06	6.62	99.87
L0.5	58.28 Yrs.	2.9075E+11	150.35	6.65	83.40
S0	50.81 Yrs.	3.0983E+11	145.64	6.87	96.83
R2	43.38 Yrs.	3.2699E+11	141.77	7.05	100.00
R2.5	40.66 Yrs.	3.2924E+11	141.28	7.08	100.00
R3	38.13 Yrs.	3.3689E+11	139.67	7.16	100.00
S0.5	46.50 Yrs.	3.5170E+11	136.70	7.32	99.99
L1	51.47 Yrs.	3.5379E+11	135.29	7.34	91.69
R4	35.03 Yrs.	3.6061E+11	135.00	7.41	100.00
L1.5	46.91 Yrs.	3.8776E+11	130.19	7.66	96.49
S1	42.94 Yrs.	4.0746E+11	127.00	7.87	100.00
S1.5	40.72 Yrs.	4.2503E+11	124.35	8.04	100.00
L2	43.06 Yrs.	4.5447E+11	120.25	8.32	99.13
S2	38.66 Yrs.	4.5480E+11	120.21	8.32	100.00
S3	35.97 Yrs.	4.8635E+11	116.24	8.60	100.00
L3	38.28 Yrs.	5.3510E+11	110.82	9.02	100.00
L4	35.09 Yrs.	5.8326E+11	106.15	9.42	100.00
S4	33.75 Yrs.	6.1788E+11	103.13	9.70	100.00
R5	32.75 Yrs.	7.1756E+11	95.70	10.45	100.00
L5	33.25 Yrs.	8.0653E+11	90.27	11.08	100.00
S5	32.41 Yrs.	9.7266E+11	82.20	12.17	100.00
S6	31.69 Yrs.	1.5937E+12	64.22	15.57	100.00
SQ	32.00 Yrs.	4.2048E+12	39.53	25.29	100.00

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*Montana-Dakota Utilities Company**Gas Division*

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	1974
Last Test Point -	1978

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O4	140.63 Yrs.	1.5262E+11	163.06	6.13	57.46
O3	101.84 Yrs.	1.5462E+11	162.00	6.17	60.60
SC	63.25 Yrs.	1.5985E+11	159.33	6.28	73.12
O1	63.25 Yrs.	1.5985E+11	159.33	6.28	73.12
O2	71.09 Yrs.	1.5992E+11	159.29	6.28	71.40
R0.5	53.78 Yrs.	1.7525E+11	152.17	6.57	90.70
R4	31.38 Yrs.	1.7826E+11	150.88	6.63	100.00
S.5	52.03 Yrs.	1.9719E+11	143.45	6.97	92.17
R1	46.41 Yrs.	2.0061E+11	142.22	7.03	99.99
R3	34.13 Yrs.	2.0669E+11	140.12	7.14	100.00
L0	57.60 Yrs.	2.1589E+11	137.10	7.29	82.19
R2.5	36.31 Yrs.	2.2126E+11	135.43	7.38	100.00
R1.5	42.06 Yrs.	2.2176E+11	135.27	7.39	100.00
R2	38.56 Yrs.	2.3718E+11	130.80	7.65	100.00
L0.5	50.59 Yrs.	2.3947E+11	130.17	7.68	90.51
S0	44.38 Yrs.	2.5785E+11	125.45	7.97	100.00
S0.5	40.91 Yrs.	2.7752E+11	120.92	8.27	100.00
L1	44.97 Yrs.	2.7894E+11	120.61	8.29	96.60
S3	32.06 Yrs.	2.8413E+11	119.51	8.37	100.00
L1.5	41.25 Yrs.	2.9262E+11	117.76	8.49	99.02
S1.5	36.16 Yrs.	2.9536E+11	117.21	8.53	100.00
S2	34.41 Yrs.	2.9575E+11	117.14	8.54	100.00
S1	38.00 Yrs.	3.0121E+11	116.07	8.62	100.00
L4	31.22 Yrs.	3.1075E+11	114.27	8.75	100.00
S4	30.00 Yrs.	3.1929E+11	112.74	8.87	100.00
R5	29.06 Yrs.	3.2615E+11	111.54	8.97	100.00
L2	38.00 Yrs.	3.2825E+11	111.19	8.99	99.92
L3	33.97 Yrs.	3.4155E+11	109.00	9.17	100.00
L5	29.47 Yrs.	4.0160E+11	100.52	9.95	100.00
S5	28.66 Yrs.	4.9164E+11	90.85	11.01	100.00
S6	27.94 Yrs.	8.1216E+11	70.69	14.15	100.00
SQ	28.00 Yrs.	1.5826E+12	50.64	19.75	100.00

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*Montana-Dakota Utilities Company**Gas Division**376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008*

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	1969
Last Test Point -	1973

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
R4	28.75 Yrs.	1.3310E+10	446.72	2.24	100.00
S4	27.13 Yrs.	2.2779E+10	341.47	2.93	100.00
L4	28.22 Yrs.	2.4949E+10	326.29	3.06	100.00
R5	26.28 Yrs.	2.4987E+10	326.04	3.07	100.00
L5	26.50 Yrs.	2.6575E+10	316.14	3.16	100.00
R3	31.03 Yrs.	2.9245E+10	301.37	3.32	100.00
S3	29.00 Yrs.	3.3639E+10	281.00	3.56	100.00
S5	25.59 Yrs.	3.6009E+10	271.59	3.68	100.00
R2.5	32.78 Yrs.	4.2904E+10	248.81	4.02	100.00
SQ	24.00 Yrs.	4.8201E+10	234.74	4.26	100.00
O4	118.31 Yrs.	5.4107E+10	221.56	4.51	62.89
S2	30.97 Yrs.	5.4136E+10	221.50	4.51	100.00
O3	85.91 Yrs.	5.4651E+10	220.46	4.54	66.91
O2	60.38 Yrs.	5.6448E+10	216.92	4.61	80.15
O1	53.72 Yrs.	5.6482E+10	216.85	4.61	86.10
SC	53.72 Yrs.	5.6482E+10	216.85	4.61	86.10
L3	30.44 Yrs.	5.6487E+10	216.84	4.61	100.00
R2	34.56 Yrs.	5.7544E+10	214.84	4.65	100.00
S6	24.63 Yrs.	5.8183E+10	213.66	4.68	100.00
R0.5	46.31 Yrs.	6.0333E+10	209.82	4.77	100.00
S1.5	32.44 Yrs.	6.2167E+10	206.70	4.84	100.00
S.5	45.00 Yrs.	6.2592E+10	206.00	4.85	100.00
L0	49.71 Yrs.	6.3212E+10	204.99	4.88	89.35
R1.5	37.31 Yrs.	6.3987E+10	203.74	4.91	100.00
R1	40.66 Yrs.	6.4439E+10	203.02	4.93	100.00
L0.5	44.06 Yrs.	6.8330E+10	197.16	5.07	95.54
S0	38.97 Yrs.	7.0303E+10	194.37	5.14	100.00
S0.5	36.25 Yrs.	7.1660E+10	192.52	5.19	100.00
S1	33.91 Yrs.	7.2099E+10	191.94	5.21	100.00
L1.5	36.50 Yrs.	7.3747E+10	189.78	5.27	99.85
L2	33.81 Yrs.	7.5822E+10	187.16	5.34	100.00
L1	39.50 Yrs.	7.7990E+10	184.55	5.42	99.09

000033

*Montana-Dakota Utilities Company**Gas Division*

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	1964
Last Test Point -	1968

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
O4	114.47 Yrs.	2.2421E+09	784.21	1.28	63.88
O3	83.13 Yrs.	2.2595E+09	781.18	1.28	68.08
O2	58.38 Yrs.	2.3214E+09	770.69	1.30	81.70
SC	51.94 Yrs.	2.3222E+09	770.55	1.30	89.05
O1	51.94 Yrs.	2.3222E+09	770.55	1.30	89.05
R2.5	32.38 Yrs.	2.5391E+09	736.91	1.36	100.00
R0.5	44.75 Yrs.	2.5567E+09	734.36	1.36	100.00
R2	33.75 Yrs.	2.7315E+09	710.48	1.41	100.00
S.5	43.44 Yrs.	2.8569E+09	694.72	1.44	100.00
R1	39.34 Yrs.	2.9731E+09	681.01	1.47	100.00
L1.5	35.41 Yrs.	3.0353E+09	673.99	1.48	99.92
S1.5	31.78 Yrs.	3.0768E+09	669.43	1.49	100.00
R1.5	36.22 Yrs.	3.0778E+09	669.32	1.49	100.00
S1	32.94 Yrs.	3.2240E+09	653.96	1.53	100.00
L0	47.84 Yrs.	3.3595E+09	640.65	1.56	90.96
L0.5	42.47 Yrs.	3.3624E+09	640.37	1.56	96.52
S0.5	35.06 Yrs.	3.6441E+09	615.12	1.63	100.00
L1	38.03 Yrs.	3.6725E+09	612.74	1.63	99.47
L2	32.97 Yrs.	3.8691E+09	596.96	1.68	100.00
S0	37.56 Yrs.	4.0334E+09	584.68	1.71	100.00
R3	31.06 Yrs.	4.6688E+09	543.44	1.84	100.00
S2	30.63 Yrs.	5.3202E+09	509.08	1.96	100.00
L3	30.50 Yrs.	1.4343E+10	310.05	3.23	100.00
R4	29.78 Yrs.	1.7227E+10	282.91	3.53	100.00
S3	29.59 Yrs.	2.0151E+10	261.58	3.82	100.00
S6	29.78 Yrs.	2.2988E+10	244.91	4.08	100.00
L4	29.53 Yrs.	2.8616E+10	219.51	4.56	100.00
R5	29.47 Yrs.	3.6228E+10	195.09	5.13	100.00
S5	29.59 Yrs.	3.8496E+10	189.26	5.28	100.00
L5	29.44 Yrs.	4.3215E+10	178.62	5.60	100.00
S4	29.31 Yrs.	4.3949E+10	177.13	5.65	100.00
SQ	23.00 Yrs.	1.9498E+12	26.59	37.60	100.00

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*Montana-Dakota Utilities Company**Gas Division*

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points - 5
 Interval Between Test Points - 1
 First Test Point - 1959
 Last Test Point - 1963

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
R2.5	34.94 Yrs.	1.6551E+10	215.23	4.65	100.00
S6	32.56 Yrs.	1.6602E+10	214.90	4.65	100.00
S5	32.66 Yrs.	1.6800E+10	213.63	4.68	100.00
R2	36.47 Yrs.	1.7064E+10	211.98	4.72	100.00
R1.5	39.50 Yrs.	1.7186E+10	211.22	4.73	100.00
R3	33.72 Yrs.	1.7744E+10	207.87	4.81	100.00
R5	32.69 Yrs.	1.8044E+10	206.13	4.85	100.00
R1	43.63 Yrs.	1.8111E+10	205.75	4.86	100.00
R0.5	50.88 Yrs.	1.9034E+10	200.70	4.98	94.52
L5	32.84 Yrs.	1.9319E+10	199.22	5.02	100.00
O2	67.75 Yrs.	1.9606E+10	197.76	5.06	74.15
O1	60.31 Yrs.	1.9606E+10	197.75	5.06	76.68
SC	60.31 Yrs.	1.9606E+10	197.75	5.06	76.68
R4	32.91 Yrs.	1.9631E+10	197.63	5.06	100.00
S4	32.84 Yrs.	1.9661E+10	197.48	5.06	100.00
O3	97.41 Yrs.	1.9835E+10	196.61	5.09	62.28
O4	134.63 Yrs.	1.9894E+10	196.32	5.09	58.87
S.5	49.00 Yrs.	1.9999E+10	195.80	5.11	96.49
L0	53.89 Yrs.	2.0645E+10	192.71	5.19	85.60
S0	41.38 Yrs.	2.1080E+10	190.72	5.24	100.00
SD.5	38.41 Yrs.	2.2450E+10	184.81	5.41	100.00
L0.5	47.50 Yrs.	2.2703E+10	183.77	5.44	93.07
S1	36.00 Yrs.	2.5249E+10	174.26	5.74	100.00
S1.5	34.84 Yrs.	2.6450E+10	170.26	5.87	100.00
L4	33.22 Yrs.	2.6515E+10	170.05	5.88	100.00
L1	42.31 Yrs.	2.6700E+10	169.46	5.90	98.03
S3	33.16 Yrs.	2.6865E+10	168.94	5.92	100.00
L1.5	39.44 Yrs.	2.8110E+10	165.16	6.05	99.46
S2	33.88 Yrs.	2.9137E+10	162.22	6.16	100.00
L3	34.59 Yrs.	3.2388E+10	153.86	6.50	100.00
L2	37.06 Yrs.	3.3097E+10	152.21	6.57	99.96
SQ	18.00 Yrs.	1.2772E+13	7.75	129.06	100.00

000080

*Montana-Dakota Utilities Company**Gas Division*
*376.00 MAINS**Simulated Plant Record Analysis Calculated As Of 12/31/2008*

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	1954
Last Test Point -	1958

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
R2.5	36.34 Yrs.	7.1717E+08	699.50	1.43	100.00
R2	38.53 Yrs.	7.2687E+08	694.82	1.44	100.00
S2	35.81 Yrs.	8.4078E+08	646.04	1.55	100.00
R1.5	42.41 Yrs.	8.4320E+08	645.11	1.55	100.00
L3	36.47 Yrs.	8.7862E+08	631.97	1.58	100.00
R1	47.84 Yrs.	9.9074E+08	595.14	1.68	99.70
R0.5	57.09 Yrs.	1.0591E+09	575.61	1.74	86.11
O1	68.69 Yrs.	1.0771E+09	570.77	1.75	67.33
SC	68.69 Yrs.	1.0771E+09	570.77	1.75	67.33
O2	77.19 Yrs.	1.0780E+09	570.53	1.75	66.55
S1.5	37.19 Yrs.	1.0797E+09	570.08	1.75	100.00
O3	111.59 Yrs.	1.0916E+09	566.98	1.76	57.10
O4	154.63 Yrs.	1.0957E+09	565.91	1.77	54.34
R3	34.75 Yrs.	1.1174E+09	560.39	1.78	100.00
S.5	54.75 Yrs.	1.2745E+09	524.72	1.91	88.24
L2	40.06 Yrs.	1.3085E+09	517.85	1.93	99.74
S1	38.84 Yrs.	1.6612E+09	459.60	2.18	100.00
LD	60.41 Yrs.	1.6713E+09	458.22	2.18	79.61
S0.5	41.75 Yrs.	1.6738E+09	457.87	2.18	100.00
L1.5	43.03 Yrs.	1.6808E+09	456.93	2.19	98.41
L0.5	52.84 Yrs.	1.7545E+09	447.23	2.24	88.51
S3	34.28 Yrs.	1.7935E+09	442.33	2.26	100.00
S0	45.47 Yrs.	1.8105E+09	440.25	2.27	100.00
L1	46.97 Yrs.	2.2186E+09	397.71	2.51	95.28
L4	34.19 Yrs.	2.8138E+09	353.14	2.83	100.00
R4	33.47 Yrs.	4.1107E+09	292.17	3.42	100.00
S4	33.25 Yrs.	5.8387E+09	245.15	4.08	100.00
L5	33.25 Yrs.	6.4771E+09	232.76	4.30	100.00
R5	32.88 Yrs.	9.5257E+09	191.93	5.21	100.00
S5	32.84 Yrs.	9.7306E+09	189.90	5.27	100.00
S6	32.69 Yrs.	1.1182E+10	177.15	5.65	100.00
SQ	33.00 Yrs.	2.0199E+10	131.81	7.59	100.00

000091

Montana-Dakota Utilities Company**Gas Division**

376.00 MAINS

Simulated Plant Record Analysis Calculated As Of 12/31/2008

Simulated Balances Method

No. Of Test Points -	5
Interval Between Test Points -	1
First Test Point -	1949
Last Test Point -	1953

<i>Curve Type</i>	<i>Average Service Life</i>	<i>Sum Of Squares Difference</i>	<i>Conformance Index</i>	<i>Index Of Variation</i>	<i>Ret Exp Index</i>
S6	31.84 Yrs.	1.3226E+08	954.90	1.05	100.00
S5	32.22 Yrs.	1.3477E+09	299.14	3.34	100.00
R5	32.34 Yrs.	2.3339E+09	227.32	4.40	100.00
L5	32.97 Yrs.	3.2562E+09	192.45	5.20	100.00
S4	33.19 Yrs.	5.6641E+09	145.92	6.85	100.00
SQ	32.00 Yrs.	5.8955E+09	143.03	6.99	100.00
L4	34.63 Yrs.	8.6831E+09	117.85	8.49	100.00
R4	33.81 Yrs.	1.0738E+10	105.98	9.44	100.00
S3	35.28 Yrs.	1.3049E+10	96.14	10.40	100.00
L3	38.38 Yrs.	1.6541E+10	85.39	11.71	100.00
S2	38.44 Yrs.	2.0745E+10	76.25	13.12	100.00
R3	36.75 Yrs.	2.1262E+10	75.31	13.28	100.00
L2	44.47 Yrs.	2.5340E+10	68.99	14.50	98.69
S1.5	41.09 Yrs.	2.5676E+10	68.53	14.59	100.00
R2.5	39.81 Yrs.	2.6855E+10	67.01	14.92	100.00
S1	44.44 Yrs.	2.9635E+10	63.79	15.68	100.00
L1.5	49.59 Yrs.	3.0005E+10	63.40	15.77	94.71
R2	44.06 Yrs.	3.0971E+10	62.40	16.03	100.00
L1	56.28 Yrs.	3.2781E+10	60.65	16.49	87.21
S0.5	49.56 Yrs.	3.3693E+10	59.83	16.71	98.87
R1.5	51.25 Yrs.	3.4301E+10	59.30	16.86	98.90
L0.5	65.91 Yrs.	3.6136E+10	57.77	17.31	76.13
R1	61.13 Yrs.	3.6185E+10	57.73	17.32	85.27
S0	56.25 Yrs.	3.6659E+10	57.36	17.43	89.99
S.5	71.41 Yrs.	3.6957E+10	57.12	17.51	67.43
R0.5	76.53 Yrs.	3.6990E+10	57.10	17.51	61.80
O1	94.53 Yrs.	3.7302E+10	56.86	17.59	48.93
SC	94.53 Yrs.	3.7302E+10	56.86	17.59	48.93
O2	106.19 Yrs.	3.7307E+10	56.86	17.59	48.94
O3	154.88 Yrs.	3.7411E+10	56.78	17.61	44.68
L0	78.81 Yrs.	3.8415E+10	56.03	17.85	64.27
O4	201.00 Yrs.	4.0812E+10	.00	.00	45.52

000092

MONTANA-DAKOTA UTILITIES CO.
MONTANA CONSUMER COUNSEL
DATA REQUEST
DATED FEBRUARY 4, 2013
DOCKET NO. D2012.9.100

MCC-177 RE: RESPONSE TO MCC-139
WITNESS: ROBINSON

In response to MCC-139, the Company states it performs an estimation of vintage level survivors based on both Development Survivor routines with the SPR data and more recent detailed line item records from the Company's Continuing Property Records. Regarding the Company's statement, provide the actual and estimated age data for Accounts 376 and 380, identifying which items of information were utilized, and specifically how, in the calculation for Accounts 376 and 380. Further, provide the Development Survivor routines on electronic medium in Excel readable format to the extent such are available in Excel. If not available in Excel, provide the information in hard copy and in its native electronic format. Further, provide all other documentation, assumptions, and information reviewed and/or relied upon in sufficient detail to permit replication of the Company's estimates for Accounts 376 and 380.

Response:

The actual balances for the simulated accounts are contained within the data provided in Response No. MCC-135. The simulated balances were calculated using the vintage gross additions, proposed Iowa curves, and related average service lives.

The Simulated Plant Record Method was the primary input for estimating the average service life parameters for Accounts 376 and 380. In addition, vintage level survivors were developed for individual sub account categories of Accounts 376 and 380 during the 2001 depreciation study. Those detailed calculations, performed more than ten years ago, are no longer available. In subsequent periods, efforts have been completed to continue to develop longer range actuarial files. The vintage sub-account files were also used to calculate the December 31, 2008 average remaining lives. The estimated average service life parameters and future net salvage percent for each property group gives consideration to the overall range of data recent experience.

With regard to the service life parameters, given the nature of the utility property contained in each property group in which quality property is placed in service with the expectation that large quantities of retirements are not anticipated shortly after being placed in service, the estimated mode of survivor curve tends to be focused on more right mode or higher sub-script curves.

In Response No. MCC-135, Montana-Dakota provided a complete copy of the historic depreciation database. The SPR is a tool among various items that are reviewed to identify the estimated average service life for each of the applicable property groups.

~~XXXXXXXXXX~~
000093

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

6-23. Please provide the original cost of plant, by vintage, by account as reflected in the depreciation study, on electronic medium in Excel readable format for each account separately.

Response:

Please see the enclosed CD with the file identified as "PUC 6-23 Depr Database Files" and Response No. 6-30.

000094

The attachment to PUC 6-23 is voluminous. Please see file “PUC 6-23 Depr Database Files” provided on CD by the Company.

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

- 6-30. Please provide the actual and estimated aged data separately, for Accounts 376 and 380, identifying specifically how each of the items of information were utilized in all calculations for Accounts 376 and 380. Further, provide the Development Survivor routines relied on, on electronic medium in Excel readable format to the extent such are available in Excel. If not available in Excel, provide the information in hard copy and in its native electronic format. Further, provide all other documentation, assumptions, and information reviewed and/or relied upon in sufficient detail to permit replication of the Company's estimates for Accounts 376 and 380.

Response:

Research identifies that the vintage survivors for Accounts 376 and 380, by sub-account were initially developed as of yearend 2003. The underlying calculations cannot be presently located, and therefore, are not available. Furthermore, vintage activity prior to 2002 (specifically retirements that were previously supplied in the Montana data request) were developed via allocations for the earlier years back through 1977, and therefore, not viewed as necessarily reliable for completion as a basis for use with the retirement rate method. Likewise, due to the passage of numerous years, those worksheets from the earlier year's calculations cannot be located.

Information from company records during the period 2004 through 2008 were used to update the survivors through December 31, 2008. As previously noted as more expanded retirement database grows with the passage of time, such data is anticipated to be the basis for future actual analysis. The detailed actuarial data files for Account 376 and 380 for the period 2002 to 2008 identified is provided in Response No. 6-23 in the file identified as D08_MU_376_380

Contrary to the statement in the middle of page 7 of Mr. Robinson's direct testimony and in accordance with the discussion on page 14, lines 16 to 21 of Mr. Robinson's direct testimony, the Simulated Plant Record method was used to develop depreciation service life parameters given the short range of actual available company vintage retirement data.

000096

**MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008**

- 6-35. Please segregate the investment in Account 376.1 – Distribution Steel Mains between bare steel, coated and wrapped steel, and other, as well as when each type of investment was first installed in the system and when the Company no longer installed such type of main.**

Response:

Montana-Dakota does not track steel mains by bare, coated, or wrapped pipe.

000097

**MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008**

6-36. Please identify the dollar level of retirements, by year, associated with Account 376.1 – Distribution Steel Mains by type of pipe (i.e., bare, wrapped, coated, etc.). The information should be provided on electronic medium in Excel readable format.

Response:

Montana-Dakota does not track steel mains by bare, coated, or wrapped pipe.

000098

**MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008**

- 6-28. Please provide a copy of each of Mr. Robinson's gas-related depreciation studies, including all testimony and exhibits submitted during the past five years.

Response:

Please see the enclosed CD for the electronic file entitled "PUC 6-28 Aus Depr Study Reports" for Mr. Robinson's gas related depreciation studies, including testimony and exhibits.

000099

The attachment to PUC 6-28 is voluminous. Please see file “PUC 6-28 AUS Depr Study Reports” provided on CD by the Company.

MONTANA-DAKOTA UTILITIES CO.
MONTANA CONSUMER COUNSEL
DATA REQUEST
DATED JANUARY 11, 2013
DOCKET NO. D2012.9.100

MCC-135 RE: DATA
WITNESS: ROBINSON

Please provide the original cost, by vintage, by account as reflected in Section 9 of the depreciation study, on electronic medium in Excel readable format for each account separately.

Response:

There is no Section 9 in either the Montana-Dakota Gas or Common Plant depreciation study report. The SPR depreciation data etc. and related developed survivors along with the Company's historical salvage data are being provided electronically on the enclosed CD entitled 'MCC-135 Depr Data Base.zip'.

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

6-44. Please provide a detailed description (e.g., physical location, type of construction, square feet, when built, etc.) for each of the 10 largest investments in Account 390 – General Structures Common Plant. For each of the 10 largest investments, identify whether the investment is owned or leased. Finally, identify all plant to retire any of the identified buildings.

Response:

Please see Attachment A. Montana-Dakota has no plans to retire any of the structures referenced on Attachment A.

000102

Montana-Dakota Utilities Co.
 Ten Largest General Plant Structures by Investment
 Common 390 Account - All Owned
 As of December 31, 2012

Building	Location	390 Account Balance	Type of Construction	Year Built	Size (Sq. Ft)	Current Use
Billings Office	Billings, MT	\$4,341,473.19	Steel with brick exterior	2007	32,680	Construction and maintenance warehouse and shop primarily supporting the Billing's District's operations and the main operations office for the Rocky Mountain Region
MDU General Office	Bismarck, ND	5,309,559.38	Steel with precast exterior	1968	65,224	Main administrative and operations office for Montana-Dakota Utilities Co.
Bismarck Service Center	Bismarck, ND	4,456,772.65	Steel with brick/metal exterior	1984	101,767	Construction and maintenance warehouse, shop, and office primarily supporting the Bismarck District's operations
MDU Resources Corporate Office	Bismarck, ND	5,470,791.60	Steel with precast exterior	2005	90,752	Main administrative office for MDU Resources Group, Inc. Amount presented represents Montana-Dakota Utilities Co's 13% ownership
Glendive District Office & Service Center	Glendive, MT	1,529,677.39	Steel with EIFS/metal exterior	1995	25,124	Construction and maintenance warehouse, shop, and office primarily supporting the Glendive District's operations
Sheridan District Office	Sheridan, WY	1,117,566.19	Wood stud with EIFS/stone veneer exterior	2004	6,250	Main operations office for the Sheridan District
Sheridan Service Center	Sheridan, WY	855,683.80	Steel with metal exterior	1979	18,425	Construction and maintenance warehouse and shop primarily supporting the Sheridan District's operations
Badlands Region Office & Service Center	Dickinson, ND	2,152,318.31	Steel with brick/metal exterior	1982	33,800	Construction and maintenance warehouse and shop primarily supporting the Dickinson District's operations and the main operations office for the Badlands Region
Williston Employee Trailer Park	Williston, ND	2,072,792.09	Vinyl Siding	2012	20,660	Land improvements/10 Mobile Homes & one 4-Plex @ Employee Mobile Home Park MDU employee and contractor housing
Aircraft Hangar	Bismarck, ND	714,588.22	Steel with metal exterior	2009	14,975	Maintenance and hangar for corporate aircraft
Total		<u>\$28,021,222.82</u>				
Total Other Structures & Improvements		\$ 7,008,416.49				
Total 390 Account-Common		<u>\$35,029,639.31</u>				

000103

PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA

REBUTTAL TESTIMONY OF
EARL M. ROBINSON

MONTANA DAKOTA UTILITIES CO.
GAS PLANT

000104

1 Furthermore, Company management has indicated that during a
2 replacement project (either Mains or Services) almost always the facility
3 being replaced is still in service until the new replacement facility is cut
4 over into service. As such, this means that very seldom work associated
5 with the installation part of the project has any relation to or benefit to the
6 final retirement resources required to either remove or properly abandon
7 the replaced facility.

8 Mr. Pous' testimony position relative to the Company's operating
9 policy and practice is that the Company is improperly accounting for cost.
10 Based upon his position he stated: "I also recommend the Commission
11 order the Company to make a full and complete analysis of why its recorded
12 levels of negative net salvage are not only becoming more negative, but are
13 at high negative levels compared to the rest of the industry. Such analysis
14 should include a detailed review and justification of those costs directly
15 assigned to cost of removal when replacement activity occurs. It may very
16 well be a situation where activities that should be assigned to the new
17 replacement investment are being booked as cost of removal. However, in
18 no instance should the Commission adopt a more negative value than
19 currently exists."

20 To support his position to reject the proposed higher level of negative
21 net salvage for Account 380-Services, Mr. Pous, in his typical misleading
22 way, quotes the negative net salvage percent for a Gas Company which I
23 produced a study during the past five years, to argue that the MDU's net

1 salvage proposal is 8 times the salvage rate for other companies. The
2 referenced negative (-25) percent net salvage that Mr. Pous quotes for RG&E
3 is the lowest negative net salvage percent of any of the gas depreciation
4 studies that I prepared during the past five years. There can be specific
5 reasons for such low levels of negative net salvage such as for some
6 companies under its jurisdiction, the NY PSC artificially caps the level of cost
7 of removal to be recorded in the depreciation reserve.

8 Net salvage of the gas company studies that I performed in the past
9 five years (other than MDU) ranged from negative (-25) to (-160) percent. It
10 should be noted that the negative (-160) percent net salvage is not
11 significantly less than MDU's current Account 380 net salvage percent and
12 illustrates how wide of a range of net salvage occurs across various
13 operating companies. Accordingly, it is irrational to believe that one can
14 propose a net salvage rate for a company by simply selecting a net salvage
15 percent from another study produced at the same time period. Furthermore,
16 the quoted negative net salvage of (-25) which Mr. Pous quoted was for an
17 operating company from back east in upstate New York with likely far
18 different operating characteristic from MDU which is located in the western
19 mountain states. Mr. Pous' comparison and suggested limitation is not only
20 incorrect but also irrational.

21 The MDU net salvage data for Account 380 Services is clear and
22 empirical—Mr. Pous simply choses to ignore or oppose the data when it does
23 not serve his purpose.

1 The gross salvage data is currently included in Section 7 of the depreciation
2 study analysis.

3 In response to a data request from Mr. Pous, detailed explanations
4 were provide to Mr. Pous but he chose to ignore the information in his net
5 salvage recommendations (this will be further discussed with the salvage
6 information a little later in my rebuttal).

7 **Q30. WANT IS THE NEW RESULTING AVERAGE SERVICE LIFE**
8 **RECOMMENDATION AS A RESULT OF THIS ANALYSIS UPDATE?**

9 A. While the original life analysis produced an average service life indication of
10 an Iowa 35-R1 life and curve, the elimination of the General Office retirement
11 at a very young age changed the service life pattern from an R1 dispersion to
12 an R3 dispersion and also lengthened the life indication to a 37 year average
13 service life from 35 years. The R3 dispersion far more consistent of a typical
14 life pattern of a group of structures which routinely experience smaller levels
15 of component retirements earlier in life followed by more material retirements
16 of the overall structure later in life. The revised average service life, while
17 longer than the original proposal actually produces a shorter average
18 remaining life and higher proposed depreciation rate from that included in the
19 original depreciation study report. The original average remaining life listed
20 for Account 390 in the depreciation report was 25.2 years; the revised
21 average remaining life for the account is now 24.1 years. Implicitly, while the
22 change would increase the proposed depreciation expense no adjustment is
23 being proposed at this time. The cause for the shorter average remaining life

1 and higher depreciation rate is the change in the survivor characteristic from
2 the prior Iowa R1 curve to the revised R3 curve (as discussed above the
3 removal of the young aged retirements relative to the General Office building
4 caused the shift in the survival characteristic).

5 **Q31. MR POUS STATES "THE RETIREMENT ACTIVITY REFLECTED IN THE**
6 **ACTUARIAL RESULTS (E.G., ROOFS, A/C SYSTEMS, ETC.) RELIED**
7 **UPON BY MR. ROBINSON WILL SIGNIFICANLY UNDERSTATE THE LIFE**
8 **EXPECTANCY OF THE MAJORITY OF THE INVESTMENT IN THE**
9 **ACCOUNT (E.G., STEEL STRUCTURES). IS HE CORRECT?**

10 A. No. Either Mr. Pous is intentionally misstating the facts or he does not
11 understand how levels of retirements impact retirement rate analysis results.
12 A simple discussion will illustrate the impact of retirements on an observed life
13 table and resulting plotted survivor curve (the observed life table/survivor
14 curve is plotted against the Iowa curves to identify an average service life).
15 First, to the extent that only small quantities of component retirements, related
16 to roofs, A/C systems, etc. occur the indication would be that the property
17 (from a retirement perspective) would remain in service far longer than
18 otherwise. That is, for example if one had a \$1,000 property with annual
19 retirements of \$100, the indication is that the property would live 10 years
20 (1,000/100). Conversely, if one had a \$1,000 property with annual retirements
21 of \$50, the indication is that the property would live 20 years (1,000/50).
22 Therefore, with few and smaller retirements from the structure account, the
23 retirement rate analysis will generate a longer life indication, nor shorter as

1 stated by Mr. Pous. Mr. Pous' argument with regard to the historical analysis
2 of the Company's overall structure account is totally flawed.

3 **Q32. MR. POUS STATED "I RECOMMEND NOTHING SHORT THAN A 55-R1**
4 **LIFE AND CURVE COMBINATION." WHAT ARE YOUR COMMENTS?**

5 A. Again, Mr. Pous either has an error in his judgment and analysis or is
6 providing misleading information. His misinformed statement contains critical
7 estimation errors. In his testimony, Mr. Pous even acknowledges that a
8 portion of the portion of the buildings will not live the full life that he suggests
9 for the overall structures. In his generalized statement his estimate of
10 component cost for the build out, fit and finish of a structure at 30 percent is
11 extremely low. Finishing a building with all the mechanical, electrical,
12 interiors, HVAC, etc. is more like 50 percent or higher. These are all items
13 that are subject to far short lives. The interiors of office type structures get
14 changed out even more frequently. A reasonable range for the
15 superstructure portion of an office building would be 60 years (for 50 percent
16 of the cost) and 20 years for the finish component at 50 percent of the cost.
17 The cost of the replacement components at 20 and 40 year periods would be
18 at higher cost due to the passage of time and overall increased cost.
19 Furthermore, increased care is routinely required of construction crews when
20 reworking an occupied facility resulting in higher cost. The attached Exhibit
21 No.__(EMR-9) summarizes the resulting composite life giving consideration
22 to the applicable inputs. The result is an implicit average service life of about
23 34 plus years. The 34 year average service life result is comparable to both

1 the life indications from the original and revised life indications for Account
2 390 plus the general range of lives from industry survey results.

3 Mr. Pous' proposed life of 55 years for Account 390 is incorrect and
4 irrational.

5
6 **Q33. WHAT NET SALVAGE PERCENT DOES MR. POUS PROPOSE FOR**
7 **ACCOUNT 390 AND WHY IS HE INCORRECT?**

8 A. In response to Mr. Pous' data request MCC-184 the Company provided the
9 following response explaining the basis of the gross salvage contained within
10 Common Plant Account 390 Structures and Improvements:

11 "The overwhelming majority (99 plus percent) of the \$502,496 is
12 related to the investment in the MDU Resources Group, Inc.
13 Corporate office building that was bought and sold within a relatively
14 short time period (6 years- bought in 1994 and sold to MDU
15 Resources in 2001). At the time, it was decided to create a separate
16 company under MDU Resources to hold the assets of the building
17 and its contents. Montana-Dakota originally had on its books 100
18 percent of the MDU Resources Corporate office building and its
19 contents. When the new company, Future Source, was formed,
20 Montana-Dakota sold the MDU Resources Corporate office building
21 and its contents to Future Source at net book value."

22
23 Furthermore in response to data request PSC-099 of which Mr. Pous
24 would have received a copy, the following response was provided:

25 "While the Company has historically, on a couple of occasions,
26 experienced positive net salvage amounts for Account 390-
27 Structures and Improvements, the quantity of any such owned
28 structures have been significantly reduced. Furthermore, it is
29 anticipated that over the life of the facilities, the Company will make
30 improvements and/or upgrades resulting in rework to the current
31 existing facilities. Such rehabilitation, from time to time routinely
32 results in a significant increase in the cost of removal due to the care
33 required to remove piecemeal components as opposed to wholesale
34 demolition and/or disposal. Even if existing properties were disposed
35 of at the end of their useful life, any such buyer would likely be
36 purchasing the underlying land as opposed to the outdated structure.

1 Hence any future gross salvage is anticipated to be exceeded by the
2 corresponding cost of removal.”

3
4 Mr. Pous simply choose to ignore both detailed responses,
5 continued to complain about only receiving generalization, and claimed
6 that the Company received extensive level of gross salvage. Mr. Pous'
7 testimony is totally misleading and false. The salvage that the Company
8 received was simply the product of internal transactions related to young
9 aged property that in no way reflect the level of net salvage that will be
10 received at the end of the property's life. The Company's proposal of zero
11 net salvage for Common Plant Account 390 is the most reasonable and
12 rational recommendation.

13
14 **VII. RECOMMENDATION**

15 **Q34. WHAT IS YOUR RECOMMENDATION TO THE COMMISSION?**

16 I recommend that the proposed depreciation rates set forth in the Company's
17 depreciation study report be uniformly and prospectively adopted by the
18 Commission for regulatory purposes.

19 **Q35. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

20 **A.** Yes, it does.

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

- 6-7. As it pertains to Mr. Robinson's proposal for a -50% net salvage for Account 376, please provide a detailed narrative identifying each step in the process of arriving at the final result. The response should be in sufficient detail to permit a clear understanding of what values, by component, area, or step analyzed, were considered and how each component, area, or step considered resulted in a -50% net salvage rather than any other value. Further, provide all supporting documentation for each component.

Response:

While historical gross salvage and cost of removal are components used in estimating future net salvage, the resulting overall historical average is often not the primary driver for the estimate.

The net salvage forecast analysis is an additional tool used to provide information about the level of net salvage anticipated to occur relative to property over its life. The historical component of net salvage is what has transpired for only the smaller portion of the Company's property that has been retired to date. Such retirements have routinely occurred at ages far younger than the average service of the various property groups. Accordingly, the experienced historical net salvage likely significantly understates the overall net salvage that will be experienced as the property groups continue to age.

The estimated future net salvage percent for each property group gives consideration to the overall average, recent experience, and forecast analysis. The process is one of gradualism towards more future looking calculations which is more representative of the future net salvage that can be anticipated at end of life of the property group.

Specifically, for the large Account 376-Mains, the three year rolling band experience has varied but generally trended up over time. During the most recent four or five years through 2008, some of the yearly negative net salvage averages have been lower. Based upon the current experienced negative net salvage percent reductions, plus giving consideration that over the longer term, the negative net salvage percent will likely increase, a modest reduction was temporarily proposed for the estimated future net salvage percent. Nevertheless, it is fully anticipated that any such reductions will be short lived and that negative net salvage will continue to increase over time.

**MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008**

- 6-8. As it pertains to Mr. Robinson's proposal for a -200% net salvage for Account 380, please provide a detailed narrative identifying each step in the process of arriving at the final result. The response should be in sufficient detail to permit a clear understanding of what values, by component, area, or step analyzed, were considered and how each component, area, or step considered resulted in a -200% net salvage rather than any other value. Further, provide all supporting documentation for each component.

Response:

While historical gross salvage and cost of removal are components used in estimating future net salvage, the resulting overall historical average is often not the primary driver for the estimate.

The net salvage forecast analysis is an additional tool used to provide information about the level of net salvage anticipated to occur relative to property over its life. The historical component of net salvage is what has transpired for only the smaller portion of the Company's property that has been retired to date. Such retirements have routinely occurred at ages far younger than the average service of the various property groups. Accordingly, the experienced historical net salvage likely significantly understates the overall net salvage that will be experienced as the property groups continue to age.

The estimated future net salvage percent for each property group gives consideration to the overall average, recent experience, and forecast analysis. The process is one of gradualism towards more future looking calculations which is more representative of the future net salvage that can be anticipated at end of life of the property group.

Specifically with regard to Account 380-Services, historical net salvage through 2008 has been climbing over time and has routinely been above negative 200 percent net salvage since the early 2000's. It is fully anticipated that negative net salvage will continue to increase over time.

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
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6-21. To the extent future inflation influenced the determination of the proposed net salvage value to any degree, please explain why the impact of future inflation was not discounted back to a net present value level so that current customers would not be requested to pay with current dollars for future inflated costs. Further, provide all support for such position.

Response:

The calculation of future net salvage is not the determination of an absolute net salvage amount, but the relationship (percentage) of original cost that is anticipated to occur at end of life.

Also, see Response No. 6-20.

2-21-2013

U.S. Department Of Labor
Bureau of Labor Statistics
Washington, D.C. 20212

Consumer Price Index

All Urban Consumers - (CPI-U)

U.S. city average

All items

1982-84=100

Year													Annual Avg.	Percent change	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		Dec- Dec	Avg- Avg
1913	9.8	9.8	9.8	9.8	9.7	9.8	9.9	9.9	10.0	10.0	10.1	10.0	9.9		
1914	10.0	9.9	9.8	9.8	9.9	9.9	10.0	10.2	10.2	10.1	10.2	10.1	10.0	1.0	1.0
1915	10.1	10.0	9.9	10.0	10.1	10.1	10.1	10.1	10.1	10.2	10.3	10.3	10.1	2.0	1.0
1916	10.4	10.4	10.5	10.6	10.7	10.8	10.8	10.9	11.1	11.3	11.5	11.6	10.9	12.6	7.9
1917	11.7	12.0	12.0	12.6	12.8	13.0	12.8	13.0	13.3	13.5	13.5	13.7	12.8	18.1	17.4
1918	14.0	14.1	14.0	14.2	14.5	14.7	15.1	15.4	15.7	16.0	16.3	16.5	15.1	20.4	18.0
1919	16.5	16.2	16.4	16.7	16.9	16.9	17.4	17.7	17.8	18.1	18.5	18.9	17.3	14.5	14.6
1920	19.3	19.5	19.7	20.3	20.6	20.9	20.8	20.3	20.0	19.9	19.8	19.4	20.0	2.6	15.6
1921	19.0	18.4	18.3	18.1	17.7	17.6	17.7	17.7	17.5	17.5	17.4	17.3	17.9	-10.8	-10.5
1922	16.9	16.9	16.7	16.7	16.7	16.7	16.8	16.6	16.6	16.7	16.8	16.9	16.8	-2.3	-6.1
1923	16.8	16.8	16.8	16.9	16.9	17.0	17.2	17.1	17.2	17.3	17.3	17.3	17.1	2.4	1.8
1924	17.3	17.2	17.1	17.0	17.0	17.0	17.1	17.0	17.1	17.2	17.2	17.3	17.1	0.0	0.0
1925	17.3	17.2	17.3	17.2	17.3	17.5	17.7	17.7	17.7	17.7	18.0	17.9	17.5	3.5	2.3
1926	17.9	17.9	17.8	17.9	17.8	17.7	17.5	17.4	17.5	17.6	17.7	17.7	17.7	-1.1	1.1
1927	17.5	17.4	17.3	17.3	17.4	17.6	17.3	17.2	17.3	17.4	17.3	17.3	17.4	-2.3	-1.7
1928	17.3	17.1	17.1	17.1	17.2	17.1	17.1	17.1	17.3	17.2	17.2	17.1	17.1	-1.2	-1.7
1929	17.1	17.1	17.0	16.9	17.0	17.1	17.3	17.3	17.3	17.3	17.3	17.2	17.1	0.6	0.0
1930	17.1	17.0	16.9	17.0	16.9	16.8	16.6	16.5	16.6	16.5	16.4	16.1	16.7	-6.4	-2.3
1931	15.9	15.7	15.6	15.5	15.3	15.1	15.1	15.1	15.0	14.9	14.7	14.6	15.2	-9.3	-9.0
1932	14.3	14.1	14.0	13.9	13.7	13.6	13.6	13.5	13.4	13.3	13.2	13.1	13.7	-10.3	-9.9
1933	12.9	12.7	12.6	12.6	12.6	12.7	13.1	13.2	13.2	13.2	13.2	13.2	13.0	0.8	-5.1
1934	13.2	13.3	13.3	13.3	13.3	13.4	13.4	13.4	13.6	13.5	13.5	13.4	13.4	1.5	3.1
1935	13.6	13.7	13.7	13.8	13.8	13.7	13.7	13.7	13.7	13.7	13.8	13.8	13.7	3.0	2.2
1936	13.8	13.8	13.7	13.7	13.7	13.8	13.9	14.0	14.0	14.0	14.0	14.0	13.9	1.4	1.5
1937	14.1	14.1	14.2	14.3	14.4	14.4	14.5	14.5	14.6	14.6	14.5	14.4	14.4	2.9	3.6
1938	14.2	14.1	14.1	14.2	14.1	14.1	14.1	14.1	14.1	14.0	14.0	14.0	14.1	-2.8	-2.1
1939	14.0	13.9	13.9	13.8	13.8	13.8	13.8	13.8	14.1	14.0	14.0	14.0	13.9	0.0	-1.4
1940	13.9	14.0	14.0	14.0	14.0	14.1	14.0	14.0	14.0	14.0	14.0	14.1	14.0	0.7	0.7
1941	14.1	14.1	14.2	14.3	14.4	14.7	14.7	14.9	15.1	15.3	15.4	15.5	14.7	9.9	5.0
1942	15.7	15.8	16.0	16.1	16.3	16.3	16.4	16.5	16.5	16.7	16.8	16.9	16.3	9.0	10.9
1943	16.9	16.9	17.2	17.4	17.5	17.5	17.4	17.3	17.4	17.4	17.4	17.4	17.3	3.0	6.1
1944	17.4	17.4	17.4	17.5	17.5	17.6	17.7	17.7	17.7	17.7	17.7	17.8	17.6	2.3	1.7
1945	17.8	17.8	17.8	17.8	17.9	18.1	18.1	18.1	18.1	18.1	18.1	18.2	18.0	2.2	2.3
1946	18.2	18.1	18.3	18.4	18.5	18.7	19.8	20.2	20.4	20.8	21.3	21.5	19.5	18.1	8.3
1947	21.5	21.5	21.9	21.9	21.9	22.0	22.2	22.5	23.0	23.0	23.1	23.4	22.3	8.8	14.4
1948	23.7	23.5	23.4	23.6	23.9	24.1	24.4	24.5	24.5	24.4	24.2	24.1	24.1	3.0	8.1
1949	24.0	23.8	23.8	23.9	23.8	23.9	23.7	23.8	23.9	23.7	23.8	23.6	23.8	-2.1	-1.2
1950	23.5	23.5	23.6	23.6	23.7	23.8	24.1	24.3	24.4	24.6	24.7	25.0	24.1	5.9	1.3
1951	25.4	25.7	25.8	25.8	25.9	25.9	25.9	25.9	26.1	26.2	26.4	26.5	26.0	6.0	7.9
1952	26.5	26.3	26.3	26.4	26.4	26.5	26.7	26.7	26.7	26.7	26.7	26.7	26.5	0.8	1.9
1953	26.6	26.5	26.6	26.6	26.7	26.8	26.8	26.9	26.9	27.0	26.9	26.9	26.7	0.7	0.8
1954	26.9	26.9	26.9	26.8	26.9	26.9	26.9	26.9	26.8	26.8	26.8	26.7	26.9	-0.7	0.7
1955	26.7	26.7	26.7	26.7	26.7	26.7	26.8	26.8	26.9	26.9	26.9	26.8	26.8	0.4	-0.4
1956	26.8	26.8	26.8	26.9	27.0	27.2	27.4	27.3	27.4	27.5	27.5	27.6	27.2	3.0	1.5
1957	27.6	27.7	27.8	27.9	28.0	28.1	28.3	28.3	28.3	28.3	28.4	28.4	28.1	2.9	3.3
1958	28.6	28.6	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	28.9	28.9	1.8	2.8
1959	29.0	28.9	28.9	29.0	29.0	29.1	29.2	29.2	29.3	29.4	29.4	29.4	29.1	1.7	0.7
1960	29.3	29.4	29.4	29.5	29.5	29.6	29.6	29.6	29.6	29.8	29.8	29.8	29.6	1.4	1.7
1961	29.8	29.8	29.8	29.8	29.8	29.8	30.0	29.9	30.0	30.0	30.0	30.0	29.9	0.7	1.0
1962	30.0	30.1	30.1	30.2	30.2	30.2	30.3	30.3	30.4	30.4	30.4	30.4	30.2	1.3	1.0
1963	30.4	30.4	30.5	30.5	30.5	30.6	30.7	30.7	30.7	30.8	30.8	30.9	30.6	1.6	1.3
1964	30.9	30.9	30.9	30.9	30.9	31.0	31.1	31.0	31.1	31.1	31.2	31.2	31.0	1.0	1.3
1965	31.2	31.2	31.3	31.4	31.4	31.6	31.6	31.6	31.6	31.7	31.7	31.8	31.5	1.9	1.6
1966	31.8	32.0	32.1	32.3	32.3	32.4	32.5	32.7	32.7	32.9	32.9	32.9	32.4	3.5	2.9
1967	32.9	32.9	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	33.4	3.0	3.1
1968	34.1	34.2	34.3	34.4	34.5	34.7	34.9	35.0	35.1	35.3	35.4	35.5	34.8	4.7	4.2
1969	35.6	35.8	36.1	36.3	36.4	36.6	36.8	37.0	37.1	37.3	37.5	37.7	36.7	6.2	5.5
1970	37.8	38.0	38.2	38.5	38.6	38.8	39.0	39.0	39.2	39.4	39.6	39.8	38.8	5.6	5.7
1971	39.8	39.9	40.0	40.1	40.3	40.6	40.7	40.8	40.8	40.9	40.9	41.1	40.5	3.3	4.4
1972	41.1	41.3	41.4	41.5	41.6	41.7	41.9	42.0	42.1	42.3	42.4	42.5	41.8	3.4	3.2

1973	42.6	42.9	43.3	43.6	43.9	44.2	44.3	45.1	45.2	45.6	45.9	46.2	44.4	8.7	6.2
1974	46.6	47.2	47.8	48.0	48.6	49.0	49.4	50.0	50.6	51.1	51.5	51.9	49.3	12.3	11.0
1975	52.1	52.5	52.7	52.9	53.2	53.6	54.2	54.3	54.6	54.9	55.3	55.5	53.8	6.9	9.1
1976	55.6	55.8	55.9	56.1	56.5	56.8	57.1	57.4	57.6	57.9	58.0	58.2	56.9	4.9	5.8
1977	58.5	59.1	59.5	60.0	60.3	60.7	61.0	61.2	61.4	61.6	61.9	62.1	60.6	6.7	6.5
1978	62.5	62.9	63.4	63.9	64.5	65.2	65.7	66.0	66.5	67.1	67.4	67.7	65.2	9.0	7.6
1979	68.3	69.1	69.8	70.6	71.5	72.3	73.1	73.8	74.6	75.2	75.9	76.7	72.6	13.3	11.3
1980	77.8	78.9	80.1	81.0	81.8	82.7	82.7	83.3	84.0	84.8	85.5	86.3	82.4	12.5	13.5
1981	87.0	87.9	88.5	89.1	89.8	90.6	91.6	92.3	93.2	93.4	93.7	94.0	90.9	8.9	10.3
1982	94.3	94.6	94.5	94.9	95.8	97.0	97.5	97.7	97.9	98.2	98.0	97.6	96.5	3.8	6.2
1983	97.8	97.9	97.9	98.6	99.2	99.5	99.9	100.2	100.7	101.0	101.2	101.3	99.6	3.8	3.2
1984	101.9	102.4	102.6	103.1	103.4	103.7	104.1	104.5	105.0	105.3	105.3	105.3	103.9	3.9	4.3
1985	105.5	106.0	106.4	106.9	107.3	107.6	107.8	108.0	108.3	108.7	109.0	109.3	107.6	3.8	3.6
1986	109.6	109.3	108.8	108.6	108.9	109.5	109.5	109.7	110.2	110.3	110.4	110.5	109.6	1.1	1.9
1987	111.2	111.6	112.1	112.7	113.1	113.5	113.8	114.4	115.0	115.3	115.4	115.4	113.6	4.4	3.6
1988	115.7	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3	120.5	118.3	4.4	4.1
1989	121.1	121.6	122.3	123.1	123.8	124.1	124.4	124.6	125.0	125.6	125.9	126.1	124.0	4.6	4.8
1990	127.4	128.0	128.7	128.9	129.2	129.9	130.4	131.6	132.7	133.5	133.8	133.8	130.7	6.1	5.4
1991	134.6	134.8	135.0	135.2	135.6	136.0	136.2	136.6	137.2	137.4	137.8	137.9	136.2	3.1	4.2
1992	138.1	138.6	139.3	139.5	139.7	140.2	140.5	140.9	141.3	141.8	142.0	141.9	140.3	2.9	3.0
1993	142.6	143.1	143.6	144.0	144.2	144.4	144.4	144.8	145.1	145.7	145.8	145.8	144.5	2.7	3.0
1994	146.2	146.7	147.2	147.4	147.5	148.0	148.4	148.0	148.4	149.5	149.7	149.7	148.2	2.7	2.6
1995	150.3	150.9	151.4	151.9	152.2	152.5	152.5	152.9	153.2	153.7	153.6	153.5	152.4	2.5	2.8
1996	154.4	154.9	155.7	156.3	156.6	156.7	157.0	157.3	157.8	158.3	158.6	158.6	156.9	3.3	3.0
1997	159.1	159.6	160.0	160.2	160.1	160.3	160.5	160.8	161.2	161.6	161.5	161.3	160.5	1.7	2.3
1998	161.6	161.9	162.2	162.5	162.8	163.0	163.2	163.4	163.6	164.0	164.0	163.9	163.0	1.6	1.6
1999	164.3	164.5	165.0	166.2	166.2	166.2	166.7	167.1	167.9	168.2	168.3	168.3	166.6	2.7	2.2
2000	168.8	169.8	171.2	171.3	171.5	172.4	172.8	172.8	173.7	174.0	174.1	174.0	172.2	3.4	3.4
2001	175.1	175.8	176.2	176.9	177.7	178.0	177.5	177.5	178.3	177.7	177.4	176.7	177.1	1.6	2.8
2002	177.1	177.8	178.8	179.8	179.8	179.9	180.1	180.7	181.0	181.3	181.3	180.9	179.9	2.4	1.6
2003	181.7	183.1	184.2	183.8	183.5	183.7	183.9	184.6	185.2	185.0	184.5	184.3	184.0	1.9	2.3
2004	185.2	186.2	187.4	188.0	189.1	189.7	189.4	189.5	189.9	190.9	191.0	190.3	188.9	3.3	2.7
2005	190.7	191.8	193.3	194.6	194.4	194.5	195.4	196.4	198.8	199.2	197.6	196.8	195.3	3.4	3.4
2006	198.3	198.7	199.8	201.5	202.5	202.9	203.5	203.9	202.9	201.8	201.5	201.8	201.6	2.5	3.2
2007	202.416	203.499	205.352	206.686	207.949	208.352	208.299	207.917	208.490	208.936	210.177	210.036	207.342	4.1	2.8
2008	211.080	211.693	213.528	214.823	216.632	218.815	219.964	219.086	218.783	216.573	212.425	210.228	215.303	0.1	3.8
2009	211.143	212.193	212.709	213.240	213.856	215.693	215.351	215.834	215.969	216.177	216.330	215.949	214.537	2.7	-0.4
2010	216.687	216.741	217.631	218.009	218.178	217.965	218.011	218.312	218.439	218.711	218.803	219.179	218.056	1.5	1.6
2011	220.223	221.309	223.457	224.906	225.964	225.722	225.922	226.545	226.889	226.421	226.230	225.672	224.939	3.0	3.2
2012	226.665	227.663	229.392	230.085	229.815	229.478	229.104	230.379	231.407	231.317	230.221	229.601	229.594	1.7	2.1
2013	230.280														

000116

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

- 6-20. Please provide a detailed narrative specifically explaining how annual inflation built into forecasted net salvage amounts was employed or relied upon in the development of the final proposed net salvage parameters for accounts 376 and 380. To the extent the response relies on the age of historical plant in relationship to the estimated average service life, clearly demonstrate that age of retired plant is the driving factor that causes net salvage to change from year to year for the specific plant in each account. Finally, provide all supporting documentation.

Response:

While the net salvage forecast was prepared and shown with the historical net salvage analysis schedules, the forecast future net salvage was not the basis for the future net salvage included with the proposed annual depreciation rates. For the most part, the future net salvage estimate gives greater consideration to the Company's more recent historic experience.

Property historically has and always will be placed into service at the beginning of its life and retired at the end of its life. Hence, there will always be a period of increased cost between the time when initially install and when it is retired from service. This has occurred in the past and will occur in the future. Next, in the salvage analysis process, the depreciation professional is not calculating or identifying the absolute quantity of future net salvage, but is using the analysis process to identify the percent of negative net salvage experienced as it relates to original cost of the property retired. The resulting net salvage percentage is then related to the currently plant in service to estimate the anticipated level of future net salvage.

One critical factor routinely overlooked is the fact that historic retirements have routinely occurred at ages far less than average service life, thus resulting in an understatement of the level of future net salvage that is anticipated to occur at the ultimate end of life of the property group.

As stated in prior responses, the estimated future net salvage percent for each property group gives consideration to the overall average, recent experience, and forecast analysis. The estimation process is one of gradualism towards more future looking calculations which is more representative of the future net salvage that can be anticipated at end of life of the property group.

Relative to the forecast net salvage, it is simply a tool that is used to calculate and display the anticipated end of life net salvage. The forecast analysis calculation takes into consideration that the historic data does not contain a complete record of

000117

**MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008**

Response No. 6-20 (cont.)

factors that impact average net salvage through end of life. That is, the historic net salvage is simply a snapshot of what has occurred without regard to the age of the retirements that generated the data. Conversely, the forecast analysis incorporates such data. The provision of the forecast net salvage percent enables the reader of the depreciation study to gain an understanding of the expected level of future net salvage throughout the remaining portion of the life of the property group.

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

6-17. Please identify the dollar amount of cost of removal incurred, by account, for accounts 376 and 380 by year for the past 10 years associated with emergency retirement activity.

Response:

Construction work for emergency property replacements are not specifically identified in the work order or fixed asset systems.

000119

MONTANA-DAKOTA UTILITIES CO.
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION STAFF
SIXTH DATA REQUEST
DATED JULY 25, 2013
DOCKET NO. NG12-008

6-45. Please identify each time in the last 20 years when the Company retired one of its general office structure in Account 390 Common Plant, or terminated a lease and moved to a new location. For each such instance, identify the dollar level of retirements, a description of what was retired, along with corresponding cost of removal and net salvage.

Response:

Please see Attachment A.

000120

Montana-Dakota Utilities Co.
 Ten Largest General Plant Structures Retirements
 Common 390 Account
 As of December 31, 2012

Building	Location	Year Retired	390 Account Balance	Cost of Removal	Salvage
Schuchart Building	Bismarck, ND	07/31/01	3,302,689.44	0.00	(3,028,920.86)
Billings Office Building	Billings, MT	12/31/06	368,352.37	4,000.00	(330,000.00)
Bismarck Dist. Office Building	Bismarck, ND	11/30/09	534,298.00	38,904.00	(526,443.80)
Sheridan Office Building	Sheridan, WY	12/31/04	983,302.83	4,500.00	(638,829.00)
Forsyth Office Building	Forsyth, MT	05/31/96	139,236.18	627.00	(67,504.37)
Gettysburg Office Building	Gettysburg, SD	05/31/96	21,826.80	99.64	(7,533.00)
Glendive Warehouse	Glendive, MT	11/30/99	311,956.52	3,088.93	(23,000.00)
Glendive Office	Glendive, MT	12/31/95	147,380.00	562.00	(51,715.84)
Hebron Office	Hebron, ND	12/31/95	15,391.18	520.00	(13,010.00)
Ray Office	Ray, ND	09/30/99	44,257.16	0.00	(5,000.00)
Terry Office	Terry, MT	12/31/95	37,836.34	259.00	(19,401.10)
Total			5,906,526.82	52,560.57	(4,711,357.97)

000121

COMPANY : MDU
 ACCOUNT : 376.1 - DISTRIBUTION MAINS - STEEL
 INPUT BY: JP

DOCKET NO.:40824

DATE : 22-Feb-13

CO'S MODEL
 CURVE : R
 CURVE # : 4
 ASL : 47

CITIES' MODEL
 CURVE : R
 CURVE # : 2.5
 ASL : 60

BALANCE : 41,975,049
 RESERVE : 36,466,143 ALLOCATED ALG THEO =>
 SALVAGE : (50.00)
 REM LF. : 22.30
 DEPR EXP.: 1,188,181 (138,805)
 DEPR RATI: 2.83% -0.33%

BALANCE : 41,975,049
 RESERVE : 24,454,158
 SALVAGE : (50.00)
 REM. LF. : 36.70
 DEPR EXP.: 1,049,376
 DEPR RATI: 2.50%

000061

000122

2011	0.5	4120953.24	100.0458	60.03	59.53	245,310,348
2010	1.5	515100.14	100.1410	60.06	58.56	30,089,765
2009	2.5	368109.51	100.2413	60.14	57.84	21,219,509
2008	3.5	1531295.84	100.3489	60.21	56.71	88,537,641
2007	4.5	1109475.58	100.4580	60.27	55.77	61,546,130
2006	5.5	1137502.51	100.5752	60.35	54.85	62,408,377
2005	6.5	177255.15	100.6995	60.42	53.82	9,599,103
2004	7.5	112871.05	100.8300	60.50	53.00	5,991,872
2003	8.5	416165.28	100.9552	60.57	52.08	21,520,914
2002	9.5	411147.56	101.1063	60.65	51.17	21,036,813
2001	10.5	283997.86	101.2606	60.75	50.25	13,287,546
2000	11.5	105532.09	101.4185	60.85	49.35	5,109,423
1999	12.6	160286.25	101.5852	60.95	48.45	7,788,045
1998	13.5	93201.40	101.7585	61.06	47.56	4,432,258
1997	14.5	395658.63	101.9420	61.17	46.57	16,011,303
1996	15.0	1097025.48	102.1357	61.28	45.75	49,764,244
1995	16.0	632954.05	102.3345	61.40	44.90	28,420,080
1994	17.5	545918.18	102.5437	61.53	44.03	24,034,703
1993	18.5	442123.14	102.7637	61.65	43.16	19,081,230
1992	19.5	444873.54	102.9925	61.80	42.30	18,816,146
1991	20.5	566763.45	103.2317	61.84	41.44	23,570,233
1990	21.5	344343.54	103.4808	62.06	40.59	13,879,388
1989	22.5	1202038.32	103.7415	62.24	39.74	46,051,916
1988	23.5	789337.51	104.0118	62.41	38.91	30,673,872
1987	24.0	320731.56	104.2943	62.58	38.08	12,212,367
1986	25.5	665584.48	104.5890	62.76	37.25	35,970,725
1985	26.5	1208817.07	104.8923	62.94	36.44	44,043,733
1984	27.5	1021358.89	105.2050	63.13	35.63	36,380,366
1983	28.5	838852.11	105.5285	63.32	34.82	25,211,431
1982	29.5	662815.95	105.8790	63.53	34.03	23,574,725
1981	30.5	350633.94	106.2332	63.74	33.24	11,835,530
1980	31.5	399391.83	106.6000	63.86	32.46	12,649,327
1979	32.5	718735.33	106.9790	64.19	31.69	22,805,541
1978	33.5	56815	107.3723	64.42	30.92	1,766,613
1977	34.5	441093.34	107.7790	64.67	30.17	13,306,236
1976	35.5	504826.77	108.1980	64.92	29.42	26,618,016
1975	36.5	819061.51	108.6322	65.18	28.68	23,507,882
1974	37.5	777937.31	109.0815	65.45	27.95	21,742,482
1973	38.5	3206435.77	109.5443	65.73	27.23	67,300,344
1972	39.5	598031.03	110.0227	66.01	26.51	24,670,580
1971	40.5	1040380.28	110.5155	66.31	25.81	28,851,594
1970	41.5	840189.44	111.0232	66.62	25.12	21,282,132
1969	42.5	599081.81	111.5510	66.93	24.43	14,635,439
1968	43.5	840951.87	112.0990	67.26	23.76	18,675,109
1967	44.5	926987.83	112.6622	67.60	23.09	15,082,268
1966	45.5	853732.22	113.2398	67.84	22.44	16,579,819
1965	46.5	827542.70	113.8240	68.29	21.79	20,215,237
1964	47.5	630728.69	114.4368	68.66	21.16	13,347,543
1963	48.5	720787.84	115.0702	69.04	20.54	14,805,466
1962	49.5	548461.29	115.7225	69.43	19.93	10,892,886
1961	50.5	391105.28	116.3948	69.84	19.34	7,562,783
1960	51.5	314770.47	117.0890	70.25	18.75	5,803,017
1959	52.5	538096.79	117.8040	70.68	18.18	5,783,827
1958	53.5	731467.72	118.5403	71.12	17.62	12,891,533
1957	54.5	74257.30	119.3003	71.58	17.08	1,268,230
1956	55.5	270938.75	120.0890	72.05	16.55	4,478,034
1955	56.5	296702.94	120.8992	72.53	16.03	4,757,009
1954	57.5	476853.46	121.7173	73.03	15.53	7,402,775
1953	58.5	218884.18	122.5510	73.54	15.04	3,292,587
1952	59.5	46827.51	123.4033	74.07	14.57	882,220
1951	60.5	38544.48	124.2750	74.61	14.11	557,873
1950	61.5	34507.81	125.1765	75.17	13.67	471,680
1949	62.5	24144.41	126.2287	75.74	13.24	318,575
1948	63.5	0.00	127.3008	76.32	12.82	0
1947	64.5	0.00	128.3990	76.92	12.42	0
1946	65.5	0.00	129.5207	77.53	12.03	0
1945	66.5	0.00	130.6646	78.16	11.65	0
1944	67.5	0.00	131.8320	78.80	11.30	0
1943	68.5	823.00	132.4202	79.45	10.95	10,108
1942	69.5	2308.00	133.5285	80.12	10.62	24,483
1941	70.5	1424.88	134.6575	80.79	10.28	14,658
1940	71.5	4246.91	135.8040	81.45	8.98	42,394
1939	72.5	2005.57	136.9690	82.19	8.68	19,417
1938	73.5	418.47	138.1495	82.69	8.29	3,829
1937	74.5	450.01	139.3495	83.61	8.11	4,098
1936	75.5	655.15	140.5630	84.33	8.83	5,785
1935	76.5	703.03	141.7750	85.07	8.57	6,022
1934	77.5	493.63	143.0078	85.80	8.30	4,089
1933	78.5	263.88	144.2495	86.55	8.05	2,044
1932	79.5	111.24	145.5000	87.30	7.80	888
1931	80.5	37.89	146.7573	88.05	7.55	286
1930	81.5	7.80	148.0223	88.81	7.31	58
1929	82.5	0.45	149.2925	89.58	7.08	3
1928	83.5	0.00	150.5690	90.34	6.84	0
1927	84.5	0.00001	151.8488	91.11	6.61	0
1926	85.5	0.00001	153.1340	91.88	6.38	0
1925	86.5	0.00001	154.4233	92.65	6.15	0
1924	87.5	0.00001	155.7175	93.43	5.93	0
1923	88.5	0.00001	157.0145	94.21	5.71	0
1922	89.5	0.00001	158.3152	94.99	5.49	0
1921	90.5	0.00001	159.6185	95.77	5.27	0
1920	91.5	0.00001	160.9225	96.55	5.05	0
1919	92.5	0.00001	162.2282	97.34	4.84	0
1918	93.5	0.00001	163.5270	98.12	4.62	0
1917	94.5	0.00001	164.8216	98.89	4.39	0
1916	95.5	0.00001	166.1078	99.65	4.18	0
1915	96.5	0.00001	167.3820	100.43	3.93	0
1914	97.5	0.00001	168.6410	101.18	3.68	0
1913	98.5	0.00001	169.8832	101.93	3.43	0
1912	99.5	0.00001	171.1080	102.67	3.17	0
1911	100.5	0.00001	172.3215	103.39	2.99	0
1910	101.5	0.00001	173.5289	104.12	2.82	0
1909	102.5	0.00001	174.7399	104.84	2.64	0
1908	103.5	755.55	175.9535	105.57	2.07	1,585
1907	104.5	469.74	177.1735	106.30	1.80	847

000062
000123

COMPANY : MDU
 ACCOUNT : 376.1 - DISTRIBUTION MAINS - STEEL
 INPUT BY: JP

DOCKET NO.:40824

DATE : 22-Feb-13

CO'S MODEL

CURVE : R
 CURVE # : 4
 ASL : 47

CITIES' MODEL

CURVE : s
 CURVE # : 0.5
 ASL : 68

BALANCE : 41,975,049
 RESERVE : 36,466,143 ALLOCATED ALG THEO =>
 SALVAGE : (50.00)
 REM LF. : 22.30
 DEPR EXP.: 1,188,181 (262,261)
 DEPR RATI: 2.83% -0.62%

BALANCE : 41,975,049
 RESERVE : 17,032,652
 SALVAGE : (50.00)
 REM. LF. : 49.60
 DEPR EXP.: 925,920
 DEPR RATI: 2.21%

000063

000124

CURVE YEAR	AGE (YEARS)	ADDITIONS	SURVIVORS	PROBABLE LIFE FACTOR	PROBABLE LIFE	REMAINING LIFE	DOLLAR PER YEAR
2011	0.5		4120658.34	100.0074	69.01	67.51	278,105,293
2010	1.5		513100.14	100.0430	69.03	66.53	34,136,378
2009	2.5		368108.51	100.1051	69.07	65.57	24,137,743
2008	3.5		1561295.54	100.1811	69.13	64.63	100,809,506
2007	4.5		1103475.58	100.2988	69.20	63.70	70,294,603
2006	5.5		1137802.51	100.4256	69.29	62.77	71,448,281
2005	6.5		177055.15	100.5748	69.39	61.89	11,012,559
2004	7.5		112871.05	100.7416	69.60	61.00	6,885,822
2003	8.5		415155.29	100.9280	69.63	60.13	24,064,002
2002	9.5		411147.56	101.1338	69.77	59.27	24,369,129
2001	10.5		263897.66	101.3591	69.92	58.42	15,423,678
2000	11.5		103532.09	101.5993	69.99	57.59	5,602,154
1999	12.5		160268.25	101.8594	69.28	56.75	9,098,546
1998	13.5		93201.40	102.1359	69.45	55.95	5,214,844
1997	14.5		385958.63	102.4300	69.65	55.15	21,287,089
1996	15.5		1087025.48	102.7407	69.83	54.36	59,094,727
1995	16.5		532954.05	103.0679	70.05	53.59	33,817,577
1994	17.5		545918.18	103.4113	70.32	52.82	28,835,213
1993	18.5		442123.14	103.7709	70.66	52.06	23,018,786
1992	19.5		444873.64	104.1482	70.82	51.32	22,830,652
1991	20.5		588793.49	104.5391	71.08	50.58	28,772,180
1990	21.5		344943.54	104.9413	71.36	49.85	17,189,003
1989	22.5		1200008.32	105.3509	71.65	49.15	69,417,173
1988	23.5		788387.51	105.7856	71.94	48.44	38,180,311
1987	24.5		920731.56	106.2442	72.25	47.75	15,313,652
1986	25.5		865584.46	255.7070	174.56	149.06	143,830,753
1985	26.5		1209817.07	115.0960	78.88	52.38	63,322,746
1984	27.5		1021959.69	107.5727	73.22	45.72	48,893,941
1983	28.5		836852.11	108.1746	73.66	45.06	37,787,636
1982	29.5		652915.65	108.8801	73.51	44.41	30,767,458
1981	30.5		355053.04	109.2170	74.27	43.77	15,584,271
1980	31.5		396931.83	109.7684	74.64	43.14	17,208,196
1979	32.5		718735.33	110.3102	75.01	42.51	30,696,611
1978	33.5		56815	110.8747	75.39	41.89	2,380,253
1977	34.5		441083.34	111.4497	75.79	41.29	18,210,479
1976	35.5		804826.77	112.0364	76.18	40.69	38,612,642
1975	36.5		818991.61	112.6347	76.60	40.09	32,862,327
1974	37.5		777937.31	113.2426	77.00	39.50	30,732,306
1973	38.5		3205495.77	113.8619	77.43	38.93	124,813,575
1972	39.5		836031.03	114.4913	77.85	38.35	35,577,317
1971	40.5		1040360.25	115.1318	78.29	37.79	39,314,788
1970	41.5		848189.44	115.7801	78.73	37.23	31,504,056
1969	42.5		598051.81	116.4400	79.18	36.68	21,873,108
1968	43.5		840851.67	117.1086	79.63	36.13	30,383,207
1967	44.5		826367.83	117.7867	80.09	35.59	29,415,242
1966	45.5		863732.22	118.4735	80.56	35.05	30,284,231
1965	46.5		927542.70	119.1694	81.04	34.54	32,032,854
1964	47.5		830728.66	119.8734	81.51	34.01	21,453,554
1963	48.5		720767.64	120.5889	82.00	33.50	24,145,750
1962	49.5		546461.28	121.3077	82.48	32.98	18,027,343
1961	50.5		391064.28	122.0371	82.98	32.49	12,705,174
1960	51.5		314770.47	122.7739	83.49	31.99	10,058,310
1959	52.5		596098.79	123.5190	83.99	31.49	15,945,308
1958	53.5		731467.72	124.2717	84.50	31.00	22,878,981
1957	54.5		74257.30	125.0315	85.02	30.52	2,258,437
1956	55.5		270839.75	125.7986	85.54	30.04	8,130,852
1955	56.5		286702.94	126.5718	86.07	29.57	8,773,160
1954	57.5		476883.48	127.3534	86.60	29.10	13,871,080
1953	58.5		218884.19	128.1406	87.14	28.64	6,267,820
1952	59.5		46827.51	128.9355	87.68	28.18	1,318,418
1951	60.5		39544.48	129.7360	88.22	27.72	1,098,191
1950	61.5		34507.81	130.5431	88.77	27.27	941,004
1949	62.5		24144.41	131.3561	89.32	26.82	647,805
1948	63.5	0.00	0.00	132.1757	89.88	26.38	0
1947	64.5	0.00	0.00	133.0004	90.44	25.94	0
1946	65.5	0.00	0.00	133.8314	91.01	25.51	0
1945	66.5	0.00	0.00	134.6676	91.57	25.07	0
1944	67.5	0.00	0.00	135.5092	92.15	24.65	0
1943	68.5	923.00	136.3563	92.72	24.22	22.97	0
1942	69.5	2305.00	137.2088	93.30	23.80	54,887	0
1941	70.5	1424.88	138.0681	93.88	23.38	33,321	0
1940	71.5	4246.91	138.9286	94.47	22.97	87,658	0
1939	72.5	2005.67	139.7980	95.06	22.56	45,248	0
1938	73.5	418.47	140.6678	95.65	22.15	8,271	0
1937	74.5	490.01	141.5446	96.25	21.76	8,788	0
1936	75.5	855.15	142.4257	96.85	21.35	13,957	0
1935	76.5	703.03	143.3115	97.45	20.95	14,730	0
1934	77.5	493.83	144.2012	98.06	20.56	10,147	0
1933	78.5	253.88	145.0951	98.68	20.16	5,121	0
1932	79.5	111.24	145.9931	99.28	19.78	2,200	0
1931	80.5	37.89	146.8951	99.89	19.39	0	0
1930	81.5	7.80	147.8013	100.50	19.00	0	0
1929	82.5	0.46	148.7106	101.12	18.62	0	0
1928	83.5	0.00	149.6239	101.74	18.24	0	0
1927	84.5	0.00001	150.5414	102.37	17.87	0	0
1926	85.5	0.00001	151.4613	102.99	17.49	0	0
1925	86.5	0.00001	152.3895	103.62	17.12	0	0
1924	87.5	0.00001	153.3118	104.25	16.75	0	0
1923	88.5	0.00001	154.2422	104.88	16.38	0	0
1922	89.5	0.00001	155.1756	105.52	16.02	0	0
1921	90.5	0.00001	156.1123	106.16	15.66	0	0
1920	91.5	0.00001	157.0511	106.79	15.29	0	0
1919	92.5	0.00001	157.9929	107.44	14.94	0	0
1918	93.5	0.00001	158.9375	108.08	14.58	0	0
1917	94.5	0.00001	159.8850	108.72	14.22	0	0
1916	95.5	0.00001	160.8344	109.37	13.87	0	0
1915	96.5	0.00001	161.7868	110.02	13.52	0	0
1914	97.5	0.00001	162.7415	110.68	13.16	0	0
1913	98.5	0.00001	163.6983	111.31	12.81	0	0
1912	99.5	0.00001	164.6573	111.97	12.47	0	0
1911	100.5	0.00001	165.6184	112.62	12.12	0	0
1910	101.5	0.00001	166.5816	113.27	11.77	0	0
1909	102.5	0.00001	167.5454	113.93	11.43	0	0
1908	103.5	755.85	168.5125	114.58	11.09	6,378	0
1907	104.5	489.74	169.4801	115.25	10.75	5,048	0

000064

000125

COMPANY : MDU
ACCOUNT : 376.2 - DISTRIBUTION MAINS - PLASTIC
INPUT BY: JP

DOCKET NO.:40824

DATE : 22-Feb-13

CO'S MODEL
CURVE : R
CURVE # : 4
ASL : 47

CITIES' MODEL
CURVE : R
CURVE # : 2.5
ASL : 60

BALANCE : 63,935,959
RESERVE : 30,608,794 ALLOCATED ALG THEO =>
SALVAGE : (50.00)
REM LF. : 33.40
DEPR EXP.: 1,954,944 (356,545)
DEPR RATI: 3.06% -0.56%

BALANCE : 63,935,959
RESERVE : 20,064,684
SALVAGE : (50.00)
REM. LF. : 47.45
DEPR EXP.: 1,598,399
DEPR RATI: 2.50%

000065
000126

ACCOUNT CURVE YEAR	376.2 - DISTRIBUTION MAINS - PLASTIC R2.5 60 AGE (YEARS)	ADDITIONS	SURVIVORS	PROBABLE LIFE FACTOR	PROBABLE LIFE	REMAINING LIFE	DOLLAR PER YEAR
2008	0.5		3230998.08	100.0458	50.03	59.53	162,333,238
2007	1.5		3274254.85	100.1410	50.08	58.55	181,821,502
2006	2.5		3375408.81	100.2413	50.14	57.84	184,747,700
2005	3.5		3668727.85	100.3483	50.21	56.71	206,003,433
2004	4.5		2468222.75	100.4590	50.27	55.77	137,553,081
2003	5.5		3159607.85	100.5752	50.35	54.85	173,288,008
2002	6.5		1642988.92	100.6985	50.42	53.92	88,584,170
2001	7.5		1598283.87	100.8280	50.50	53.00	84,597,835
2000	8.5		1488821.71	100.9652	50.58	52.08	78,328,260
1999	9.5		1002838.81	101.1093	50.67	51.17	51,311,673
1998	10.5		1434972.07	101.2605	50.76	50.26	72,116,367
1997	11.5		1881801.15	101.4186	50.85	49.35	96,807,175
1996	12.5		2326335.52	101.5852	50.95	48.45	112,712,515
1995	13.5		1260540.80	101.7595	51.06	47.56	58,945,691
1994	14.5		4148686.16	101.9420	51.17	46.67	183,421,102
1993	15.5		6716425.25	102.1337	51.28	45.78	307,478,291
1992	16.5		1809825.75	102.3345	51.40	44.89	85,752,513
1991	17.5		1263326.77	102.5437	51.53	44.03	55,399,478
1990	18.5		804282.29	102.7637	51.65	43.18	39,309,884
1989	19.5		615172.76	102.9925	51.80	42.30	26,081,335
1988	20.5		788772.36	103.2317	51.94	41.44	33,100,328
1987	21.5		1245800.87	103.4808	52.09	40.59	50,557,076
1986	22.5		1207695.76	103.7415	52.24	39.74	47,888,747
1985	23.5		1288384.82	104.0118	52.41	38.91	46,271,361
1984	24.5		1247636.59	104.2943	52.58	38.08	47,617,258
1983	25.5		1176844.50	104.5890	52.75	37.25	43,916,258
1982	26.5		1140141.23	104.8923	52.94	36.44	41,541,502
1981	27.5		1109155.39	105.2090	53.13	35.63	39,407,228
1980	28.5		1459514.40	105.5385	53.32	34.82	62,221,222
1979	29.5		1069370.09	105.8790	53.53	34.03	37,406,706
1978	30.5		523726.09	106.2332	53.74	33.24	17,408,603
1977	31.5		318479.80	106.5000	53.95	32.46	10,337,646
1976	32.5		652828.63	106.7790	54.18	31.69	20,885,379
1975	33.5		893348.54	107.0723	54.42	30.92	27,525,312
1974	34.5		55675.19	107.7780	54.67	30.17	1,961,250
1973	35.5		287850.57	108.1880	54.92	29.42	5,765,348
1972	36.5		1284061.52	108.6332	55.18	28.68	37,112,781
1971	37.5		142625.39	109.0815	55.45	27.95	3,996,222
1970	38.5		376086.60	109.5443	55.73	27.23	10,212,333
1969	39.5		125278.43	110.0227	56.01	26.51	3,585,745

000065

000127

COMPANY : MDU
ACCOUNT : 376.2 - DISTRIBUTION MAINS - PLASTIC
INPUT BY: JP

DOCKET NO.:40824

DATE : 22-Feb-13

CO'S MODEL
CURVE : R
CURVE # : 4
ASL : 47

CITIES' MODEL
CURVE : R
CURVE # : 2.5
ASL : 67

BALANCE : 63,935,959
RESERVE : 30,608,794 ALLOCATED ALG THEO =>
SALVAGE : (50.00)
REM LF. : 33.40
DEPR EXP.: 1,954,944 (523,542)
DEPR RATI: 3.06% -0.82%

BALANCE : 63,935,959
RESERVE : 18,086,808
SALVAGE : (50.00)
REM. LF. : 54.36
DEPR EXP.: 1,431,402
DEPR RATI: 2.24%

000067
000128

ACCOUNT : 3762 - DISTRIBUTION MAINS - PLASTIC

CURVE YEAR	R2.5 67 AGE (YEARS)	ADDITIONS	SURVIVORS	PROBABLE LIFE FACTOR	PROBABLE LIFE	REMAINING LIFE	DOLLAR PER YEAR
2008	0.5		3230680.08	100.0410	67.03	66.53	214,950,225
2007	1.5		3274284.55	100.1259	67.06	65.56	214,740,440
2006	2.5		3376408.61	100.2145	67.14	64.64	218,383,150
2005	3.5		3669727.95	100.3073	67.21	63.71	235,694,536
2004	4.5		2492222.75	100.4050	67.27	62.77	164,808,131
2003	5.5		3163507.85	100.5068	67.34	61.84	195,388,622
2002	6.5		1842609.62	100.6142	67.41	60.91	100,072,080
2001	7.5		1568263.67	100.7261	67.49	59.96	85,764,289
2000	8.5		1465621.71	100.8439	67.57	59.07	86,567,577
1999	9.5		1002650.61	100.9662	67.65	58.16	68,313,602
1998	10.5		1434972.37	101.0951	67.73	57.23	82,126,790
1997	11.5		1681601.15	101.2293	67.82	56.32	110,484,458
1996	12.5		2376335.52	101.3694	67.92	55.42	128,919,676
1995	13.5		1260540.90	101.5151	68.02	54.52	88,719,341
1994	14.5		4144888.10	101.6678	68.12	53.62	232,239,790
1993	15.5		6716425.25	101.8278	68.22	52.72	354,120,602
1992	16.5		1608265.75	101.9945	68.34	51.84	88,986,281
1991	17.5		1258329.77	102.1673	68.45	50.95	84,114,657
1990	18.5		800428.20	102.3463	68.57	50.07	45,087,432
1989	19.5		016172.76	102.5356	68.70	49.20	30,314,985
1988	20.5		768772.36	102.7320	68.83	48.33	38,685,020
1987	21.5		1245600.87	102.9348	68.97	47.47	58,123,645
1986	22.5		1207652.76	103.1468	69.11	46.61	56,286,731
1985	23.5		1266384.82	103.3663	69.26	45.76	57,843,944
1984	24.5		1247838.59	103.5945	69.41	44.91	56,842,691
1983	25.5		1178844.50	103.8307	69.57	44.07	61,547,657
1982	26.5		1140141.23	104.0752	69.73	43.23	49,289,525
1981	27.5		1106157.39	104.3208	69.90	42.40	48,602,825
1980	28.5		1499514.40	104.5647	70.08	41.56	62,351,657
1979	29.5		1099370.09	104.8066	70.26	40.76	44,811,017
1978	30.5		523728.09	105.1463	70.45	39.95	20,622,873
1977	31.5		318479.60	105.4410	70.65	39.15	12,467,034
1976	32.5		652826.63	105.7430	70.85	38.35	25,034,485
1975	33.5		660346.54	106.0540	71.05	37.56	33,550,683
1974	34.5		65875.19	106.3769	71.27	36.77	2,415,041
1973	35.5		297950.57	106.7087	71.49	35.99	18,724,671
1972	36.5		1294061.62	107.0518	71.72	35.22	45,582,606
1971	37.5		142626.39	107.4049	71.96	34.46	4,915,053
1970	38.5		375086.60	107.7697	72.21	33.71	12,642,588
1969	39.5		135279.43	108.1497	72.46	32.96	4,458,306

000068

000129

COMPANY : MDU
ACCOUNT : 376.4 - DISTRIBUTION MAINS - MANHOLES
INPUT BY: JP

DOCKET NO.:40824

DATE : 22-Feb-13

CO'S MODEL
CURVE : R
CURVE # : 4
ASL : 47

CITIES' MODEL
CURVE : R
CURVE # : 2.5
ASL : 60

BALANCE : 69,919
RESERVE : 55,146 ALLOCATED ALG THEO =>
SALVAGE : (50.00)
REM LF. : 24.60
DEPR EXP.: 2,022 (274)
DEPR RATI: 2.89% -0.39%

BALANCE : 69,919
RESERVE : 36,018
SALVAGE : (50.00)
REM. LF. : 39.39
DEPR EXP.: 1,748
DEPR RATI: 2.50%

000069

000130

000070
000131

ACCOUNT: 3764 - DISTRIBUTION MAINS - MANHOLES

CURVE YEAR	AGE (YEARS)	ADDITIONS	SURVIVORS	PROBABLE LIFE FACTOR	PROBABLE LIFE	REMAINING LIFE	DOLLAR PER YEAR
2000	0.5		0.00	100.0468	60.00	60.00	60.00
2007	1.5		0.00	100.1410	60.06	60.06	60.06
2006	2.5		0.00	100.2413	60.14	60.14	60.14
2005	3.5		0.00	100.3463	60.21	60.21	60.21
2004	4.5		0.00	100.4560	60.27	60.27	60.27
2003	5.5		0.00	100.5702	60.35	60.35	60.35
2002	6.5		0.00	100.6885	60.42	60.42	60.42
2001	7.5		0.00	100.8100	60.50	60.50	60.50
2000	8.5		0.00	100.9352	60.58	60.58	60.58
1999	9.5		0.00	101.0639	60.67	60.67	60.67
1998	10.5		0.00	101.1959	60.76	60.76	60.76
1997	11.5		0.00	101.4185	60.85	60.85	60.85
1996	12.5		2267.48	101.5852	60.86	60.86	150.283
1995	13.5		2260.06	101.7995	61.06	61.06	108.333
1994	14.5		0.00	101.9420	61.17	61.17	46.87
1993	15.5		4944.30	102.1237	61.28	61.28	193.883
1992	16.5		0.00	102.3345	61.40	61.40	0
1991	17.5		1140.52	102.5437	61.53	61.53	50.213
1990	18.5		5270.86	102.7617	61.66	61.66	406.502
1989	19.5		0.00	102.9925	61.80	61.80	48.10
1988	20.5		3739.38	103.2377	61.94	61.94	154.855
1987	21.5		3512.19	103.4988	62.08	62.08	142.362
1986	22.5		1718.67	103.7415	62.24	62.24	80.241
1985	23.5		6397.11	104.0118	62.41	62.41	38.91
1984	24.5		2652.00	104.2943	62.58	62.58	204.986
1983	25.5		4593.08	104.5980	62.75	62.75	112.402
1982	26.5		1090.76	104.9253	62.84	62.84	36.44
1981	27.5		4703.73	105.2350	63.13	63.13	35.83
1980	28.5		7490.06	105.5365	63.52	63.52	157.750
1979	29.5		1211.46	105.8790	63.82	63.82	250.738
1978	30.5		3704.52	106.2332	63.74	63.74	41.222
1977	31.5		0.00	106.6000	63.86	63.86	123.204
1976	32.5		0.00	106.9760	64.19	64.19	0
1975	33.5		0.00	107.3720	64.42	64.42	0
1974	34.5		0.00	107.7790	64.67	64.67	0
1973	35.5		0.00	108.1890	64.92	64.92	0
1972	36.5		0.00	108.6322	65.18	65.18	0
1971	37.5		0.00	109.0915	65.45	65.45	0
1970	38.5		0.00	109.5440	65.73	65.73	0
1969	39.5		0.00	110.0227	66.01	66.01	0
1968	40.5		0.00	110.5165	66.31	66.31	0
1967	41.5		0.00	111.0252	66.62	66.62	0
1966	42.5		0.00	111.5510	66.93	66.93	0
1965	43.5		0.00	112.0950	67.26	67.26	0
1964	44.5		0.00	112.6572	67.59	67.59	0
1963	45.5		0.00	113.2285	67.84	67.84	0
1962	46.5		0.00	113.8240	68.29	68.29	0
1961	47.5		0.00	114.4368	68.65	68.65	0
1960	48.5		9.80	115.0702	69.04	69.04	20.54

55.816

2,754,452
39.39

COMPANY : MDU
 ACCOUNT : 376.5 - DISTRIBUTION MAINS - BRIDGES/RIVER
 INPUT BY: JP

DOCKET NO.:40824
 DATE : 22-Feb-13

CO'S MODEL
 CURVE : R
 CURVE # : 4
 ASL : 47

CITIES' MODEL
 CURVE : R
 CURVE # : 2.5
 ASL : 60

BALANCE : 19,818
 RESERVE : 6,023 ALLOCATED ALG THEO =>
 SALVAGE : (50.00)
 REM LF. : 38.30
 DEPR EXP.: 619 (123)
 DEPR RATI: 3.12% -0.62%

BALANCE : 19,818
 RESERVE : 3,989
 SALVAGE : (50.00)
 REM. LF. : 51.95
 DEPR EXP.: 495
 DEPR RATI: 2.50%

000071

000132

ACCOUNT CURVE YEAR	SPUS - DS (RIBUTION MAINS - BRIDGES/RIVER R2S 20		SURVIVORS	PROBABLE LIFE FACTOR	PROBABLE LIFE	REMAINING LIFE	DOLLAR PER YEAR
	AGE (YEARS)	ADDITIONS					
2008	0.5		0.00	100.0458	50.03	59.23	0
2007	1.5		0.00	100.1410	50.08	58.58	0
2006	2.5		6514.77	100.2413	50.14	57.84	375,643
2005	3.5		0.00	100.3483	50.21	56.71	0
2004	4.5		0.00	100.4580	50.27	55.77	0
2003	5.5		0.00	100.5752	50.35	54.85	0
2002	6.5		2817.45	100.6685	50.42	53.92	141,131
2001	7.5		0.00	100.6280	50.50	53.00	0
2000	8.5		0.00	100.8652	50.58	52.08	0
1999	9.5		0.00	101.1083	50.67	51.17	0
1998	10.5		1723.00	101.2805	50.76	50.26	80,682
1997	11.5		0.00	101.4185	50.85	49.35	0
1996	12.5		39.80	101.5852	50.95	48.45	1,016
1995	13.5		8923.21	101.7685	51.06	47.56	424,849

000072

000133

376.1 Distribution Mains Steel
P & E 1977-2008

Age Interval	Exposures	Retirements	Ret Ratio	Survivors	OLT
0	23146946	0	0	1	100
0.5	18792882	15452.13	0.0008222	0.9991778	100
1.5	18383361	8022.88	0.0004364	0.9995636	99.917777
2.5	17826128	9599.99	0.0005385	0.9994615	99.87417
3.5	16389391	9578.85	0.0005845	0.9994155	99.820385
4.5	15290560	47263.34	0.003091	0.996909	99.762044
5.5	14237712	10895.47	0.0007653	0.9992347	99.453678
6.5	14049887	12998.11	0.0009251	0.9990749	99.377571
7.5	13898558	39300.77	0.0028277	0.9971723	99.285633
8.5	13550418	6901.97	0.0005094	0.9994906	99.004884
9.5	13031510	88529.58	0.0067935	0.9932065	98.954456
10.5	12771536	4588.06	0.0003592	0.9996408	98.282208
11.5	12608435	64195.64	0.0050915	0.9949085	98.246901
12.5	12420453	32457.65	0.0026132	0.9973868	97.746679
13.5	12252524	104456.13	0.0085253	0.9914747	97.491243
14.5	11443573	71504.49	0.0062484	0.9937516	96.660104
15.5	10268566	14625.43	0.0014243	0.9985757	96.056129
16.5	9621920.2	31647.88	0.0032891	0.9967109	95.919317
17.5	9117561.7	18518.56	0.0020311	0.9979689	95.603824
18.5	8635362.4	58717.65	0.0067997	0.9932003	95.409645
19.5	8236826.4	25850.05	0.0031384	0.9968616	94.76089
20.5	7667430.8	56480.85	0.0073663	0.9926337	94.463497
21.5	7213321.9	21760.15	0.0030167	0.9969833	93.767648
22.5	6034948.7	10049.97	0.0016653	0.9983347	93.484782
23.5	5279682.9	3851.87	0.0007296	0.9992704	93.329103
24.5	4974583.1	9735.72	0.0019571	0.9980429	93.261013
25.5	4180727.3	929.23	0.0002223	0.9997777	93.078493
26.5	3029916.8	6996.34	0.0023091	0.9976909	93.057804
27.5	2084867.7	0	0	1	92.842926
28.5	1320149.3	37002.55	0.0280291	0.9719709	92.842926
29.5	699843.37	0	0	1	90.240626
30.5	360308.08	0	0	1	90.240626

000075

000134

376.2 Distribution Mains Plastic
P & E 1970-2008

Age Interval	Exposures	Retirements	Ret Ratio	Survivors	OLT
0	65343947	3359.94	0.0000514	0.9999486	100
0.5	61581190	40251.19	0.0006536	0.9993464	99.994858
1.5	58104872	55351.7	0.0009526	0.9990474	99.929499
2.5	54187061	46753.5	0.0008628	0.9991372	99.834304
3.5	51359074	105437.2	0.0020529	0.9979471	99.748165
4.5	48811515	48473.16	0.0009931	0.9990069	99.543388
5.5	46033423	51762.97	0.0011245	0.9988755	99.444535
6.5	44205596	49395.8	0.0011174	0.9988826	99.332713
7.5	42434794	48113.06	0.0011338	0.9988662	99.221717
8.5	40918662	35471.44	0.0008669	0.9991331	99.109219
9.5	39825966	64796.03	0.001627	0.998373	99.023303
10.5	38299435	45439.16	0.0011864	0.9988136	98.862194
11.5	36280937	36580.51	0.0010083	0.9989917	98.744902
12.5	33929527	25074.69	0.000739	0.999261	98.645342
13.5	32494637	172637.6	0.0053128	0.9946872	98.572441
14.5	28267136	82632.5	0.0029233	0.9970767	98.048745
15.5	21535961	14935.92	0.0006935	0.9993065	97.762122
16.5	19603487	22648.5	0.0011553	0.9988447	97.694321
17.5	18307185	37972.72	0.0020742	0.9979258	97.581452
18.5	17374768	31988.75	0.0018411	0.9981589	97.379048
19.5	16740627	17968.11	0.0010733	0.9989267	97.199763
20.5	15902876	38978.01	0.002451	0.997549	97.095437
21.5	14642468	14807.48	0.0010113	0.9989887	96.857455
22.5	13416879	17892.98	0.0013336	0.9986664	96.759506
23.5	12101682	48812.23	0.0040335	0.9959665	96.630466
24.5	10820702	33042.01	0.0030536	0.9969464	96.240706
25.5	9625827.8	16029.25	0.0016652	0.9983348	95.946827
26.5	8466445.1	19241.43	0.0022727	0.9977273	95.787053
27.5	7352838.7	7451.05	0.0010134	0.9989866	95.56936
28.5	5848991.7	4232.58	0.0007236	0.9992764	95.472515
29.5	4735392.3	14229.34	0.0030049	0.9969951	95.403427
30.5	4209904.7	1761.5	0.0004184	0.9995816	95.11675
31.5	3889807.6	1617.47	0.0004158	0.9995842	95.076951
32.5	3235101.3	1879.66	0.000581	0.999419	95.037416
33.5	2177479.9	164274.92	0.0754427	0.9245573	94.982197
34.5	2110391.8	1412.85	0.0006695	0.9993305	87.816485
35.5	1812086	355.25	0.000196	0.999804	87.757695
36.5	517761.97	262.38	0.0005068	0.9994932	87.74049
37.5	375086.6	49.98	0.0001332	0.9998668	87.696027

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NS 380

	Ret	NS	NS%
1995	85394	132758	155.47%
1996	190887	195985	102.67%
1997	147018	167593	113.99%
1998	156868	232674	148.32%
1999	129801	205972	158.68%
2000	134394	200261	149.01%
2001	123831	203197	164.09%
2002	95019	198438	208.84%
2003	163649	267037	163.18%
2004	184932	371150	200.70%
2005	91049	257858	283.21%
2006	107042	265723	248.24%
2007	173206	367329	212.08%
2008	112618	322277	286.17%
Total	1895708	3388252	178.73%

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MCC 161
Robinson Proposals Last 5 Years

Life

<u>376 P</u>	<u>376 S</u>	<u>380 P</u>	<u>380 S</u>	Utility	Year
45R4	54R3	37R5	38R2	Gt Plains	2011
50R4	36L4	50R3	50R3	PSE&G	2008
45R3	65R3	40S2	55R4	Cascade NG	2008
45S2	45R3	40R3	47R3/38L3	Northern UT NH	2006
60R3	75L2	45R2	50L1	NY State	2008
60R4	67R2.5	44L3	35R0.5	Rochester G&E	2008
50.8	57	42.7	45.8	R Average	

Net Salvage

<u>376 P</u>	<u>376 S</u>	<u>380 P</u>	<u>380 S</u>	Utility	Year
-55	-55	-75	-75	Gt Plains	2011
-75	-75	-125	-125	PSE&G	2008
-30	-20/-70	-160	-160	Cascade NG	2008
-25	-25	-85	-85	Northern UT NH	2006
-15	-100	-55	-45	NY State	2008
-70	-70	-30	-25	Rochester G&E	2008
		-88	-86	R Average	

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COMPANY : MDU
 ACCOUNT : 390 - COMMON STRUCTURES & IMPROVMT.
 INPUT BY: JP

DOCKET NO.:40824

DATE : 30-Sep-13

CO'S MODEL

CURVE : R
 CURVE # : 3
 ASL : 37

CITIES' MODEL

CURVE : L
 CURVE # : 1
 ASL : 53

BALANCE : 26,865,571
 RESERVE : 11,607,449 ALLOCATED ALG THEO =>
 SALVAGE : 0.00
 REM LF. : 25.20
 DEPR EXP.: 605,481 (98,583)
 DEPR RATI: 2.25% -0.37%

BALANCE : 26,865,571
 RESERVE : 5,403,018
 SALVAGE : 0.00
 REM. LF. : 42.34
 DEPR EXP.: 506,898
 DEPR RATI: 1.89%

ACCOUNT CURVE YEAR	350 - COMMON STRUCTURES & IMPROVMT L1 S3 AGE (YEARS)	ADDITIONS	SURVIVORS	PROBABLE LIFE FACTOR	PROBABLE LIFE	REMAINING LIFE	DOLLAR PER YEAR
2008	0.5		298058.93	100.0598	53.03	52.53	15,857,020
2007	1.5		4703481.21	100.1881	53.10	51.80	242,898,219
2006	2.5		43081.84	100.3374	53.18	50.88	2,183,336
2005	3.5		3528351.33	100.5104	53.27	49.77	175,657,580
2004	4.5		1282380.59	100.7188	53.38	48.88	61,702,428
2003	5.5		237482.71	100.9591	53.51	48.01	12,841,390
2002	6.5		433470.02	101.2288	53.65	47.15	20,438,848
2001	7.5		287033.58	101.5357	53.81	46.31	12,367,387
2000	8.5		720315.20	101.8775	54.00	45.50	32,770,812
1999	9.5		281328.27	102.2849	54.20	44.70	11,678,659
1998	10.5		251211.03	102.6788	54.42	43.82	11,472,048
1997	11.5		850004.48	103.1415	54.67	43.17	28,067,443
1996	12.5		328408.43	103.6438	54.93	42.43	13,934,764
1995	13.5		1242406.73	104.1915	55.22	41.72	51,835,072
1994	14.5		2292791.38	104.7783	55.53	41.03	94,078,961
1993	15.5		301888.43	105.4058	55.87	40.37	12,185,757
1992	16.5		163580.50	106.0802	56.22	39.72	6,497,032
1991	17.5		70702.10	106.7875	56.60	39.10	2,764,643
1990	18.5		3458.78	107.5813	57.01	38.51	133,227
1989	19.5		28001.83	108.3508	57.43	37.93	1,008,891
1988	20.5		4844.35	109.1957	57.87	37.37	161,051
1987	21.5		0.00001	110.0717	58.34	36.84	0
1986	22.5		485888.01	110.9864	58.82	36.32	15,922,284
1985	23.5		538048.87	111.9332	59.32	35.82	15,275,414
1984	24.5		3123696.11	112.9200	59.85	35.35	110,415,181
1983	25.5		494701.29	113.9323	60.38	34.88	17,257,209
1982	26.5		1752465.92	114.9700	60.93	34.43	80,344,576
1981	27.5		186300.70	116.0495	61.50	34.00	6,334,988
1980	28.5		243248.46	117.1387	62.09	33.58	5,168,168
1979	29.5		528255.41	118.2486	62.67	33.17	17,523,447
1978	30.5		8332.24	119.3783	63.27	32.77	273,052
1977	31.5		300263.37	120.5247	63.88	32.38	8,721,634
1976	32.5		41609.38	121.6757	64.48	31.99	1,331,005
1975	33.5		0.00001	122.8287	65.10	31.60	0
1974	34.5		18418.38	123.9985	65.72	31.22	512,413
1973	35.5		75575.41	125.1683	66.34	30.84	2,330,885
1972	36.5		423317.01	126.3586	66.97	30.47	12,898,118
1971	37.5		18019.83	127.5455	67.60	30.10	560,434
1970	38.5		5744.59	128.7406	68.23	29.73	170,801
1969	39.5		74568.26	129.9481	68.87	29.37	2,180,187
1968	40.5		1009471.80	131.1557	69.51	29.01	29,287,301
1967	41.5		161052.17	132.3732	70.16	28.66	4,615,401
1966	42.5		152338.84	133.5926	70.80	28.30	4,311,842
1965	43.5		3850.31	134.8291	71.46	27.95	107,852
1964	44.5		18963.84	136.0851	72.11	27.61	524,232
1963	45.5		5458.13	137.3104	72.77	27.27	148,888
1962	46.5		9611.84	138.5557	73.43	26.93	258,893
1961	47.5		1232.59	139.8172	74.10	26.60	32,791
1960	48.5		2078.30	141.0764	74.77	26.27	54,588
1959	49.5		413.04	142.3455	75.44	25.94	10,718
1958	50.5		1338.02	143.6186	76.12	25.62	34,278
1957	51.5		11218.58	144.8955	76.79	25.28	283,768
1956	52.5		24602.08	146.1885	77.48	24.96	614,572
1955	53.5		18414.07	147.4809	78.16	24.66	454,181
1954	54.5		853.89	148.7728	78.85	24.35	21,035
1953	55.5		3484.98	150.0747	79.54	24.04	84,017
1952	56.5		12280.88	151.3888	80.23	23.73	290,778

LIFE ONLY

**MONTANA-DAKOTA UTILITIES, CO.
GAS PLANT DEPRECIATION EXPENSE
PERIOD ENDING DECEMBER 31, 2008**

No.	Account Description	Balance		Net Salvage	Reserve	Net	Remaining	Depreciation	
		12/31/2008	%	\$	12/31/2008	Depreciable	Life	Accrual	Rate
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
376.1	Mains - Steel	\$41,975,049	-50%	\$ (20,987,524.73)	\$36,466,143	\$26,496,431	36.90	\$718,060	1.71%
376.2	Mains - Plastic	\$63,935,959	-50%	\$ (31,967,979.40)	\$30,608,794	\$65,295,144	47.45	\$1,376,083	2.15%
376.3	Mains - Valves	\$447,328	-50%	\$ (223,664.05)	\$257,220	\$413,772	26.16	\$15,817	3.54%
376.4	Mains - Manholes	\$69,919	-50%	\$ (34,959.65)	\$55,146	\$49,733	39.39	\$1,263	1.81%
376.5	Mains - Bridge/River Cx	\$19,818	-50%	\$ (9,909.02)	\$6,023	\$23,704	51.95	\$456	2.30%
Total 376		\$106,448,074		\$ (53,224,036.83)	\$67,393,326	\$92,278,784		\$2,111,679	1.98%
380.1	Services - Steel	\$7,285,188	-200%	\$ (14,570,375.74)	\$12,429,968	\$9,425,595	13.43	\$701,831	9.63%
380.2	Services - Plastic	\$42,690,273	-200%	\$ (85,380,546.46)	\$30,149,319	\$97,921,501	29.00	\$3,376,603	7.91%
380.3	Farm/Fuel Lines	\$248,640	-200%	\$ (497,280.36)	\$256,290	\$489,630	17.96	\$27,262	10.96%
Total 380		\$50,224,101		\$ (100,448,202.56)	\$42,835,578	\$107,836,726		\$4,105,697	8.17%
381	Meters	\$55,172,050	-15%	\$ (8,275,807.54)	\$16,541,851	\$46,906,007	24.19	\$1,939,066	3.51%
Others	Remaining Accounts	\$39,980,869	14%	\$ 5,574,093.50	\$20,321,636	\$14,085,139	13.76	\$1,023,825	
Total		\$251,825,094		\$ (156,373,953.42)	\$147,092,391	\$261,106,656		\$9,180,268	
	MDU Request							\$10,224,058	
	MCC Adjustment							\$ (1,043,789.54)	

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NET SALVAGE ONLY

**MONTANA-DAKOTA UTILITIES, CO.
GAS PLANT DEPRECIATION EXPENSE
PERIOD ENDING DECEMBER 31, 2008**

No.	Account Description	Balance		Net Salvage	Reserve	Net	Remaining	Depreciation	
		12/31/2008	%	\$	12/31/2008	Depreciable	Life	Accrual	Rate
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
376.1	Mains - Steel	\$41,975,049	-30%	\$ (12,592,514.84)	\$36,466,143	\$18,101,421	22.36	\$809,545	1.93%
376.2	Mains - Plastic	\$63,935,959	-30%	\$ (19,180,787.64)	\$30,608,794	\$52,507,952	33.45	\$1,569,744	2.46%
376.3	Mains - Valves	\$447,328	-30%	\$ (134,198.43)	\$257,220	\$324,306	26.16	\$12,397	2.77%
376.4	Mains - Manholes	\$69,919	-30%	\$ (20,975.79)	\$55,146	\$35,749	24.63	\$1,451	2.08%
376.5	Mains - Bridge/River Cx	\$19,818	-30%	\$ (5,945.41)	\$6,023	\$19,741	38.35	\$515	2.60%
Total 376		\$106,448,074		\$ (31,934,422.10)	\$67,393,326	\$70,989,169		\$2,393,652	2.25%
380.1	Services - Steel	\$7,285,188	-175%	\$ (12,749,078.77)	\$12,429,968	\$7,604,299	13.43	\$566,217	7.77%
380.2	Services - Plastic	\$42,690,273	-175%	\$ (74,707,978.15)	\$30,149,319	\$87,248,932	29.00	\$3,008,584	7.05%
380.3	Farm/Fuel Lines	\$248,640	-175%	\$ (435,120.32)	\$256,290	\$427,470	17.96	\$23,801	9.57%
Total 380		\$50,224,101		\$ (87,892,177.24)	\$42,835,578	\$95,280,701		\$3,598,602	7.17%
381	Meters	\$55,172,050	-5%	\$ (2,758,602.51)	\$16,541,851	\$41,388,802	24.19	\$1,710,988	3.10%
Others	Remaining Accounts	\$39,980,869	14%	\$ 5,574,093.50	\$20,321,636	\$14,085,139	13.76	\$1,023,825	
Total		\$251,825,094		\$ (117,011,108.35)	\$147,092,391	\$221,743,811		\$8,727,068	
	MDU Request							\$10,224,058	
	MCC Adjustment							\$ (1,496,989.12)	

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