



A CMS Energy Company

General Offices:
212 West Michigan Avenue Tel: (517) 788.0550
Jackson, MI 49201 Fax: (517) 788-0768

*Washington Office:
1016 46th Street, NW, Tel: (202) 293.5795
Washington, DC 20036 Fax: (202) 223-6178

Writer's Direct Dial Number. (517) 788.0677

LEGAL DEPARTMENT

DAVID A. MIKELONIS
Senior Vice President
and General Counsel

James E. Brunner
William M. Lange
Jon R. Robinson
Arunas T. Udrys
Assistant General
Counsel

David E. Barth
Francis X. Berkemeier
H. Richard Chambers
Charles D. Dawson
James W. Dempsey
John P. Dickey
Ann F. Goodman
Kelly M. Hall
Deborah Ann Kile
Wayne A. Kirkby
Frank R. Knox
Roger K. Krakusin
Eric V. Luoma
Wendy A. McIntyre
Raymond E. McQuillan
Deborah A. Moss
Mirce Michael Nestor
Robert M. Neustifter
David A. Pell
Vincent P. Provenzano
Susan L. Rasmussen
Catherine M. Reynolds
P. Leni Staley
Charlotte A. Walls
Michael G. Wilson
Attorney

September 15, 1999

Ms. Dorothy Wideman
Executive Secretary
Michigan Public Service Commission
6545 Mercantile Way
P.O. Box 30221
Lansing, MI 48909

In the Matter of the Application of Consumers Energy Company
for a partial waiver of the interval for leakage survey of copper services,
currently contained in Rule 723 of the Michigan Gas Safety Code,
Case No. U-12103

Dear Ms. Wideman:

Enclosed for filing is an original and 4 copies of the Application and Verification for filing in the
above matter. Thank you for your assistance.

Sincerely,

Raymond E. McQuillan

cc: Paul A. Proudfoot, MPSC

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of)
CONSUMERS ENERGY COMPANY)
for a partial waiver of the interval)
for leakage survey of copper services,)
currently contained in Rule 723)
of the Michigan Gas Safety Code)

Case No. U- 12103

TESTIMONY
OF
JAMES R. COTANT
ON BEHALF OF
CONSUMERS ENERGY COMPANY

September 1999

JAMES R. COTANT
QUALIFICATIONS

1

1 Q. Please state your name, business address and position with Consumers Energy Company.

2 A. My name is James R. Cotant. My business address is 1955 West Parnall Road, Jackson,
3 Michigan, 49201-8644 and I am Corrosion Control Program Manager in the Consumers
4 Energy Company Gas Division.

5 Q. Please outline your education and professional experience.

6 A. I have a Bachelor of Science degree from Western Michigan University, majoring in the
7 Production Technology area. I also have an Associates of Science degree in Electronics
8 from Kellogg Community College. My work with Consumers Energy Company (then
9 Consumers Power Company) began in 1979 as an Energy Distribution Technician in the
10 Electric Distribution Department in Kalamazoo Michigan. In 1986 I transferred to the Gas
11 Distribution Department in Kalamazoo Michigan as a Trenching Machine Operator. In
12 1990 I was promoted to Field Supervisor in charge of the overall direction and support of
13 the Corrosion Control Program for the old Southern Region Gas Distribution area. In
14 1996, I was promoted to Senior Technical Analyst in charge of the overall direction and
15 support of the Consumers Energy Corrosion Control Program. With the addition of the
16 Gas T&S Cathodic Protection System in 1998 this is my current position at Consumers
17 Energy. I am NACE (National Association of Corrosion Engineers) certified as a Senior
18 Corrosion Technologist and a Cathodic Protection Specialist. I have been an active
19 member of the AGA Corrosion Control Committee since 1997, and am currently serving
20 as Vice Chair in 1999.

21 Q. What are your responsibilities as Corrosion Control Program Manager?

22 A. My primary responsibilities are to provide the overall direction and support of Consumers
23 Energy's Corrosion Control Program for the Gas Division. This includes monitoring

compliance of Consumers Energy's cathodic protection standards as well as the Michigan Gas Safety Standards, formerly the Michigan Gas Safety Code.

1 Q. What is the purpose of your testimony?

2 A. The purpose of my testimony is (1) to support the Application of Consumers Energy
3 Company for a partial waiver of the interval for leakage survey of copper services,
4 contained in Rule 723(2)(b) [R 460.147231 (“Rule 723”) of the current Michigan Gas
5 Safety Code; (2) to provide performance history that demonstrates Consumers Energy’s
6 copper gas distribution service lines perform very similar to coated and wrapped steel
7 distribution service lines, and much better than bare steel distribution service lines of
8 which the majority require leakage survey at intervals of not more than five years; and (3)
9 based on this performance propose that the portion of the underground copper gas
10 distribution service lines in the customer’s yard be leak surveyed at intervals not to exceed
11 five years. [The standards are prescribed in the current Michigan Gas Safety Code, as
12 amended, 1979 Administrative Code, as supplemented, R 460.14001, et seq (the
13 “Michigan Gas Safety Code”). By Order dated August 3 1, 1999 in Case No. U-1 1750, the
14 Commission approved administrative rules that rescind the current Michigan Gas Safety
15 Code and replace it with new Michigan Gas Safety Standards (the “Michigan Gas Safety
16 Standards”), [R460.20101, et seq], as set forth in the Order. For purposes of this
17 testimony, any reference to “Rule 723” of the Michigan Gas Safety Code should also be
18 deemed to include Rule 606 [R 460.206061 of the new Michigan Gas Safety Standards,
19 which is the corresponding provision, and which incorporates by reference 49 CFR
20 192.723.]

21 Q. Have you prepared any exhibits?

22 A. Yes, I have prepared two exhibits. Exhibit JRC-1; (A--) is the history of
23 underground corrosion leaks over the past 12 years for coated and wrapped steel services,

1 bare steel services, and copper services, along with the corresponding leak rate for each.
2 Exhibit JRC-2; (A--) is the history of copper service leaks due to underground
3 corrosion over a 12 year period identified by regional service area, including the
4 corresponding leak rate for each area.

5 Q. Please explain the requirements of the current Michigan Gas Safety Code (and new
6 Michigan Gas Safety Standards) for leakage survey.

7 A. Rule 723(2)(b) provides that "A leakage survey utilizing leak detector equipment shall be
8 conducted outside business districts as frequently as necessary, but at intervals of not more
9 than 5 years. However, for cathodically unprotected distribution lines subject to
10 R 460.14465(5), on which electrical surveys for corrosion are impractical, survey intervals
11 may not be more than 3 years." [Rule 723 is identical to the federal gas pipeline safety
12 regulations contained in 49 CFR 192.723(b)(2). The new Michigan Gas Safety Standards
13 incorporates 49 CFR 192.723 by reference in Rule 606; (R460.20606).]

14 Consumers Energy understands these rules to require leakage surveys for
15 cathodically protected steel distribution services at intervals of not more than 5 years, with
16 the exception of isolated (electrically insulated) services leak surveyed on a 3 year interval,
17 while copper distribution lines not cathodically protected must be leak surveyed at
18 intervals of not more than 3 years.

19 Q. How is leak history information collected and documented?

20 A. This information is collected at the time the leak is fixed by our repair crews. The
21 information is documented on company forms and is entered into a computerized leak
22 tracking system. This computerized system schedules leak **surveys** and leak repairs, and
23 tracks the history of leak surveys and leak repairs.

1 Q. How are these leaks found?

2 A. These leaks can be found by the use of leak survey equipment, or by a customer or other
3 member of the public smelling or otherwise noticing a leak. Once a leak is discovered
4 there is a determination whether it constitutes a hazard or potential hazard to the public
5 or to buildings. It either receives an immediate effort to protect life and property by
6 remedial action or receives scheduled repair within one year if it does not constitute an
7 immediate hazard, pursuant to Rule 723. All customer complaints or reported leaks are
8 promptly investigated.

9 Q. What is the history of Consumers Energy's copper gas distribution services compared to
10 its coated and wrapped steel and its bare steel distribution services?

11 A. Statistics indicate that copper gas distribution services perform very similar to coated and
12 wrapped steel services, and over 800% better than bare steel services. As shown on
13 Exhibit JRC- 1; (A-___) the average leak rate for bare steel services over the last 12 years
14 is 8.14 per 1000 services. Over that same time, the average leak rate for copper services
15 is 1 .00 per 1000 services. By comparison, over that same time, the average leak rate for
16 coated and wrapped steel distribution services is 0.84 per 1000 services. Thus, copper gas
17 distribution services compare very favorably with coated and wrapped steel distribution
18 services and perform much better than our bare steel distribution services. While the
19 average leak rate in any given year may vary slightly from the overall averages, our copper
20 distribution services average leak rate per 1000 services always compare favorably to
21 coated and wrapped steel distribution services and far out-perform bare steel distribution
22 services. In every year, copper gas pipes are more similar to coated and wrapped gas pipes
23 regarding the number of discovered leaks than they are similar to bare steel pipes.

1 Q. What type of leaks are included in the above figures?

2 A. These leaks are underground corrosion leaks.

3 Q. Does your analysis demonstrate any reason to be concerned that certain areas of
4 Consumers Energy's service territory are more likely to experience higher underground
5 corrosion rates on copper services?

6 A. No. As shown in Exhibit JRC-2; (A- -) , the average annual leak rate due to
7 underground corrosion on copper services over the last 12 years in Consumers Energy's
8 three major regional areas is very similar. These leak rates by regional service areas are
9 1.00; 0.95; and 1.06 leaks per 1000 services, with a total Company average of 1.00 per
10 1000 services over this 12 year period.

11 Q. Could just the copper services leak survey be conducted on a three year cycle?

12 A. Since the copper services are scattered throughout the entire gas distribution system,
13 selectively leak surveying the copper services on a cycle different than the rest of the
14 services in the area would be an extremely inefficient task. Likewise, any attempt to
15 cathodically protect copper services would be prohibitively expensive. Based upon
16 location of the leaks on copper services, as supported by the Direct Testimony of Eric D.
17 Golke, Consumers Energy would propose to do a mobile survey on a three year cycle of
18 copper services within the road right-of-way and conduct leakage surveys on the yard
19 portion of the copper services at intervals of not more than five years.

20 Q. The Michigan Public Service Commission may waive compliance with any standard in
21 the Michigan Gas Safety Code if waiver is not inconsistent with gas pipeline safety. Is this
22 waiver request consistent with gas pipeline safety?

1 A. Yes, public safety remains a critical concern of Consumers Energy. We do not believe
2 that a five year leak survey cycle on the yard portion of copper services should impact
3 public safety. Consumers Energy will continue leakage surveys utilizing our extremely
4 sensitive leak detector equipment which detects leaks before a human can smell it. Our
5 employees will continue to promptly investigate public complaints or reports. This waiver
6 is not intended to result in any reduction in our work force. Consumers Energy remains
7 committed to the safety of its employees. Our repair crews face difficult situations
8 involving gas leaks from a variety of sources including distribution lines inadvertently
9 damaged by equipment operators. They carefully and skillfully respond to such potential
10 emergencies on a regular basis. Consumers Energy would not pursue this waiver if it
11 believed that worker safety would be compromised by a five year leakage survey schedule.
12 Considering that a corrosion leak starts out with a very small leak opening and grows at
13 a slow rate, and the very sensitive leak detection equipment now being utilized, a
14 corrosion leak on a copper service should be identified before public or worker safety is
15 jeopardized.

16 Q. What is your conclusion?

17 A. Based on the performance of copper services over the last 12 years, leak surveying the
18 yard portion of copper services on an interval not to exceed five years seems to be
19 reasonable, and with the majority of the leaks occurring near the roadway, the proposal to
20 do the mobile leakage survey on a three year cycle is not inconsistent with gas pipeline
21 safety, and in the public interest. Therefore, Consumers Energy requests the Commission
22 waive compliance with the provision of the current Michigan Gas Safety Code Rule

1 723(2)(b) to allow leakage surveys of the yard portion of the underground copper gas
2 distribution services at intervals of not more than 5 years.

3 Q. Would a five year leak survey interval for copper services be reasonable for other gas
4 distribution companies to follow?

5 Not necessarily. That conclusion should not be determined without looking at copper
6 service performance by each gas distribution company, given their unique environments
7 and leak history information.

8 Q. Does this conclude your testimony?

9 Yes, it does.

UNDERGROUND CORROSION LEAKS ON SERVICES

Coated & Wrapped				Copper			Bare		
YEAR	Leaks	Services	Leaks/K	Leaks	Services	Leaks/K	Leaks	Services	Leaks/K
1987	476	529290	0.90	236	238848	0.99	95	20720	4.58
1988	407	524740	0.78	169	236553	0.71	79	19995	3.95
1989	344	521281	0.66	145	235008	0.62	46	19464	2.36
1990	266	517706	0.51	92	233246	0.39	38	19091	1.99
1991	361	512185	0.70	140	230824	0.61	65	18544	3.51
1992	317	506500	0.63	123	227734	0.54	76	17886	4.25
1993	392	499615	0.78	212	224251	0.95	135	16888	7.99
1994	543	494911	1.10	316	222271	1.42	277	16172	17.13
1995	597	489558	1.22	327	219750	1.49	245	15130	16.19
1996	504	484668	1.04	363	217621	1.67	248	14267	17.38
1997	436	482398	0.90	293	216276	1.35	229	13909	16.46
1998	446	480055	0.93	298	214550	1.39	141	13490	10.45
Totals	5089	6042907		2714	271693 2		16.74	205556	
Leaks/1000			0.84			1.00			8.14
Leak Information Source - Leakcon									
Service Count Source - Accounting Records/DOT Report									

COPPER SERVICE LEAKS DUE TO UNDERGROUND CORROSION

	SERVICES	12-YEAR PERIOD
Southeastern Service Area	113,602	1,368
Leaks/1000 Services/Year		1.00
Northeastern Service Area	68,185	779
Leaks/1000 Services/Year		0.95
Southcentral Service Area	44,624	567
Leaks/1000 Services/Year		1.06
TOTAL	226,411	2,714
Leaks/1000 Services/Year		1.00
Copper Service Count Source - Accounting Records		
Copper Service Leak Source - Leakcon		
Copper Service Count is a twelve year average.		
Southeastern Area - Pontiac, Macomb, Wayne		
Northeastern Area - Saginaw, Bay City, Flint		
Southcentral Area - Lansing, Jackson, Kalamazoo		

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of	)	
CONSUMERS ENERGY COMPANY	)	
for a partial waiver of the interval	)	
for leakage survey of copper services,	)	Case No. U- 12103
currently contained in Rule 723	)	
of the Michigan Gas Safety Code	)	
_____	)	

DIRECT TESTIMONY
OF
ERIC D. GOLKE
ON BEHALF OF
CONSUMERS ENERGY COMPANY

September 1999

ERIC D. GOLKE
QUALIFICATIONS

1

1 Q. Please state your name and business address and position with Consumers Energy
2 Company.

3 A. My name is Eric D. Golke. My business address is the same as my home address, 1135
4 Woodwind Trail, Haslett, Michigan 48840, and I am a retired employee of Consumers
5 Energy Company as of February 1, 1999.

6 Q. Please outline your education and professional experience.

7 A. I have a Bachelor of Science degree in Civil Engineering from the University of Michigan
8 and I am also a Registered Professional Engineer in Mechanical Engineering in the State
9 of Michigan. I have over 36 years of Gas Distribution experience with Consumers Energy,
10 beginning in 1963 in the Engineering Department of our Macomb Region, where I
11 supervised the design of gas mains, services and large-volume meter installations. From
12 1968 to 1976, I was in our General Office Engineering Department providing function
13 direction to our then 16 Division Engineering Departments. From 1976 to 1987, I was the
14 Superintendent in charge of a department of seven supervisors and approximately 50
15 employees who operated, maintained and constructed gas distribution facilities for our
16 Southwest Region of Kalamazoo, Hastings and Marshall. Since then, I was in a functional
17 capacity for what became the Southern Region of the Lansing, Kalamazoo and Jackson
18 areas. Over the years, I have served on many task forces and committees for Consumers
19 Energy, including some on reviewing gas incidents.

1 Q. What is the purpose of your testimony?

2 A. The purpose of my testimony is to support the application of Consumers Energy Company
3 for a partial waiver of compliance with Rule 732(2)(b) [R 460.147231 of the current
4 Michigan Gas Safety Code to allow a leakage survey of copper services at intervals of not
5 more than five years and to provide the results of my review of 983 work orders for copper
6 service leak repairs spanning the last five years. [The standards are prescribed in the
7 current Michigan Gas Safety Code, as amended, 1979 Administrative Code, as
8 supplemented, R 460.14001, et seq (the "Michigan Gas Safety Code"). By Order dated
9 August 31, 1999 in Case No. U-1 1750, the Commission approved administrative rules that
10 rescind the current Michigan Gas Safety Code and replace it with new Michigan Gas
11 Safety Standards (the "Michigan Gas Safety Standards"), [R460.20101, et seq], as set forth
12 in the Order. For purposes of this testimony, any reference to "Rule 723" of the Michigan
13 Gas Safety Code should also be deemed to include Rule 606 [R 460.206061 of the new
14 Michigan Gas Safety Standards, which is the corresponding provision, and which
15 incorporates by reference 49 CFR 192.723.]

16 Q. Have you prepared any exhibits?

17 A. Yes, I have prepared Exhibit EDG-1; (A-___), which is a Fact Summary of my review
18 of Work Orders of corrosion leaks on copper services which occurred from 1994 through
19 1998. It identifies the number and percentage of corrosion leaks that occurred in the right-
20 of-way portion of the services and also identifies the breakdown of leaks in road right-of-
21 way throughout the Company's service areas.

22 Q. What are the specifics of Consumers Energy Company's proposal for the waiver?

1 A. Consumers Energy Company's proposal is to leak survey copper services in the road right-
2 of-way every three years, but to leak survey the yard portion every five years.

3 Q. Would granting this waiver to extend leak surveys of the yard portion to every five years
4 in any way compromise public safety?

5 A. No. Consumers Energy Company has submitted the testimony of James R. Cotant which
6 shows that copper services perform basically on a par with coated and wrapped steel
7 services, of which the majority are surveyed in a five-year cycle. Both copper and coated-
8 and-wrapped steel services perform about 800% better than residential bare steel services
9 which are also surveyed on a five year cycle. Add to this that Consumers Energy will leak
10 survey copper services every three years in the road right-of-way portion, where over 60%
11 of leaks occur, I believe that granting this waiver in no way compromises public safety.

12 Q. What research have you done to cause you to support Consumers Energy Company's
13 waiver proposal?

14 A. I reviewed all available Company work orders, spanning 5 years from 1994 to 1998, for
15 leak repairs for corrosion leaks on copper services. This was approximately 1000 orders.

16 Q. What were you looking for when reviewing these work orders?

17 A. Basically, I was looking for any patterns in locations of leaks on the copper services; that
18 is, did they tend to occur in the road right-of-way or the yard portion of the service, which
19 would support the theory that accumulation of winter road salts for pavement de-icing was
20 a major cause for the majority of leaks on copper services. Also, I looked at all the areas
21 in the state served by Consumers Energy Company to see if this would be true throughout
22 the data compiled by geographical areas as well.

23 Q. What were the results of your review?

1 A. As stated in Exhibit EDG-1, (A-____), I found that, overall, 60.3% of the total leaks
2 occurred in the road right-of-way portion of the service. This percentage was greater in
3 the outstate areas than in the more urban areas. This supports the theory that most
4 corrosion leaks on copper services occur from accumulation of winter road salts. Also
5 supporting this is the finding that the percentage is lower in the urban areas where there
6 is a greater occurrence of curb and gutter street construction, which would prevent salts
7 from seeping into the ground over the copper services. In these cases the salts would be
8 drawn off into storm drains.

9 Q. What was the percentage difference between Consumers Energy Company's major
10 geographical areas?

11 A. As we expected, the lowest percentage was found in the Southeastern area (Pontiac,
12 Macomb, Wayne), which has 47% of the leaks occurring in the road right-of-way. The
13 next area was the Northeastern area (Flint, Saginaw, Bay City), which has 67% of the
14 leaks occurring in the road right-of-way. The highest percentage was found in the South
15 Central area (Lansing, Jackson, Kalamazoo) which had 72% occurring in the road right-of-
16 way.

1 Q. What was your conclusion?

2 A. Based on my extensive experience in the gas distribution utility business, my judgment as
3 a Professional Engineer, my review of approximately 1000 leak repair orders, and given
4 the past actual good performance of copper services -- I believe that leak surveying copper
5 services every three years in the road right-of-way and granting Consumers Energy's
6 waiver proposal to leak survey the yard portion in an interval not to exceed every five
7 years, is not inconsistent with gas pipeline safety and would be in the public interest.

8 Q. Does this conclude your testimony?

9 A. Yes, it does.

Fact Summary

Total Work Orders reviewed of Corrosion Leaks on Copper Services

occurring during 1994 to 1998 983

Of the 983, those that occurred in the right-of-way portion 587

Percentage of those that occurred in the right-of-way portion 60.3%

Leaks in Road Right-of-Way by Area

Area	Leaks in Road Right-of-Way	Total Leaks	Percent in Road Right-of-Way
Southeastern Service Area (Pontiac, Macomb, Wayne)	196	416	47%
Northeastern Service Area (Flint, Bay City, Saginaw)	215	321	67%
Southcentral Service Area (Lansing, Jackson, Kalamazoo)	176	246	72%
Total	587	983	60.3%