

**Office of Pipeline and Producer Regulation
Washington, D.C. 20426**

**PREPARED SURREBUTTAL TESTIMONY OF
PATRICK R. CROWLEY
FOR
MISSISSIPPI RIVER TRANSMISSION CORPORATION
DOCKET NO. RP89-248-000 & RP90-75-000**



**WASHINGTON, D.C.
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FEDERAL ENERGY REGULATORY COMMISSION

OFFICE OF PIPELINE AND PRODUCER REGULATION

MISSISSIPPI RIVER TRANSMISSION CORPORATION

DOCKET NUMBERS RP89-248-000 & RP90-75-000

PREPARED SURREBUTTAL TESTIMONY OF PATRICK R. CROWLEY

1 Q. Please state your name and address.

2 A. My name is Patrick R. Crowley. My business address is 825
3 North Capitol Street, Washington, D.C., 20426.

4 Q. Are you the same Patrick R. Crowley who has previously filed
5 testimony in this docket?

6 A. Yes I am.

7 Q. What issue does this surrebuttal testimony address?

8 A. This testimony addresses the testimony of Mississippi River
9 Transmission's (MRT) witness Richard Reis and Union Electric
10 Company's Mr. Pappas with respect to their criticisms of my
11 mcf-mile study.

12 Q. Why do you take exception to Mr. Reis' comments on your
13 mcf-mile study?

14 A. I find Mr. Reis' criticisms of my mcf-mile study
15 unjustified. Mr. Reis has criticized my mcf-mile study for
16 three main reasons: one, that the flow diagram method fails
17 to replicate the operation of the system; two, that the
18 presence of some errors invalidates the study; and three, I

1 have failed to demonstrate why the flow diagram method is
2 superior to the explosion method used by MRT.

3 Q. Please explain why you disagree with Mr. Reis' conclusion
4 that your mcf·mile study fails to replicate the operation of
5 the system?

6 A. The purpose of an mcf·mile study is not to map out the exact
7 day to day operation of the system but to outline the
8 general pattern of operations over the course of a year.
9 Mr. Reis' Rebuttal Testimony spends a great deal of time
10 discussing the possible flows of gas on the mainline system
11 as gas enters in Arkansas and may flow north to St. Louis or
12 south to the Unionville storage area or the Perryville
13 interconnections. He leads us to believe that the gas
14 doesn't have any particular place to go and will not follow
15 any general patterns. That is not the case. If you look at
16 the commodity studies of Mr. Reis' own mcf·mile study, you
17 see that the majority of the gas deliveries are to the St.
18 Louis market at the far northern end of the mainline system.
19 Excluding the deliveries into the Unionville storage fields,
20 St. Louis area deliveries (at mileposts 431 and 433 only)
21 for the mainline account for 68% of the total mainline
22 deliveries. The Perryville and Texas Gas field zone
23 transportation interconnections account for another 21% of
24 total mainline deliveries. So it seems rather clear that in
25 general the gas has two main destinations, St. Louis and
26 Perryville. The deliveries to Perryville, as shown in Mr.

1 Reis' own study, enter at Sherrill and travel south to
2 Perryville. It was my understanding in conversations with
3 Mr. Reis and Mr. Dothage that this transportation took place
4 on one of the loops and that the other three continued to
5 operate in a south to north direction. My study
6 acknowledged that that particular flow was from north to
7 south and simply reversed the flow so that the positive
8 mcf·miles generated by the service would show up on the
9 spreadsheet as positive mcf·miles rather than negative
10 miles. While there may be some deliveries by displacement,
11 the very fact that they are delivered by displacement shows
12 that the gas is flowing northward rather than southward
13 toward the desired delivery point.

14 Q. In what ways does Mr. Reis claim that your study does not
15 reflect the flows on the system?

16 A. Mr. Reis' first objection, at the top of page 10, is that I
17 have segmented the system into jurisdictional and non-
18 jurisdictional components and that this is illogical because
19 individual molecules cannot be colored and separately
20 identified as they move through the system. I have not
21 attempted to trace the gas through the system from
22 particular injection points. I have measured the average
23 miles of haul for gas delivered to jurisdictional customers
24 and the average mile of haul for gas delivered to non-
25 jurisdictional customers. The delivery points for these
26 customers is readily apparent but the supply source is not.

1 I have assumed that the gas is sourced from all upstream
2 injection points in the commingled stream.

3 Q. Mr. Reis claims that you have made "a vague reference" to
4 Commission policy in regard to segmentation of the stream of
5 gas. Will you comment on that assertion?

6 A. Yes, my reference to Commission policy, on page 25 of my
7 direct testimony, is directed toward the policy of
8 allocating demand costs between jurisdictional and non-
9 jurisdictional services on the basis of three day peak
10 deliveries rather than contract demand.

11 Q. Mr. Reis claims that your method of segmenting the
12 jurisdictional and non-jurisdictional flows is illogical
13 because integrated pipeline systems do not and cannot
14 attribute molecules to particular services (p.10, line 39).
15 Will you comment on this?

16 A. My model has not attempted to attribute molecules to
17 particular services. My model has attempted to measure the
18 relative intensity of the use of the system by the
19 jurisdictional and non-jurisdictional services by
20 calculating the weighted average miles of haul for each
21 service. I assume that all gas enters the line into
22 essentially a pool of gas from which each delivery is drawn.
23 Deliveries do not come from particular injections but from
24 the pool of gas in the line as it moves down the pipeline.

25 Q. Mr. Reis has claimed that the large differences in average
26 miles of haul between the jurisdictional and non-

1 jurisdictional services are not reasonable (p.11, line 18).

2 Will you comment?

3 A. We should keep in mind that these figures represent the
4 weighting of the distance from the supply points and the
5 volume delivered. If the average non-jurisdictional service
6 happens to be further from the sources of gas than the
7 average jurisdictional service, then it is reasonable to
8 expect that the average miles of haul for those services
9 will be larger than for jurisdictional services. The
10 jurisdictional service has a large number of small
11 deliveries all along the line. These shorter hauls tend to
12 draw down the average mile of haul. The non-jurisdictional
13 service is concentrated beyond milepost 395 and thus is
14 weighted heavily toward these long distance hauls.
15 Additionally, the shorter haul transportation entering in
16 the field zone represent a fairly high proportion of the gas
17 stream in the jurisdictional calculations and thus hold
18 down the average miles of haul.

19 Q. Mr. Reis has criticized your study for the assumption that
20 all gas moves north in your study (p.11, line 23). Would
21 you please comment?

22 A. My assumption that gas flows on the MRT system are generally
23 a south to north flow comes directly from the MRT responses
24 to staff data requests. In response to ARD-25, prepared by
25 Mr. Reis, MRT provided 15 flow diagrams representing the
26 flows of gas for the commodity and demand, peak and off peak

1 usage. Not one of the 15 diagrams indicates any backhauls.
2 Furthermore, in response to ARD-27, also prepared by Mr.
3 Reis, MRT stated that the system is designed to operate
4 generally in a south to north direction on the mainline and
5 that the flow diagrams reflect that "continued operation."
6 It further states that 95% of MRT's deliveries are made in
7 the market zone. As Mr. Reis points out in his Rebuttal
8 Testimony, MRT has two major delivery areas on the system,
9 Perryville and St. Louis. St. Louis is located at the far
10 northern end of the system so the majority of the gas will
11 be flowing in that direction. In fact, approximately 85% of
12 the deliveries on the mainline occur north of the last
13 injection point at Biggers. The other major delivery area,
14 Perryville, is sourced from central Arkansas. Mr. Reis' own
15 mcf·mile study indicates that that all of the Perryville
16 deliveries are sourced at Sherrill. It was my understanding
17 that this is accomplished by reversing one of the loops
18 while the others continue to flow northward. If the
19 movement from Sherrill to Perryville is essentially isolated
20 from the other gas streams, then it doesn't matter that it
21 actually flows south as long as the study reflects a
22 positive mcf·miles or forward haul for the operation. My
23 reversal of the flow was simply to account for the operation
24 as a forward haul.

1 Q. Mr. Reis claims that you have contradicted yourself in
2 saying that there are no backhauls giving rise to unused
3 capacity (p.11, line 27). Will you comment?

4 A. Yes. Mr. Reis misunderstood my reference. My reference on
5 page 25 of my testimony, was to the Sherrill to Perryville
6 movements discussed above. My point was not that there are
7 no backhauls on the MRT system but that this particular
8 operation did not appear to be a backhaul giving rise to
9 unused capacity. My understanding is that the southward
10 movement of gas from central Arkansas to Perryville is a
11 distinct operation using a separate loop from its local
12 deliveries along the pipeline. By reversing the flow in my
13 study I properly account for the operation as a forward
14 haul. MRT's flow diagram indicates that virtually all the
15 deliveries along the mainline come off of one loop while the
16 other two form essentially a long distance trunkline with
17 occasional interconnects to the local delivery line.

18 Q. Mr. Reis claims that you have oversimplified the operation
19 of the system in the field zone (p.11, line 43). Will you
20 comment?

21 A. It is the nature of an mcf·mile study to oversimplify the
22 operation of the pipeline system. My study attempts to
23 model the general operation of the system over time not the
24 day to day operations. The Perryville/Unionville area may
25 have several backhauls and displacements taking place,
26 however, these all take place in a relatively small area

1 while the great majority of the gas does move north toward
2 the St. Louis market, with the exception of the Sherrill to
3 Perryville transportation movement.

4 Q. Mr. Reis states that over half of MRT's system supply is
5 sourced in central Arkansas. Is that a problem for your
6 study?

7 A. No. As I pointed out earlier, over 85% of the system
8 deliveries on the mainline take place north of the last
9 injection point. If half of the gas enters in Arkansas and
10 85% departs north of there, then I think it's a safe
11 assumption that the gas generally flows north.

12 Q. Mr. Reis, on pages 14 and 15 of his Rebuttal Testimony,
13 discusses the problem of backhauls and displacements and
14 concludes that this invalidates your study. Will you
15 comment?

16 A. There are certainly many intricacies in the day to day
17 operation of a pipeline system and no study could possibly
18 capture them all. My study may generate positive mcf·miles
19 where at some points during the year there may be none
20 actually occurring, however, I must point out that this
21 problem does not go away with the use of MRT's explosion
22 model. In fact it gets worse. The explosion model assumes
23 that gas travels positive mcf·miles from every injection
24 point to every delivery point and calculates positive
25 mcf·miles for each of those assumed transactions. I cannot
26 see that the explosion model accounts for backhauls and

1 displacements in any way. Mr. Reis' concern for backhauls
2 and associated distortions of the mcf·mile study is not
3 reflected in his mcf·mile study. Again, there may be
4 backhauls and displacements in the operation of the system,
5 however, with the great majority of deliveries taking place
6 in St. Louis, it is obvious that the gas flows in a
7 northerly direction and the flow diagram model adequately
8 reflects this general operation.

9 Q. Mr. Reis has criticized your study for not replicating the
10 operation of the system. On page 18 of his Rebuttal
11 Testimony, he states that he assumed in his model that each
12 supply point will be redelivered prorata to all delivery
13 points. Does this solve the problem of replicating the
14 operation of the system?

15 A. No. While the explosion model is one method of allocating
16 or sourcing delivery requirements to injection points, it
17 has nothing to do with the operation of the system. It is
18 simply an allocation process. The flow diagram may have its
19 faults but it does attempt to reflect the actual flows on
20 the system. By calculating the amount of gas in the line as
21 it moves from point to point on an annual average day, I
22 believe the flow diagram model accurately reflects the
23 general usage of the system, especially for a straight line
24 pipeline with 85% of its deliveries at the northern end of
25 the line. Mr. Reis referred to my example of the injection
26 at Biggers moving upstream in the explosion model, pointing

1 out that that movement may very well occur at various times
2 during the year. My point was that the explosion model
3 requires that backhaul to occur every day and requires it to
4 backhaul to every delivery point upstream of the injection.
5 Certainly that is not a likelihood. The fact that the
6 explosion model requires this backhauling with every
7 injection would raise the question of whether it in any way
8 reflects the actual operation of the system.

9 Q. Mr. Reis alleges that you made certain "major errors" in
10 your study. What was he referring to?

11 A. Mr. Reis alleges that Staff witness Ms. Kane recommended
12 that 2/3rds of the imputed transportation volumes should
13 flow south, i.e., are field zone transportation, and only
14 1/3rd should flow north. I am unable to find in her
15 testimony where this recommendation is made. My assumption
16 that 2/3rds of the imputed volumes will flow to St. Louis is
17 based on the preponderance of deliveries in that market
18 already and that some of the sales service gas currently
19 moving to St. Louis will convert to transportation service
20 and still move to St. Louis.

21 Q. Mr. Reis criticized your study because it does not appear
22 that the East Line volumes are a prorated share of total
23 deliveries as derived from MRT's percentages by delivery
24 points. Will you comment?

25 A. Mr. Reis misunderstood the derivation and use of the
26 percentage allocations used in my study. The percentage

1 shares for injection and delivery points were derived using
2 MRT's current deliveries as shown in its mcf-mile study.
3 The shares do not include the imputed volumes added by Ms.
4 Kane. In shifting some sales service gas to transportation
5 service, the total volume allocated to sales service in my
6 study declines. MRT's study indicated that the East Line
7 accounted for approximately 20% of the total existing
8 throughput. I have retained this 20% share for the East
9 Line, applying it to the Staff's estimate of Phase I sales
10 volumes which is lower than the existing sales volumes.

11 Q. Mr. Reis has adjusted your study to indicate that 1/3rd of
12 the imputed volumes go north to St. Louis by displacement
13 and 2/3rds will be field zone transportations. Do you agree
14 with this adjustment?

15 A. I have three problems with his adjustment. One, I don't
16 agree that only one third of the imputed volumes will move
17 to St. Louis. St. Louis is MRT's major market by far and I
18 believe that the operations will continue to center on
19 delivering most of the imputed volumes to St. Louis. Two, I
20 don't understand how the movement to St. Louis occurs by
21 displacement when all the injection points lie south of that
22 market. The gas must come from the south. Three, my
23 Exhibit PC-3 Revised was missing a critical element needed
24 to derive the average miles of haul for the field zone and
25 market zone deliveries. Those exhibits reflect the average
26 miles of haul for the whole system. In order to calculate

1 the average miles of haul for gas delivered in each zone, it
2 is necessary to isolate the impact of the market zone
3 volumes and then subtract the resulting volumes and
4 mcf·miles from the system wide figures shown in PC-3
5 Revised. This can be accomplished with the Exhibit PC-3-A.
6 In PC-3-A the field zone delivery volumes are deleted along
7 with associated injections from each injection point. The
8 result is the average miles of haul for gas delivered in the
9 market zone, most of which travels through the field zone.
10 Then by subtracting the market zone numbers from the system
11 wide numbers, the average miles of haul for gas delivered in
12 the field zone can be derived. This subtraction is shown on
13 the first two pages of PC-3-A.

14 Q. Mr. Pappas has also adjusted your study to reflect a shift
15 in the boundary between the field and the market zone and to
16 construct additive zone rates for Union Electric's proposal.
17 Do you agree with his adjustment?

18 A. My proposed mcf·mile study provides an appropriate basis for
19 allocating costs which is used by staff witness Ms. Kane for
20 rate design purposes. Mr. Pappas appears to be proposing a
21 new rate design and I would only point out that his
22 subtraction of the field zone from my reported market zone
23 figures (which were actually system wide figures) derives
24 factors to be used in additive zone rates rather than stand
25 alone zone rates as proposed by staff witness Ms. Kane.

26 Q. Does this conclude your testimony?

1 A. Yes it does.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Re: Mississippi River Transmission Corporation
Docket No. RP89-248-000

Affidavit

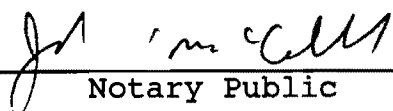
Patrick R. Crowley, being first duly sworn, on oath states that he is the Patrick R. Crowley whose prepared surrebuttal testimony entitled PREPARED SURREBUTTAL TESTIMONY was served on all parties to the above referenced proceeding. Patrick R. Crowley further states that if asked the questions contained in the text of such testimony he would give the answers that are therein set forth and that he adopts the aforesaid answers as his direct testimony in this proceeding.


Patrick R. Crowley

District of Columbia

Sworn To and Subscribed Before Me

this 22nd day of October, 1990


Notary Public

My Commission Expires November 14, 1994