

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Dominion Cove Point LNG, LP)

Docket No. RP06-_____

**TESTIMONY OF
MICHAEL FREDERICK
ON BEHALF OF
DOMINION COVE POINT LNG, LP**

1 Q. Please state your name, address and present employment.

2 A. My name is Michael D. Frederick. My business address is 2100 Cove Point
3 Road, Lusby, MD 20657. I am the Director, LNG Operations at Dominion Cove
4 Point LNG, LP (“DCP”); a subsidiary of Dominion Resources, Inc.
5 (“Dominion”).

6 Q. Please describe briefly your educational and professional background.

7 A. I graduated from the University of Pittsburgh, Pittsburgh, PA, in 1982 with a
8 Bachelor of Science Degree in Mechanical Engineering. I was employed by CNG
9 Transmission Corporation (predecessor of Dominion Transmission, Inc.), in
10 Planning Engineering. I subsequently held various positions in Engineering and
11 Operations. I have been in charge of plant operations since Dominion acquired
12 the plant. I was appointed to my current position in January 2004.

13 Q. What are your current responsibilities?

1 A. I am responsible for the operations of the Cove Point LNG facility. I also support
2 the Commercial, Regulatory and Engineering teams that work on DCP related
3 issues and projects.

4 Q. What is the purpose of your testimony?

5 A. My testimony addresses the capital expenditures to reactivate the LNG terminal
6 and shows that these expenditures were necessary to reactivate the terminal. I
7 also discuss DCP's gas use in the plant reactivation process, specifically during
8 August 2003. My testimony demonstrates that the gas usage was a just and
9 reasonable cost of restarting import services at the Cove Point terminal. DCP
10 Witness Stewart-York testifies to the inclusion of these reactivation costs in rate
11 base.

12 Q. Do you sponsor any exhibits?

13 A. Yes. I am sponsoring Exhibit No. DCP-20.

14 **COSTS OF REACTIVATION**

15 Q. Please describe the circumstances surrounding the reactivation of Cove Point for
16 import services.

17 A. Because DCP Witness Bomar details in her testimony the history of the Cove
18 Point facilities, including the various settlements ("Settlement") and the status of
19 the reactivation at the time of Dominion's acquisition, I will only address the
20 events that are significant to the cost of reactivating the facility. When Dominion
21 purchased Cove Point from Williams in September 2002, it acquired a facility that
22 was incapable of receiving LNG imports without substantial infrastructure
23 investment. Dominion was under considerable pressure to get construction

1 underway to avoid any further slippage in a construction schedule that was
2 already behind. Additionally, Dominion was constrained in its ability to make
3 changes to the construction plans, as the Commission's order authorized DCP
4 only to implement reactivation plans that were put in place by Williams.

5 Q. What is your understanding of the reactivation costs on which the existing rates
6 are based?

7 A. It is my understanding that the capital costs reflected in the Settlement are
8 approximately \$187 million. After placing the 5th tank in service the actual costs
9 to reactivate the facility were approximately \$243.7 million. Therefore, DCP has
10 incurred approximately \$57 million more than was reflected in the Settlement
11 rates. Exhibit No. DCP-20 provides a summary and detailed itemization of the
12 \$57 million in unrecovered costs.

13 Q. What were the projected costs to reactivate the facility at the time the Settlement
14 rates were established?

15 A. At the time the Settlement rates were established in September 2002, the
16 projected cost to reactivate Cove Point was preliminarily expected to be
17 approximately \$201.4 million. However, as stated above, the costs reflected in
18 the Settlement rates were approximately \$187 million. Therefore, in September
19 2002, it was anticipated that actual construction costs would exceed the projected
20 costs by at least \$14.4 million. This \$14.4 million variance explains a portion of
21 the approximately \$57 million unrecovered cost .

1 Q. Can you explain why the actual costs of reactivation of approximately \$243.7
2 million exceeded the projected September 2002 cost estimate of approximately
3 \$201.4 million by about \$42.3 million?

4 A. Yes. First, Williams severely underestimated the costs of reactivating a facility
5 that had been mothballed for over twenty years. Due to age, and exposure to a
6 salt water environment, the existing facilities were in poor condition requiring
7 significantly more repairs and refurbishment than originally anticipated by
8 Williams. I believe Williams' estimate proved to be inadequate and unrealistic
9 also because of Williams' lack of experience in building new LNG terminals or
10 refurbishing existing facilities. Indeed, the facilities underwent fourteen (14)
11 major design changes prior to reactivation, which increased the cost of
12 construction. These design changes were filed with and approved by FERC in
13 Docket No. CP01-76. Also, Williams' original construction estimates did not
14 take into account some of the enhancements to the existing facilities that were
15 necessary to ensure the facilities could operate safely and efficiently with a large
16 number of ships using the terminal.

17 Q. Were any of the additional reactivation expenditures required to comply with
18 regulations and/or the terms of the certificate issued by the Commission?

19 A. Yes. Substantial costs were incurred to comply with concerns raised by FERC or
20 by other federal or state agencies. The expenditures were necessary to reactivate
21 the terminal and to assure the terminal and related facilities would operate safely,
22 reliably and efficiently. The design changes and other construction issues were
23 detailed in monthly reports filed with FERC beginning in October of 2002.

1 Q. Did weather contribute to the additional expenditures?

2 A. Yes. Severe weather during the construction period increased the cost of the
3 project. Since a significant amount of construction took place in a marine
4 environment, reactivation was particularly susceptible to weather-induced delays.
5 A cold winter and wet spring significantly delayed work on the project and added
6 to the overall costs.

7 Q. Could you briefly describe the reactivation expenditures undertaken by DCP that
8 were significantly above Williams' estimate by approximately \$42.3 million?

9 A. Yes. The cost variances can be broken out into five categories: 1) Labor Costs;
10 2) Construction Material Costs; 3) Additional Repair and Refurbishment Costs;
11 4) Additional Testing Costs; and 5) Miscellaneous Costs. Exhibit No. DCP-20
12 itemizes the categories and provides detailed expenditures relating to each of the
13 categories.

14 Q. Please generally explain the cost variances relating to the "Labor Costs"
15 Category?

16 A. As detailed in Exhibit No. DCP-20, the largest cost variance was in the "Labor
17 Costs" category, in the amount of approximately \$37 million. Williams opted to
18 negotiate its contract with its construction contractors on a "time and materials"
19 ("T&M") basis, because Williams could not define the scope of work for several
20 reasons. First, inspections of the existing facilities had not been completed at the
21 time of the negotiations with its contractors. Also, as in any large project, the
22 scope of the work would likely change as the work progressed, especially because
23 the project involved reactivating a thirty-year old facility. Williams' use of the

1 T&M basis in its contracting had a direct and significant impact on labor costs
2 with the construction contractors, the design and construction management
3 contractor, and on internal labor. For example, Williams originally estimated
4 217,047 man-hours to complete the reactivation project (exclusive of the fifth
5 tank, sub-one electrical project and the mooring and berthing project) in
6 approximately seven and one-half months. The actual man-hours for the project,
7 however, were over three times the amount estimated by Williams –or
8 approximately 750,000 man-hours –which resulted in a cost variance of
9 \$22,320,531 above the Williams’ estimate. DCP completed the construction
10 within ten months.

11 Q. What were the cost variances associated with its design and construction
12 management contractor?

13 A. As with the case with the construction contracts, Williams also negotiated with its
14 design contractor on a T&M basis because the scope of work was not fully
15 defined and the inspections of existing facilities were incomplete. This also
16 significantly escalated the reactivation costs. The reactivation costs incurred by
17 the design contractor were \$11,062,032 over the original Williams’ estimate.

18 Q. Were there significant cost variances associated with the category “Construction
19 Material Costs”?

20 A. Yes. Again, the undefined scope of the work and the unplanned work items
21 contributed to higher material costs for construction. Reactivation construction
22 materials and equipment exceeded the original Williams’ estimate by \$7,349,740.

1 Q. Please describe the costs variances in the “Additional Repair and Refurbishment
2 Costs” and the “Additional Testing Costs” categories.

3 A. Exhibit No. DCP-20 itemizes the additional work or testing that was either never
4 contemplated by Williams in the first instance, or that required additional
5 refurbishment or repair due to the poor condition of the existing facilities. Also,
6 Williams’ estimates did not adequately budget for the costs relating to testing the
7 facilities and making the necessary repairs required by the test results.

8 Q. Were there any areas in which the reactivation costs were lower than estimated by
9 Williams?

10 A. Yes. Because the sum that could be reflected in rates was capped while the
11 Settlement rates were in effect, DCP had every incentive to try to reduce the costs
12 of reactivating the facility. DCP was able to reduce Williams’ estimates in
13 several areas by approximately \$29,545,073. These cost savings, described as
14 “Underages” because they were completed under budget, are listed on Exhibit No.
15 DCP-20.

16 **AUGUST 2003 FUEL USAGE**

17 Q. Did DCP recover gas used in August 2003 through its retainage mechanism filed
18 as part of the proceeding in Docket No. RP04-197?

19 A. Yes. However, in Docket No. RP04-197 the Commission required DCP to defer
20 367,759 Dth of the total 428,246 Dth of gas that was used during August 2003,
21 for disposition in this proceeding. *See, Dominion Cove Point LNG, LP, “Order*
22 *on Rehearing and Compliance,”* 114 FERC ¶ 61,320 (2006). My testimony
23 addresses how DCP reasonably and prudently used the 367,759 Dth in August

2003. Except for the 110,580 Dth relating to the unloading of the first commercial cargo, which is more appropriately addressed in a fuel tracker filing, DCP Witness Stewart-York addresses the appropriate rate treatment of the unrecovered August 2003 volumes.

Q. How much of the gas used in August 2003 has been deferred to this proceeding, and how is that deferral amount allocated among the different reactivation activities listed above?

A. The total deferred amount for August 2003 is 367,759 Dth, which can be broken down as follows:

Vaporizers:		
Testing and Calibration		44,238 Dth
Vaporization of Reactivation Cargo		<u>72,897 Dth</u>
Subtotal		117,135 Dth
First Commercial Cargo		110,580 Dth
Tank B Heel		12,000 Dth
Other Testing, Repairs & Training		<u>128,044 Dth</u>
Total Deferred August 2003 Fuel Usage		<u>367,759 Dth</u>

I will discuss each of these items below. Further support for these quantities can be found in the testimony and exhibits of DCP Witness Verdun. I should note, however, that at the time it was not known how much gas would be needed for startup activities.

Q. Can you describe, in more detail, how the testing and calibration of DCP's vaporizers contributed to elevated fuel use in August 2003?

A. Yes. DCP conducted live testing of the submerged combustion vaporizers that were installed during the plant reactivation. These vaporizers are a critical component of the Cove Point facility, as they are used to convert LNG back to a

1 gaseous state. The vaporizers are complex equipment, which must be calibrated
2 properly to operate effectively. These units serve a base load function, and often
3 operate at full capacity. There are ten (10) vaporizers on site, each with six (6)
4 burners. Therefore, DCP tested and calibrated a total of sixty (60) individual
5 burners once LNG became available on site.

6 Q. Why was it necessary to test and calibrate the vaporizers in August 2003?

7 A. These vaporizers are unique in many respects. In order to ensure a safe and
8 efficient startup in compliance with all applicable regulations of a long-dormant
9 LNG terminal, DCP conducted extensive testing of the facilities and training of
10 employees, during August 2003, prior to the receipt of its first commercial cargo
11 on August 20, 2003. Some of these tests required the use of a significant amount
12 of LNG from the plant reactivation cargo, as did some of the problems discovered
13 during testing. DCP used 44,238 Dth of gas to test the vaporizers.

14 Q. You mentioned that these vaporizers are unique. Please elaborate.

15 A. The submerged combustion vaporizers selected by Williams in its facility design
16 are typically designed for use as peak shavers, which would vaporize limited
17 volumes over limited time periods, with intermittent periods of cooling in
18 between. To adapt these units to handle base-load usage of the facility, DCP had
19 to experiment with start-up and firing of these burners at their maximum
20 capabilities. As with any combustion equipment, these new burners needed to be
21 fired and run so that observations could be made, and adjustments performed to
22 ensure that each burner would operate efficiently. These tests were performed by
23 burning LNG that boiled off from the plant reactivation cargo.

1 Q. As for environmental regulations, how did those affect DCP's use of the plant
2 reactivation cargo during August 2003?

3 A. DCP must abide by stringent air quality regulations. Calvert County, Maryland,
4 where the Cove Point facility is located, is considered a non-attainment area for
5 air quality. Therefore, the facility is subject to standards established by the
6 Environmental Protection Agency ("EPA") for non-attainment areas. A
7 significant amount of gas was used to ensure compliance with EPA air standards,
8 through tuning of the vaporizers. Each burner was operated across its range of
9 capability, gradually adjusting the mix of fuel and air, to establish combustion
10 characteristics with extremely lean or rich fuel intake – and across a spectrum in
11 between. DCP mapped the resulting emissions of constituents that would be
12 monitored in accordance with its emissions permits. For example, the level of
13 nitrous oxide, or "NOx," varies in relation to the calibration of this fuel source.

14 Q. Why was LNG consumed in the process of testing the vaporizers to comply with
15 environmental regulations?

16 A. DCP was required to burn an unusual amount of regasified LNG simply to create
17 the range of conditions necessary to satisfy EPA requirements. By putting each of
18 the sixty (60) burners through a range of lean-to-rich fuel mixtures, DCP was, by
19 necessity, required to operate the equipment outside its optimal range. A side
20 benefit of this exercise was the additional experience DCP operators gained in
21 understanding the peculiar dynamics of each of the vaporizer units – much as any
22 mechanic becomes familiar with the tendencies of a particular engine – which has

1 contributed to our ability to operate the facility in a safe and efficient manner
2 while complying with the limits of our applicable permits.

3 Q. Can you summarize the 72,897 Dth of gas usage associated with the vaporization
4 of the reactivation cargo?

5 A. As indicated below, before DCP could resume imports, a commissioning ship
6 delivered LNG to cool the facility's pier and import pipelines. Part of this cargo
7 was also used to test the vaporizers. Approximately 1.6 MMDth of the
8 reactivation cargo was ultimately vaporized, resulting in storage gas usage of
9 approximately 72,897 Dth.

10 Q. Could you please explain how the issues associated with unloading the first
11 commercial cargo also contributed to August 2003 gas use by the plant?

12 A. Certainly. When the first LNG tanker arrived on August 20, 2003, it took three
13 days to unload that cargo, compared to today's typical off-loading cycle of less
14 than 13 hours. As a result, the LNG tanker remained at the Cove Point berth,
15 consuming boil-off of its cargo in order to sustain ship operations. Gas
16 attributable to the delay in offloading this first commercial cargo is 110,580 Dth,
17 which amounts to additional fuel used by the terminal. This quantity should be
18 recovered through DCP's fuel retainage mechanism.

19 Q. What factors caused this delay?

20 A. There was a mechanical malfunction during the unloading of that cargo, which
21 resulted in LNG entering the vapor system at two points. One was at an 8"
22 crossover line valve in one of the unloading arms, and the other was at an LNG
23 relief valve on the operations platform that discharged into the 14" vapor system

1 piping. Once liquid entered the vapor system, vapor return to the LNG tanker was
2 halted. Discharged liquid from the tanker could not be resumed until liquid was
3 removed from the vapor line primarily to the atmosphere, the tank relief valves
4 were reseated, and the discretionary vent for the tunnel vapor piping was reseated.

5 Q. What was done to fix this mechanical malfunction?

6 A. After the first commercial cargo was completely unloaded, inspections revealed
7 problems with a manual valve operator; this crossover valve was repaired and a
8 pressure test of the seal was performed to confirm the integrity of its seating. The
9 leaking relief valve was removed, repaired and reinstalled. Since that time, DCP
10 has installed thermocouples in the relief valve discharge lines and installed
11 additional process cameras throughout the plant, which improved DCP's
12 capability to detect events before significant quantities of liquid enter the vapor
13 return pipelines. Such detection equipment was not a part of the facility design at
14 the time of Dominion's acquisition of the plant.

15 Q. Please describe the replacement of Tank B plant heel during plant reactivation,
16 and how that activity contributed to the August 2003 underage.

17 A. LNG "heel" is a required minimum quantity of LNG that a tank must hold in
18 order to maintain safe operating temperature and pressure. Before it could be
19 used for LNG storage, Tank B needed to be cooled to the proper temperature.
20 First, liquid nitrogen was injected into Tank B to cool down the tank so that it
21 could receive LNG. After this initial pre-cooling, the tank was able to receive
22 gas, and replacement heel gas was injected into Tank B. DCP injected 12,000
23 Dth of LNG into Tank B to keep the tank cool.

1 Q. You have stated that DCP preformed various other preparedness functions
2 associated with start-up that involved fuel usage in order to ensure a safe start-up
3 and commissioning. Please describe that process and the preparedness functions.

4 A. In order to reactivate the warmed-up facility, DCP performed various
5 preparedness functions throughout the month of August to ensure a safe
6 reactivation. For instance, each piece of piping and equipment involved in the
7 cryogenic operation was purged and filled with LNG. In preparation for startup,
8 DCP methodically stepped through commissioning procedures, including
9 repairing leaks. These repairs required clearing of the affected piping and re-
10 inventory of the system. During the month of August 2003, DCP was engaged in
11 equipment testing and preparedness on all piping, compressors, pumps, tanks and
12 vessels. And, to be ready for commercial operation, DCP calibrated all plant
13 pressure, level, temperature and flow transmitters, in part, by running LNG
14 through these pieces of equipment.

15 Q. How much of the August 2003 under-recovery is attributed to these other testing,
16 repair and training activities?

17 A. DCP attributes the remaining 128,044 Dth of gas used during August 2003 to
18 these activities that were undertaken throughout the plant.

19 Q. You noted above that 110,580 Dth of the deferred quantity relating to the
20 unloading of the first commercial cargo should be recovered as fuel used during
21 August 2003 as part of the fuel tracker mechanism. What is the appropriate
22 treatment of the remainder (or 257,179 Dth) of the deferred quantity?

1 A. The remainder of the deferred quantity was utilized to start up the facilities, and
2 should be added to the cost of the plant. DCP Witness Stewart-York provides
3 further testimony to support the appropriate treatment for rate setting purposes.

4 Q. How did DCP acquire the gas used during August 2003?

5 A. On July 25, 2003, DCP received a plant commissioning cargo that DCP had
6 purchased from BP, one of the LTD-1 shippers. DCP used a portion of the gas
7 from this cargo to conduct the testing, training, and reactivation of Cove Point, as
8 described above. DCP only seeks to recover the cost of the plant commissioning
9 cargo actually used to reactivate this terminal.

10 Q. Does this conclude your testimony?

11 A. Yes, it does.

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Dominion Cove Point LNG, LP

)


Docket No. RP06-_____

AFFIDAVIT OF MICHAEL D. FREDERICK

Michael D. Frederick, being first duly sworn according to law, on oath deposes and says: that he is the witness whose testimony appears on the preceding pages entitled "TESTIMONY OF MICHAEL D. FREDERICK ON BEHALF OF DOMINION COVE POINT LNG, LP" in this proceeding; that, if asked the questions which appear in the text of the aforesaid testimony, affiant would give the answers that are therein set forth; and that affiant adopts the aforesaid testimony as his sworn testimony in these proceedings.


Michael D. Frederick

Subscribed and sworn to before me this 27 day of June, 2006.


Notary Public
District of Columbia
My Commission expires: 11/14/07